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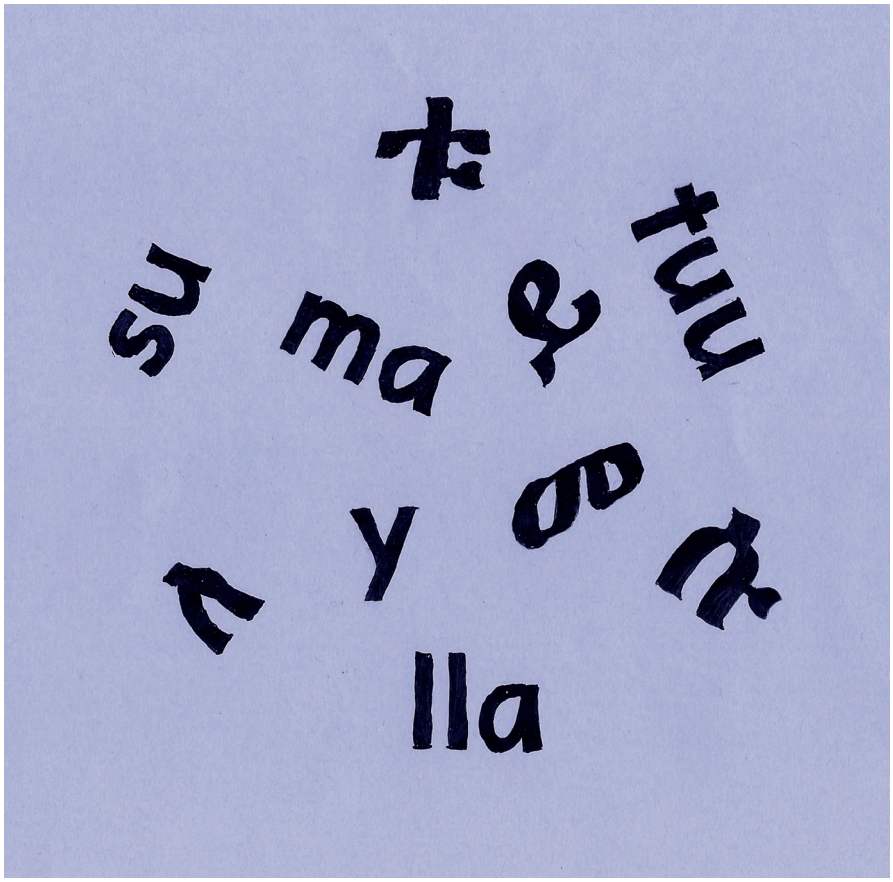

UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF HUMANITIES AND
SOCIAL SCIENCES

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ABSTRACT

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This study examines the interplay between phonological awareness, orthography and literacy learning. The field work was carried out in the Konso language community in Southwest Ethiopia, during the launching of an alphabetic orthography for the language. Konso had previously been written in the Ge'ez script, which is classified as an abugida. Each abugida character primarily denotes a consonant-vowel sequence, and transferring to an alphabetic orthography involves learning new sound-symbol correspondences on the level of phonemes.

The change of writing system offered the opportunity to study the influence of an orthography on its readers' phonological awareness in a context where only the writing system changed, not the language. At the same time, it gave the opportunity to establish the basis for the method to be used for transfer literacy teaching for the Konso language.

The data was mostly collected in the first transfer literacy training workshops for voluntary literacy teachers (N=80). The data collection stretched over three years and three months, while the teachers practised alphabetic literacy skills and started to teach transfer literacy classes. The data includes the results of phonological awareness tests, spelling and word reading tests, the subjects' written reflections on the two orthographies and the transfer learning process, and my diary notes from observations and discussions with the learners.

The results revealed close connections between the sound-symbol correspondences of the Konso abugida and its readers' conceptions about the phonological components of the language. Consonants and vowels were viewed as related components complementing each other, rather than as independent units. The lack of the marking of phoneme quantity in the abugida made it difficult for abugida readers to identify the quantity of phonemes, and the disparity between phonological syllables and orthographic syllables influenced their intuitive syllabification. Overall, the results point to the strong influence of a writing system on its readers' phonological awareness, making it hard to become aware of phonological units which are not represented in the orthography. This has consequences for the transfer literacy learning situation, especially when the transfer takes place from an orthography operating on bigger phonological units to an orthography operating on smaller units.

Keywords: transfer literacy, phonological awareness, script, writing system, orthography, abugida, Konso language

TIIVISTELMÄ

Ahlberg, Aija Katriina
Miten abugidan lukijat oppivat alfabeettisen lukutaidon – Fonologisen tietoisuuden rooli siirtymälukutaidon oppimisessa konson kielellä Lounais-Etiopiassa
Jyväskylä: University of Jyväskylä, 2020, 211 s.
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Tämän tutkimuksen keskiössä on fonologisen tietoisuuden, ortografian ja luku- ja kirjoitustaidon oppimisen välinen vuorovaikutus. Kenttätyö on tehty konson kieliyhteisössä Lounais-Etiopiassa ajankohtana, jolloin kielessä oli meneillään kirjoitusjärjestelmän vaihtaminen etiopialaisesta abugidasta alfabeettiseen kirjoitusjärjestelmään. Abugidan kirjainmerkki vastaa ensisijaisesti konsonantti-vokaaliyhdistelmää, ja siirtyminen alfabeettiseen ortografiaan edellyttää abugidan lukijalta kirjain–äänne-yhteyksien oppimista foneemien tasolla. Kirjoitusjärjestelmästä toiseen siirtyminen tarjosi mahdollisuuden seurata ortografian vaikutusta lukijan fonologiseen tietoisuuteen yhden kielen sisällä ja kehittää siirtymälukutaidon opetusmenetelmää kyseiseen kielikontekstiin.

Tutkimuksen aineisto on pääosin kerätty vapaaehtoisille lukutaito-opettajille järjestetyiltä, ensimmäisiltä konson kielen siirtymälukutaitokursseilta (N=80). Aineistonkeruu ajoittui kolmen vuoden ja kolmen kuukauden ajanjaksolle. Jakson aikana opettajat harjoittelivat alfabeettista luku- ja kirjoitustaitoa ja aloittivat siirtymälukutaito-opetusta kotikylillään. Aineisto koostuu fonologisen tietoisuuden testien sekä sanelutehtävien ja sanatason lukutehtävien tuloksista, kurssilaisten omista siirtymälukutaidon oppimis- ja opettamiskokemuksista sekä päiväkirjamerkinnöistäni.

Tulosten mukaan yhteys konson abugidan kirjain–äännejono-vastaavuuksien ja abugidan lukijoiden fonologisen tietoisuuden välillä oli kiinteä. Samalla abugidan kirjainmerkillä kirjoitettavat konsonantti ja vokaali hahmotettiin kuuluvan yhteen ja täydentävän toisiaan, ja niiden irrottaminen toisistaan osoittautui vaikeaksi. Koska konson abugidassa äänteen kvantiteetti jätetään useimpien foneemien kohdalla merkitsemättä, foneemien oikean keston hahmottaminen osoittautui myös vaikeaksi. Lisäksi erot fonologisen tavun ja abugidan ortografisen tavun välillä vaikuttivat siihen, miten abugidan lukijat tavuttivat sanoja. Kaikki nämä tulokset viittaavat vahvasti siihen, että kirjoitusjärjestelmän ja lukijan fonologisen tietoisuuden välillä on selkeä yhteys. Tuloksella on suuri merkitys siirtymälukutaidon oppimisessa erityisesti silloin, kun uuden kirjoitusjärjestelmän kirjaimet vastaavat pienempiä fonologisia yksiköitä kuin siirtymälukutaito-oppilaan jo osaaman kirjoitusjärjestelmän kirjaimet.

Avainsanat: siirtymälukutaito, fonologinen tietoisuus, kirjaimisto, kirjoitusjärjestelmä, ortografia, abugida, konson kieli

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I received financial support for the dissertation from the Kone Foundation and from the University of Jyväskylä. The study grants allowed me to concentrate on research full-time for most of the time I have been working on my PhD. The travel grants not only covered my field work in Ethiopia, but also enabled me to participate in the 12th International Workshop of the Association for Written Language and Literacy in Cambridge, and in the 20th International Conference of Ethiopian Studies in Mekelle – both events very useful from the point of view of learning and networking.

I want to thank Dr Ahmed Hassen, the Director of the Institute of Ethiopian Studies (IES) at Addis Ababa University, for his helpful advice at the beginning of my field work and for granting me a research permit. A big thank you goes also to the IES office staff for their friendly service every time I visited there.

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guest lecture and discuss my results with staff and students of the Department of Languages and Communication Studies at the University.

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A big thank you goes to all the Konso literacy teachers and their students who participated in this study. When I arrived in Konso for the first data collection phase, I expected to meet resistance towards the church's plan to launch a transfer literacy training programme, let alone my plan to insert a research component into the training. Instead, I was welcomed by highly motivated trainees who were excited about the chance to learn a new script for their language. My plan for the research was also well received, making the data collecting a joyful task. I am greatly indebted to the church members in Xolme, Faasha and Daka Deri for welcoming me to stay in their homes during the training weeks in their churches.

Finally, I want to thank my dear husband, Timo, and my precious children, Lauri and Suvi. Their understanding, patience, love and encouragement during my research have meant more to me than words can ever express. I cannot imagine what life would have been like without you, Timo, Lauri and Suvi. My gratitude and my love for you know no bounds.

Helsinki 20.05.2020
Aija Katriina Ahlberg

FIGURE

TABLE

CONTENTS

1 INTRODUCTION

1.1 Starting point of the study

This study grew out of the need to establish the basis for developing an efficient transfer literacy teaching method from the Ge'ez script,[1] classified as an abugida writing system, to alphabetic writing in the Konso language, spoken in South-west Ethiopia. The focus of the study is on the interplay between phonological awareness and orthography, and the role of phonological awareness in transfer literacy learning. Phonological awareness is defined as the ability to recognise, identify or manipulate phonological units within a word (Ziegler & Goswami, 2005).

After more than 20 years of informal literacy teaching by the local church in Konso, in 2012 the Konso language community decided to expand the use of written Konso outside the church context. The decision involved a plan to introduce Konso as the language of instruction for Konso children in grades 1-4 in primary school. Until then, Amharic, the language of wider communication in Ethiopia, had been used as the official language in the Konso area and as the language of instruction in lower primary school. It was also decided that a new, alphabetic orthography using Roman script would be developed for the language to replace the previous Ge'ez script orthography. Consequently, a language committee was set up, including a sub-committee for the development of the orthography, and in July 2014 the Konso alphabetic orthography was launched. The situation offered a unique opportunity to study a transfer from one writing system to another within the context of one language.

When the alphabetic orthography was launched, the church in Konso set out to develop a transfer literacy teaching programme for people who were able to read Konso in the Ge'ez script, and I decided to connect a study programme to the undertaking. Consequently, I collected the data for the present study at the beginning of the implementation phase of the Konso transfer literacy teaching programme. During the period covered by the study, voluntary literacy teachers from the church community were learning to read and write Konso in the new alphabetic orthography themselves and started teaching the first transfer literacy courses in their home villages. The newly drafted transfer literacy teaching materials were being piloted and developed further. Therefore, collecting and analysing the data for the study were an integral part of the initial stage of transfer literacy training. The training was always the primary consideration, and the data collection took place during the training workshops and the transfer literacy classes taught by the trainees. This type of setting ruled out systematic sampling and wide-scale, clinical testing. Rather, the data consists of small phonological

[1] Ge'ez script is also called Ethiopic script.

awareness tests carried out as part of the training workshops, short reading and spelling tests done by groups of learners, learners' written reflections on the two orthographies and the challenges they experienced in transfer literacy learning, and my field notes from the training workshops and from discussions with the learners and the trainers.

My decision to make the role of phonological awareness (PA) in transfer literacy learning the focus of the study was backed up by the wide consensus among researchers on the close links between the development of PA skills and literacy learning (see e.g. Nag, 2007; Page, 2017; Richardson & Nieminen, 2017; Seymour, 2005; Share, 2017; Yin & Sun, 2017; Ziegler & Goswami, 2005) as well as between the development of PA skills and orthography (e.g. Goswami, 2005; Koda, 2005). The view of the importance of PA in literacy learning was also in line with my earlier experience of the types of difficulties that transfer literacy learners who are familiar with the Ge'ez script encounter in attempting to master alphabetic literacy skills in a variety of language contexts in Ethiopia. In the Ge'ez script, the characters primarily denote consonant-vowel sequences in which the consonant is visually prominent, whereas in the Roman script, consonant and vowel sounds are represented by separate characters; therefore literacy skills in the two scripts involve mastering sound-symbol mappings on different phonological levels.

The main goal of this study has been to gain insights that can be used to develop an efficient transfer literacy teaching method for Konso, but I hope that the results also shed light more generally on the challenges faced by a reader of the Ge'ez script in learning alphabetic literacy skills. This is because Ethiopia is a multilingual country with a bi-script policy, and Konso is not the only language community facing the challenges of a transfer process. The issue has not, however, received much attention in Ethiopia.

Developing efficient transfer literacy teaching methodologies from consonant-based orthographies[2] to alphabetic orthographies is a current need also in Europe, as the large number of semi-literate people with literacy skills in a consonant-based orthography move to Europe and face the challenge of learning alphabetic literacy skills. The scarcity of earlier studies on the role of orthography in moulding its readers' PA in languages using the Ge'ez script also makes the study in Konso valuable from a theoretical point of view.

[2] With *consonant-based orthographies* I refer to *abugidas* and *abjads*, defined in more detail in Section 2.2.3. Abugidas are used for many languages in South and Southeast Asian countries, including India, Sri Lanka, Myanmar, Thailand, Laos, and Cambodia (Karanth, 2005) and in Ethiopia and Eritrea, e.g. Amharic and Tigrinya. Abjads are used for languages in the Middle East, Asia and North Africa, e.g. Arabic, Hebrew, and Persian (Levin, Aram, Tolchinsky & McBride, 2013).

1.2 Outline of the study

After this brief introduction, in Chapter 2, I will move on to describe the linguistic landscape of Ethiopia and the country's current bi-script language policy. I will then review the history and main characteristics of the Ge'ez script and position it typologically as an *abugida*. Having sketched the wider context for the study, I will describe the earlier literacy activities in Konso and give a brief overview of the phonological and morphological structure of the language. I will introduce the two Konso orthographies and describe the literacy teaching approaches used in Konso before the study.

Chapter 3 provides the theoretical framework for the study. In it I review research on the relationships between phonological awareness and literacy learning in alphabetic script and in the Brahmi script. The paucity of literacy studies on the Ge'ez script makes the Brahmi studies a close reference point for this study. I introduce the *psycholinguistic grain size theory*, proposed by Ziegler and Goswami (2005) as a framework for studying the relationship between phonological processing and reading development in different orthographies. I also introduce Koda's (2005) *transfer facilitation model*. The principles of Koda's model were applied to design the data collecting instruments for the present study in Konso. Having outlined the theoretical framework, I present the overarching research questions for the study.

Chapter 4 introduces the methods of the study. I characterise the study design as *mixed methods research* and describe the setting in Konso and the factors which I took into consideration when making the methodological choices. I then outline the different phases in the data collecting and introduce the participants in the study. I also describe the data collecting instruments and the methods used for analysing the data. At the end of the chapter I discuss ethical considerations related to the study.

Chapters 5-7 present the results of the study from three perspectives: phonemic awareness (Chapter 5), quantity awareness (Chapter 6), and syllable awareness (Chapter 7).

Chapter 8 reviews the main findings and discusses their practical relevance primarily for transfer literacy teaching in Konso, but also in other language contexts. The theoretical impact of the study is also discussed, and the chapter ends with a critical survey of the study and an outline of relevant topics for further research.

2 SETTING THE SCENE

2.1 Ethiopia's multilingual and bi-script language policy

The Federal Democratic Republic of Ethiopia is the second most populous country in Africa, with around 105 million people (World Bank, 2017). Ethiopia is home to more than 80 ethnic groups (Federal Democratic Republic of Ethiopia. Population Census Commission, 2008), and the linguistic landscape is rich, including around 80 indigenous languages (Eberhard, Simons & Fennig, 2019; Mekonnen, 2005; Zelealem, 2012) with great typological variety. Two of the four language phyla in Africa, Afro-Asiatic and Nilo-Saharan, are found in Ethiopia, and of the Afro-Asiatic languages three of the six branches (i.e. Semitic, Cushitic, and Omotic) are represented there (Zelealem, 2012).

Despite the large number of languages and the wide linguistic variety, according to Ethiopia's language policy since 1994 every nation, nationality and people in the country has the right to develop their language in written form, use it for local administration, and offer primary education in the children's mother tongue (Constitution of the Federal Democratic Republic of Ethiopia, 1994; Education and training policy, 1994). Until 1994, Amharic had been used as the official language and the medium of instruction in primary education throughout the country, and the change in language policy meant an enormous reorganisation, particularly in the educational sector.

The new policy was put into practice immediately, and vigorous language development work was begun in many languages as orthographies were developed, writing conventions created, and school textbooks written. According to a nation-wide study on the medium of instruction in primary education in Ethiopia (Heugh, Benson, Berhanu & Mekonnen, 2007), by 2006 twenty languages were being used in their respective language areas. Intensive work on language development has continued since then. By 2016 an additional twenty-one languages had been added to the number, and seven more were being taught as a school subject in their respective language areas (Ethiopian Ministry of Education, 2009 E.C.[3]). In addition, preparations are currently under way to begin primary education in more languages, Konso being one of them.

Besides the freedom to use their local languages in the public domain, the current language policy grants language communities the right to choose between the Ge'ez and Roman scripts for their language. Previously the Ge'ez script was to be used for writing Ethiopian languages. The bi-script policy has caused

[3] E.C. stands for the Ethiopian Calendar, and the year 2009 E.C. corresponds with the year beginning in September 2016 CE.

a major change to the literacy landscape, and according to statistics from the Ethiopian Ministry of Education (2009 E.C.), in 2016 forty of the languages being used as the medium of instruction or taught as a subject in primary schools were written in the Roman script. There are strong opinions about the benefits and disadvantages of the bi-script policy in general and about switching over to the Roman script in particular (Teshome, 2017; Zelealem, 2012). Recognising that a wide range of linguistic, educational, and sociolinguistic arguments can be put forward both to support and to oppose the present policy and practice, this study does not take sides in the dispute. Rather, it aims to respond to the current need for essential information on how to create an efficient methodology for transfer literacy teaching from abugida to alphabetic writing in Konso, as well as in other Ethiopian language communities that have chosen to adopt the Roman script.

2.2 The Ge'ez script and writing in Ethiopia

2.2.1 History of the Ge'ez script

The history of the Ge'ez script dates back to the fourth century (Getatchew, 1996), when the ancient Ethio-Semitic language *Ge'ez* served as the lingua franca for the Axumite Empire in northern Ethiopia[4] and as the language of education in the Ethiopian Orthodox Church (Zelealem, 2012). Later, Amharic, also belonging to the Ethio-Semitic language family, replaced Ge'ez as the lingua franca and was put into writing around the 14th century, inheriting the Ge'ez script (Zelealem, 2012). Since then, Amharic has maintained its status as the language of wider communication in Ethiopia, and according to Appleyard (2007), it is amongst the languages of Sub-Saharan Africa with the largest bodies of literature.

Because of the central role of Amharic in the Ethiopian language scene for so many centuries, the other Ethiopian languages were not widely used in written form before the change in language policy in the 1990s. Nevertheless, in the 1970s and 1980s the Ethiopian government ran a nationwide literacy campaign for adults, and orthographies and basic literacy materials were therefore developed for 14 languages, for use in the areas where the languages were spoken (Appleyard, 2007; Zelealem, 2012). In addition, the churches developed orthographies for more languages in order to support translation of the Bible. By the 1990s, altogether some 30 Ethiopian languages used the Ge'ez script, including over 20 languages which have switched over to using the Roman script since then.[5]

[4] The period of Axumite rule from around the first to the seventh centuries had an important impact on early Ethiopian history (Bahru, 2002/2005).
[5] Language communities which have switched over from using Ge'ez script to Roman script include: Afaan Oromo, Wolaitta, Sidaama, Hadiyya, Kambaata, Afar, Gedeo, Somali, Kafinono, Bench, Gamo, Gofa, Dawro, Dirayta, Konso, Koorete, Me'en, Suri, Majang, Gumuz, Diizi.

2.2.2 Characteristics of the Ge'ez script

The Ge'ez script characters are called *fidels*, and they primarily represent consonant-vowel (CV) sequences. The inventory of fidels includes a basic fidel for each consonant phoneme with an *inherent vowel* and six modifications to the basic fidel, thus marking the seven vowels of the Ethio-Semitic languages (Table 1). For word-initial vowels there is a separate set of seven characters. There is a certain amount of consistency in the modifications for each vowel, and this may help a literacy learner memorise the characters, but no definite rules can be formulated about how to mark a certain vowel for each of the basic fidels. Getatchew (1996) characterises the nature of the Ge'ez script and the irregularities in the patterns of marking the vowels as follows:

> The combining of individual characters with vowel signs with so little systematization has resulted, in many cases, in creation of a new character with an independent identity, a character virtually on the level of the base character. The vowel signs have become such an integral part of the body of the character that each of the seven forms, including the base form, is a symbol representing a consonant and a vowel. (p. 574)

TABLE 1 Inventory of the Ge'ez fidels for consonants /l/, /t/ and /m/

	ä	u	i	a	e	ɨ (-)	o
l	ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ
t	ተ	ቱ	ቲ	ታ	ቴ	ት	ቶ
m	መ	ሙ	ሚ	ማ	ሜ	ም	ሞ

Each set of seven fidels is referred to as a *family*, and the seven forms of each family are called *orders*. The sixth-order fidel has a dual function, marking a CV sequence and a single consonant in word positions where a consonant is not followed by an adjacent vowel. The original Ge'ez script does not mark the quantity of phonemes (i.e. the gemination of consonants and length of vowels).

2.2.3 Typological classification of the Ge'ez script

Traditionally, typologies of writing systems have recognised three types: logographies, syllabaries and alphabets (Daniels, 1996). The division is roughly based on whether the characters denote words, syllables, or phonemes, respectively. As the Ge'ez script shares characteristics of both syllabaries and alphabets, classifying it has been controversial (Bright, 2000; Daniels, 1996). In 1990, Peter Daniels suggested for the first time the term *abugida*[6] for the Ge'ez and the Indic scripts. He defines the script type as follows (Daniels, 1996):

[6] The term *abugida* comes from the traditional order of the first consonants and vowels in ancient acrostic poems (Getatchew, 1996) and the order used for teaching Ge'ez symbols in traditional church schools: አ ቡ ጊ ዳ /a bu gi da/.

> In an abugida, each character denotes a consonant accompanied by a specific vowel, and the other vowels are denoted by a consistent modification of the consonant symbol. (p. 4)

Indic scripts are derived from an ancient *Brahmi script*. Brahmi is regarded as the ancestor of many scripts in South, Southeast, and Inner Asia (Salomon, 1996), and today scripts derived from Brahmi are used widely in the Indian subcontinent (Gupta, 2012) and elsewhere in South and Southeast Asia (Verhoeven & Perfetti, 2017). I will return to Brahmi in Section 3.2, as there are a number of studies about the relationship between phonological awareness, orthography, and learning to read in languages using the Brahmi script, and those studies serve as a close reference for the present study in Konso.

Another term widely used for the Brahmi and Ge'ez scripts is *alphasyllabary*. Bright (2000) describes an alphasyllabary as a script type which denotes vowels preceded by consonants as diacritic symbols occurring in any direction from the consonant, and as independent symbols in an initial position.

The criteria given to an abugida by Daniels (1990; 1996) and to an alphasyllabary by Bright (2000) both capture the main characteristics of the Ge'ez script. In this study I use the term abugida for the writing system which the Ge'ez script represents, and I refer to the Ge'ez-script orthography for Konso as the *Konso abugida*. My reason for choosing the term abugida over alphasyllabary is the emphasis that Daniels' definition gives to the presence of a vowel as an obligatory element of the base character, as this feature of the script type can be assumed to influence the process of literacy learning, and thus is of special relevance in the transfer from abugida to alphabetic writing.

Another type of writing system which shares characteristics of both syllabaries and alphabets, but differs from abugidas by primarily denoting only consonants, is *abjad*, the name given by Daniels (1990). Perfetti and Verhoeven (2017) characterise abjads and abugidas as writing systems which "reflect a compromise between syllabic and phonemic writing" (p. 456). Languages using abjads include Hebrew, Arabic and Persian (Levin, Aram, Tolchinsky & McBride, 2013).

Writing system, *orthography* and *script* are terms often confused with each other and used differently by different scholars. In this study I follow the thought line presented by Verhoeven and Perfetti (2017), according to which a writing system reflects the primary level of mappings between symbols and sound units (e.g. CV in an abugida and phoneme in an alphabet), an orthography includes a language-specific set of rules (e.g. which symbols represent which sounds, how word breaks are determined etc.), and a script refers to the visual appearance of the writing system. For example, English and Russian are both alphabets because they denote phonemes, but the scripts they use are visually different.

2.3 Konso language and literacy

2.3.1 History of Konso literacy activities

The Konso abugida was developed in the 1970s mainly for Bible translation work, on the initiative of the Bible Society of Ethiopia (BSE) and the Ethiopian Evangelical Church of Mekane Yesus (EECMY) (Estiphanos, 1995). Along with translating Bible texts, the team of translators put into writing traditional oral literature and songs composed by church members. A review committee covering all the dialect areas was established to check and edit the parts of the Scriptures that were translated, and the reviewers became the first fluent Konso readers. In 1993, a self-study booklet that taught the differences between Amharic and Konso abugida orthographies was prepared by the translation team. This enabled Konso speakers who were literate in Amharic to teach themselves the differences between Amharic and Konso orthographies.

However, literacy teaching for non-literates did not commence until 1997, when the basic primer, ፍተለ አፈ ኾንሶ /fitala afa χonso/ 'Konso fidels' (1997/2013), was prepared by the church. At the time, there was no doubt about the need for basic literacy teaching for both adults and children, as the enrolment rate in Amharic-medium primary schools was very low.[7]

The members of the Bible review committee were involved in the preparation of the primer, and many of them served as the first voluntary literacy teachers in their home villages. The literacy programme became popular within the church community, and gradually more voluntary teachers were recruited from the local communities. Still today the literacy teaching in the church is carried out on a voluntary basis by local farmers, and students of all levels in primary and secondary schools. Some of the teachers have not attended formal education at all, but have learned to read and write through the church literacy programme and then started teaching a literacy class in their own church. Nevertheless, the number of teachers without formal education has decreased considerably over the years, as the overall level of education in the Konso language area has risen.

Since the beginning of the basic literacy teaching in 1997, the church has arranged short training workshops for voluntary literacy teachers in about ten congregations around the language area every year. The workshops are normally one week long, and are arranged between July and September, when government schools are closed and students who want to teach a literacy class in their home church have time to attend the training. Each village church is invited to send two trainees to one workshop every year. The training in the workshops is given by a group of the most experienced voluntary teachers recruited from the Konso

[7] According to statistics received from the Konso Special Woreda (Administrative Unit) Education office in 2005, during the academic year 2001-02, only 37.5% of children (boys 59.7% and girls 15.7%) from the relevant age group attended primary school (grades 1-8). The corresponding figure for grades 1-4 was 53.1% (boys 82.2% and girls 24,6%).

congregations. The training programme is led by the Konso literacy coordinator, employed by the church.

According to church records, between 1998 and 2016 the number of literacy students in the villages varied from 2562 to 4194 per year. The results of the teaching can be seen in church life, as people carry their New Testaments or song books to church, and Konso books are selling well. In addition to religious material, the church has published traditional Konso stories and riddles, and basic teaching materials. About 18% of the population of Konso are members of the EECMY.[8] According to a rough estimate made by the Konso church literacy office, about half of church members can read the Konso abugida (September 20, 2018).

In comparison to several other Ethiopian language communities, it took Konso a long time to start to take advantage of the right to use their mother tongue in writing more widely in the public domain. An official committee for orthography in the Konso language was established by the Bureau of Culture back in the 1990s, and in 1997 the committee decided to start using the Roman script for Konso and to expand the use of written Konso outside the church domain (Ongaye, 2013). However, the committee did not finalise work on the development of the alphabetic orthography, so the decision was not put into practice. This left the church on its own to continue literacy activities in the language. The church authorities did not want to take responsibility for deciding the details of the spelling rules for the alphabetic orthography without government involvement, and therefore they continued to use the Konso abugida until 2012, when the decision on the script was reconsidered, and a new language committee, including a sub-committee for developing the alphabetic orthography, was appointed. In 2014 the rules of the new orthography were approved. (For a description of how the decision on the script was made in 2012 see Ongaye, 2013.) Currently a plan is being implemented to gradually extend the use of Konso as the medium of instruction in lower primary school (grades 1-4). The first mother-tongue-medium pilot classes for grade 1 began in October 2017. In the school year 2018-19, the pilot scheme was extended to grade 2, and in 2019-20 to grade 3.

After the alphabetic orthography had been developed, the church started preparing a transfer literacy programme for adults. It was decided that the alphabetic orthography would be introduced to voluntary literacy teachers during the annual teacher training workshops in 2015. Instead of the normal one-week training workshops, the first transfer trainings would last two weeks and serve as the first step in a gradual process of transferring from the abugida to alphabetic orthography in church literacy activities. After the training workshops, the teachers were expected to continue practising alphabetic literacy skills by themselves and to establish the first transfer literacy courses in their home villages. On-the-job training in transfer literacy teaching would then be arranged for literacy teachers in future workshops. The launching of the transfer literacy programme in the church coincided with my being ready to begin the field phase of my study. I will describe the connection between the transfer literacy teaching activities and the data collection in Chapter 4.

[8] According to the church books in July 2017, there were 55 000 church members.

I have personally been involved in Konso literacy activities since the early 1990s. At the turn of the century I lived in the language area for almost seven years. I was involved in the activities of the church literacy team when the basic primer was prepared and the first voluntary teachers were trained. After I moved away from the language area, I continued to be part of the monitoring and planning team of the church literacy activities in an advisory role. I was also a member of both the government-led orthography committees, first in the 1990s and then again in 2012-14. After the decision was made to switch over to alphabetic orthography for the Konso language and the church decided to launch a transfer literacy programme, I agreed to be involved in developing the transfer literacy materials together with my Konso colleague.

2.3.2 The phonological and morphological structure of Konso

Konso is spoken as a mother tongue by 299 600 people in the Konso Zone (until December 2018, Konso Special Woreda), Southwest Ethiopia.[9] The Konso language is classified under Lowland East Cushitic languages (Mous, 2012).

The inventory of phonemes in Konso includes 21 consonants and five vowels, and the quantity of the phonemes makes differences in meaning in lexical items. All the vowels can occur short or long word initially and word medially, and /a/ also word finally.[10] All the consonants can occur geminate word medially (Ongaye, 2013). Gemination also has grammatical functions, marking for example the plural in a set of nouns (e.g. /kuta/ 'dog'; /kutta/ 'dogs'), and marking person in verb inflection (e.g. /ikalte/ 'she arrived'; /ikkalte/ 'you (sg.) arrived').

Konso can be desribed as a restricted tone language, or as an accentual language – both terms used by Mous (2012) to explain the role of tone in Cushitic languages. Ongaye (2013) has distinguished two tone levels (high and low) in Konso, and notes that tone carries a grammatical function, making distinctions between nominative (low tone) and accusative case (high tone), and between affirmative and negative person marking in some verb paradigms.

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[9] Konso Zone, Department of Finance and Economic Development, 2018.

[10] In Sim's (1977) phonological analysis, which served as the basis for the Konso Bible translation team in developing the spelling rules for the Konso abugida, the length of a word-final /a/ is not accepted as a phonemic feature on the lexical level, and therefore it is not marked in the Konso abugida. Ongaye (2013) has provided minimal pairs to prove the phonemic status of the feature, but the distinction between short and long /a/ in word-final position is subtler than in word-initial and word-medial positions, and therefore much harder to perceive. When I was preparing for the field phase of this study, questions were being raised as to whether, instead of length, the differences in pronouncing the word-final /a/ were due to different word-stress patterns, or were linked to the tendency to devoice utterance-final /a/ in words with a low tone (see Ongaye for devoicing patterns). When the Konso transfer literacy teaching programme started, it turned out that the people involved either claimed that the final /a/ was always short, or they could not agree on its length in specific words. Therefore, in the first transfer literacy teaching materials we had to give up the idea of following the rule in the Konso alphabetic orthography to mark length for the final /a/, and I could not include the feature in the study. Consequently, the length of the final /a/ is not marked in any of the Konso samples in this text.

The inventory of *phonological syllables* in Konso includes both open and closed syllables. Both the coda and the onset can be filled by one consonant, and the nucleus is filled by one short or one long vowel (Ongaye, 2013). Geminate consonants serve as ambisyllabic units, acting both as the coda of the preceding syllable and the onset of the following syllable (Ongaye, 2013). Thus, in segmenting words into phonological syllables, the geminate consonant is divided in the middle (e.g. /kar-ra/ 'ground squirrel'). This way of defining the phonological syllable for Konso complies with the *legality principle* for syllabification. The legality principle allows as syllable onsets and codas those segments which appear also in word-initial and word-final position, respectively (Goslin & Frauenfelder, 2000). The lack of complicated consonant clusters makes Konso syllable structure simple. Konso syllable types with sample words are presented in Table 2.

TABLE 2 Konso syllable types

Syllable types	Sample word	Syllable structure	Translation
V*	/ana/	(V.CV)	'me'
CV	/tika/	(CV.CV)	'house'
VV*	/aata/	(VV.CV)	'tradition'
CVV	/maana/	(CVV.CV)	'what'
VC*	/ilɗa/	(VC.CV)	'eyes'
CVC	/karma/	(CVC.CV)	'lion'
VVC*	/aakka/	(VVC.CV)	'old man'
CVVC	/tʃaatta/	(CVVC.CV)	'life'

*Konso vowels are minimally preceded by a glottal stop, and therefore syllable onset is always filled (Ongaye, 2013). However, because ordinary mother-tongue speakers do not perceive a word-initial glottal stop in the same way as they perceive other word-initial consonants, from a literacy learner's point of view the inventory of syllable types also includes a vowel-initial syllable.

Contrary to the simple syllable structure in Konso, its morphology is rich. Inflectional and derivational affixes are used to express grammatical categories and for word formation (Examples 1-4), and this results in words becoming long especially on the sentence level.

(1) /kollissa/ 'lesson',
(2) /kollissampajta/ 'male teacher'
(3) /kollissampajteeta/ 'female teacher',
(4) /kollissampajteetajʃo/ 'their female teacher'

The inventory of derivational and inflectional affixes includes single consonant phonemes as infixes (Examples 5-8) and single consonant and vowel phonemes as suffixes in verb inflection for person marking (Example 9) and for denoting aspect (Example 10).[11] These patterns may affect Konso speakers' phonemic awareness skills, especially their ability to manipulate single phonemes word medially and word finally.

[11] For a full account of Konso verb inflection see Ongaye 2013.

(5) /alaʊa/ ‘brother’ /alaʊta/ ‘sister’
(6) /sikmaja/ ‘shepherds’ /sikmajta/ ‘shepherd’
(7) /ikale/ ‘he returned’ /ikalte/ ‘she returned’
(8) /ikeere/ ‘he ran’ /ikeerʃe/ ‘he caused to run’
(9) /ikale/ ‘he returned’ /ikalen/ ‘they returned’
(10) /iʔaana/ ‘he will go’ /i’aane/ ‘he went’

Konso has four dialects: Faasha, Karatti, Tuuro and Xolme (Ongaye, 2013). When work began on translating the Bible into Konso, the Karatti dialect was chosen for the translation and for church literacy work. This is therefore the dialect that is used for the language materials of this study.

2.3.3 Konso abugida

As noted in Section 2.2.2, the inventory of Ge’ez fidels consists of families of seven symbols to denote the CV sequences of Ethio-Semitic languages. Because Konso has five vowels but vowel length often determines the meaning of the word, in the Konso abugida the Ge’ez fidels denoting vowels that are not included in the inventory of Konso vowels (i.e. the vowels /ä/ and /ɨ/, denoted by the first and the sixth orders) are used for marking the short vowels /a/ and /i/, respectively, and the fourth-order and third-order fidels are used for their long counterparts /aa/ and /ii/ (Table 3). The length of the remaining three vowels /u/, /e/ and /o/ is not marked, and the reader needs to deduce the length from the context. In line with the traditional Ge’ez script, a separate family of seven fidels is used for vowels in word-initial position and vowels preceded by a glottal stop word medially (Table 4).

TABLE 3 Inventory of the Konso fidels for consonants /l/, /t/ and /m/

	a	u (uu)	ii	aa	e (ee)	i (-)	o (oo)
l	ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ
t	ተ	ቱ	ቲ	ታ	ቴ	ት	ቶ
m	መ	ሙ	ሚ	ማ	ሜ	ም	ሞ

TABLE 4 Inventory of the Konso fidels for word-initial vowels and word-medial vowels when preceded by a glottal stop

	a	u (uu)	ii	aa	e (ee)	i	o (oo)
	አ	ኡ	ኢ	ኣ	ኤ	እ	ኦ

In line with the spelling conventions of the traditional Ge'ez script, the Konso abugida does not mark gemination for consonants. The absence of marking for gemination and for length for three of the five vowels results in a considerable amount of under-differentiation on the lexical level (Table 5). In consequence, the reader frequently has to rely on the context to deduce meanings.

TABLE 5 Word pairs differing on phoneme quantity

Abugida spelling	Pronunciation	Translation
ፉረ	/fura/	'key'
	/fuura/	'fear' (noun)
ቶመ	/toma/	'wooden plate'
	/tooma/	'copse'
ድፐ	/ɗipa/	'footprint'
	/ɗippa/	'hundred'
ተከ	/taka/	'kind of bird'
	/takka/	'one'

The Konso abugida follows Ge'ez spelling conventions also in assigning a dual function to the sixth-order fidel, thus marking a single consonant and a consonant followed by a short /i/ with the same symbol (Table 6). Because of the simple syllable structure of the language, a fidel denoting a single consonant occurs only in the coda position of closed syllables in consonant clusters (i.e. C_1C_2), and word finally.

TABLE 6 Sixth-order fidel denoting a C+/i/-sequence and a single consonant

Fidel ል denoting /li/ and /l/	Fidel ፕ denoting /pi/ and /p/
ከ ል ሶ ተ	ቁ ፕ ተ
/ka. li. soo. ta/* 'offering'	/ɠu. pi. tta/ 'finger'
ከ ል ሰ ተ	ሁ ፕ ነ
/ka. l. sa. tta/ 'to wear'	/hu. p. na/ 'strength'

*The dots denote the fidel breaks.

The spelling rules of not marking gemination and of assigning a dual function to the sixth-order fidel result in two types of disparity between the *phonological syllables* and the abugida *orthographic syllables*. The orthographic syllable is defined by the sound units represented by each fidel character. Thus, in spelling words with a geminate consonant, the orthographic syllable break gets moved forward, merging the coda consonant of the preceding syllable with the onset of the following syllable. In spelling consonant-final words and words with a consonant cluster, the coda consonant is detached from the syllable body and written on a (sixth-order) fidel, thus adding to the spelling a sub-syllabic unit which represents a consonant phoneme (Table 7).

TABLE 7 Konso phonological syllables and orthographic syllables according to the abugida spelling

	Word with a geminate consonant	Word with a consonant cluster	Word with a final consonant
Abugida spelling	ሉ ከ ል ቱ ተ	ከ ር መ	ኩ ደ ን
Orthographic syllables (+sub-syllabic coda)	/lu.kka.li.ttee.ta/ 'hen'	/ka.r.ma/ 'lion'	/ku.ɗa.n/ 'ten'
Phonological syllables	luk-ka-lit-tee-ta	kar-ma	ku-ɗan

Except for the above types of under-differentiation (i.e. the non-marking of phoneme quantity and the dual function for the sixth-order fidel), the Konso abugida is consistent in following the principle of one symbol, one CV sequence. Tone is not marked. The number of Konso fidels is 147, including 21 basic fidels and six modifications for each. The Konso abugida fidels are presented in Appendix 1.

2.3.4 Teaching method of the Konso abugida

The teaching method used in the basic primer 'Konso fidels' follows the framework developed by Morgan and Breeze (1993) for constructing primers for languages using the Ge'ez script. The method is based on the *multi-strategy method* originally developed by Faraclas and Stringer (1987) in Papua New Guinea.[12] As literacy teaching methods have been found to influence the development of learners' phonological awareness skills (e.g. Seymour, 2005; Wijaythilake, Parrila, Inoue & Nag, 2018), below I sketch the main characteristics of the Konso abugida lessons.

According to the framework put forward by Morgan and Breeze (1993), the primer lessons are divided into units, each unit teaching the seven orders of three fidel families. The sequence of units in the primer book is based on a frequency count of the fidels: those fidel families which occur most frequently in normal text are presented first. Each unit in the primer contains five basic lessons. A sample lesson is presented in Appendix 2.

The first lesson of each unit introduces three basic fidels (i.e. fidels denoting a consonant with the inherent vowel /a/) and the second lesson the sixth-order fidels for the same three basic fidels. The third lesson introduces the fourth-order fidels (i.e. C with /aa/), and the fourth lesson the third-order fidels (i.e. C with /ii/). Thus, in addition to introducing the basic fidel with the inherent vowel and three modifications, the first four lessons in each unit compare the short and the long /a/ and /i/. The fifth lesson introduces the remaining three orders for the

[12] The original multi-strategy method contains two sets of lessons called *primer lessons* and *story lessons*. Primer lessons enhance the literacy learners' accuracy skills, whereas story lessons focus on meaning and enhance the ability to read longer texts. The Konso primer includes the primer lessons, but it is assumed that the literacy students get practice in handling longer texts in church life, as they encounter texts when they sing along with others and follow the words of familiar songs in the song books, when they listen to scripture reading and follow the text in their own scripture books, etc.

fidel families taught in the unit (i.e. C with /u/, /e/ and /o/). Each basic lesson consists of five components, as follows:

1. Each fidel to be learned is introduced with a keyword beginning with that fidel. The keyword is illustrated with a picture.
2. The keywords are presented in boxes across the page. Below each keyword the fidel to be learned is written on its own, to reinforce its shape, and underneath that the whole keyword is presented again for word-building practice. Together with the students, the teacher reads each box from top to bottom over and over again.
3. The students practise reading a short text, built of familiar fidels, and three frame sentences, each of which includes one of the three keywords in the lesson.
4. The students practise writing the new fidels in their notebooks.
5. The teacher dictates 3-5 short sentences for students to write down for spelling practice. The sentences are composed of fidels that the students have already learned.

At the end of each unit there is a revision lesson (presented in Appendix 3). In the revision lessons the three fidel families taught in the unit are presented in the order of the traditional Ge'ez fidel chart, and the teaching method follows the traditional Ethiopian abugida teaching method of chanting the fidels, first together with the teacher, then by the students as a group, and finally the students taking it in turns, individually. In the teacher's instructions the teacher is advised to show on the blackboard the visual regularities of the vowel signs of each order. The signs are most regular for /u/, marked by a short line half-way down on the right-hand side of the basic fidel (e.g. ሉ /lu/, ቁ /ɠu/, ዱ /ɗu/), for /ii/, where the short line is dropped down (e.g. ሊ /lii/, ቂ /ɠii/, ዲ /ɗii/), and for /e/, marked by a small semi-circle at the bottom right-hand side of the fidel (e.g. ሌ /le/, ቄ /ɠe/, ዴ /ɗe/). It is harded to find regularities for marking /aa/ and /o/ (e.g. ላ /laa/, ቃ/ɠaa/, ዳ /ɗaa/; ሎ /lo/, ቆ/ɠo/, ዶ/ɗo/). For marking /i/ (or alternatively a single consonant) the pattern is very irregular (e.g. ል /li/, ቅ /ɠi/, ድ /ɗi/). (See Appendix 1 for all fidels.)

Regarding potential problem areas in the transfer to alphabetic writing, a point to note is that in the abugida teaching method the sixth-order fidel is introduced only as a C+/i/-sequence, and its function of marking a single consonant in syllable-final position is not explained. For example, ል is introduced with the key word ልሸ *lishsha*[13] 'whip', and ፕ is introduced with the key word ፕሰ *pisa* 'flower'. As syllable-final consonants appear naturally in keywords and in reading and writing exercises, fluent abugida readers do not confuse the pronunciation of a C+/i/ and a lone C, but the lack of explicit teaching on this may have affected abugida readers' ability to consciously process consonant phonemes as separate units.

[13] In this and in the subsequent sections Konso words are spelled using the alphabetic orthography. The phonemic value of each symbol is shown in Appendix 1.

Another potential problem area is that the quantity of phonemes is explained and practised only for the vowels /a/ and /i/. The quantity of other phonemes may come up occasionally in a literacy class. This happens more often in the early lessons, because at this stage the reading practice consists of single words, and some of the words have more than one meaning, depending on the quantity of the phoneme(s) in the word. For example, in Lesson 1 the word **ታከ** can be pronounced *taka* 'kind of bird' or *takka* 'one', and the word **ከተነ** can be pronounced as *katana* 'rainy season' or *Katanna*, which is a proper name for a female. While reading the words, the learners occasionally realise that they can pronounce them in more than one way and wonder which pronunciation (and meaning) is correct. If that happens, the teacher is advised to use the opportunity to explain to the students that there is more than one correct pronunciation for most of the fidels because the quantity of the sounds is not marked, and that the meanings of words change along with the quantity changes.

2.3.5 Konso alphabetic orthography and the first draft of the transfer lessons

Konso alphabetic orthography includes 26 symbols, one for each phoneme (see Appendix 1). The orthography is transparent in denoting consistently each phoneme with the symbol assigned to it. The inventory of the symbols includes two digraphs: <sh> for the post-alveolar sibilant /ʃ/ and <ny> for the palatal nasal /ɲ/. Long vowels and gemination are marked by doubling the respective symbol. A glottal stop is marked with an apostrophe < ' > in word-medial position and word finally in certain clause types. Tone is not marked.

In drafting the Konso transfer literacy lessons before the first training workshops for Konso literacy teachers, and before embarking on this study, ideas for the teaching approach were taken from transfer literacy materials which were developed by van Ginkel (2010) for a transfer programme from the Ge'ez script to the Roman script in the Suri language in Western Ethiopia. So far as I know, Suri and Konso are the only Ethiopian languages in which language-specific teaching materials have been developed for a transfer from abugida to alphabetic writing. Suri is a Nilo-Saharan language (Eberhard et al., 2019) and phonologically quite different from Konso.[14] However, Suri and Konso abugidas both comply with the basic characteristics of the sound-symbol correspondences of the Ge'ez script, and the alphabetic orthographies for both languages are transparent. It was therefore assumed that in the early stages of the transfer literacy learning process the Konso transfer learners would face similar challenges to those encountered by the Suri learners.

The basic principle in the Konso transfer literacy lessons was to compare the abugida fidels and the corresponding alphabetic letters (for a sample lesson

[14] The inventory of Suri phonemes is bigger than of Konso, including seven vowels, but vowel length and gemination are not phonemic. Suri syllable structure includes complex onsets word initially and complex codas word finally. Suri has both grammatical and lexical tone. For more details about Suri phonology, see Bryant, 1999 and 2013.

see Appendix 4). As in the Konso abugida primer, keywords with pictures were used to introduce each new letter. The keyword was presented beside the picture both in abugida fidels and in alphabetic letters. The traditional abugida fidel chart was also used by presenting the new letter in the chart, preceded by the equivalent abugida fidels, following the traditional order of the fidels in a family. Thus, the consonant to be learned was attached to each vowel in line with the Konso abugida (Table 8).

TABLE 8 Excerpt from a transfer lesson where the letters <r> and <u> are taught (Lesson 7)

ሪ	ሩ	ሪ	ራ	ሬ	ር	ሮ		ኡ
ra	ru	rii	raa	re	ri	ro		u/uu

Phonological syllabification rules were taught as part of the reading exercises: a few of the words in the exercise were presented first segmented into syllables and then blended again (Table 9). Due to the transparency of the Konso alphabetic orthography, the orthographic syllables comply with the phonological syllabification rules.[15]

TABLE 9 Reading exercise where the words are segmented into syllables (Lesson 9)

lon ka lonka	luk ka lit ta lukkalitta	il ka ilka	sip la sipla

Handwriting was practised by having the students write a line of the new letter in their notebooks. Spelling was practised by dictation exercises and by exercises in which words were given in the abugida, and the students had to transcribe them using alphabetic letters. The spelling rules of marking a long vowel in word-initial and word-medial positions as well as a geminate consonant by doubling a letter were taught early in the teaching programme (vowel length in Lesson 4 and gemination in Lesson 7). The dual function of the sixth-order fidel to mark both a single consonant and a C+/i/-sequence, depending on the context, was pointed out in Lesson 9, and practice was given of the need to mark the /i/ with a separate symbol in alphabetic writing.

Additional topics included in the lessons were the use of capital letters and punctuation marks, the alphabetical order of the letters (e.g. a, b, c…), the need to mark two of the phonemes with a digraph (<sh> and <ny>), and rules about how in handwriting some of the letters reach below the line and others above it (e.g. <j> and <d>). These are important components of transfer literacy teaching from abugida to alphabet, but they are not dealt with in this study.

[15] In alphabetic orthographies the concept of an orthographic syllable takes on meaning when the spelling does not follow the phoneme-syllable mappings. This happens, for example, when the number of orthographic syllables in a word does not comply with the number of phonological syllables (e.g. the English words <opaque> and <come>), or when the spelling is not linear (e.g. the British English spelling of <centre> and <metre>).

3 FRAMING THE RESEARCH PROBLEM

3.1 Phonological awareness and its role in literacy learning

Learning literacy skills involves learning how visual characters encode the spoken forms of a language and interpreting the forms into meanings (Seymour, 2005). As the size of sound units encoded in different writing systems varies, literacy learning requires operating on different levels of the phonological system, depending on the type of writing system and the specific rules of a given orthography. Consequently, there is a wide consensus amongst researchers on a close link between *phonological awareness skills* and the learning of literacy skills, regardless of the writing system's primary level of sound-symbol correspondences (e.g. Durgunoğlu & Öney, 2002; Koda, 2017; Nag, 2007; Page, 2017; Richardson & Nieminen, 2017; Share, 2017; Yin & Sun, 2017).

Seymour (2005) describes phonological awareness as a sub-skill of the *linguistic awareness system*, consisting of a *phonological* and a *morphological* component. The phonological component involves segments of speech, whereas the morphological component involves representations of meanings. The phonological component is concerned with syllables and sub-syllabic units – onset, peak, and coda structures, rimes and head bodies, as well as consonant and vowel phonemes – while the morphological component is concerned with free and bound morphemes.

Seymour (2005) further divides the linguistic awareness system into *implicit* and *explicit* levels, noting that the two terms correspond to *epilinguistic* and *metalinguistic awareness* – terms used by Gombert (1990/92). The implicit level, (i.e. epilinguistic awareness), emerges as part of oral language skills, operates in oral communication, and cannot be subject to conscious manipulation, whereas the explicit level, (i.e. metalinguistic awareness), involves the ability to consciously identify, analyse, and manipulate language units on the phonological and morphological levels. As reading and writing require operating on the explicit level of the linguistic awareness system, the learning of literacy skills involves expanding the literacy learners' metalinguistic awareness skills. Therefore, in the subsequent sections of this study, I use the terms phonological awareness (PA) and morphological awareness to refer to the two components of linguistic awareness on the metalinguistic level.

While this study focuses on the interplay between PA, orthography and transfer literacy learning, thus leaving morphological awareness outside the main scope of the study, it is important to note that both the phonological and the morphological components of the linguistic awareness system affect literacy

learning (Carlisle, 2010; Geva, 2008; Perfetti & Verhoeven, 2017). However, because neither the Konso abugida nor the Konso alphabetic orthography operates on morpheme-symbol representations, the initial stage of transfer literacy learning in Konso can be assumed to involve the phonological component more than the morphological component. After the initial stage of learning the sound-symbol correspondences of the new alphabetic characters, however, because of the morphological complexity of Konso, Konso transfer literacy learners will benefit from explicit teaching of morphological awareness, to enhance their reading fluency and comprehension skills.

Awareness of phonological units of different sizes is known to emerge first on the syllable level and gradually to advance to sub-syllabic units (e.g. Alcock, Ngorosho, Deus & Jukes, 2010; Goswami, 2005; Porpodas, 2005; Sircar & Nag, 2013; Ziegler & Goswami, 2005). Awareness of syllables has been found to develop at an early age, along with oral language skills, whereas studies on languages using alphabetic orthographies have indicated that awareness of phonemes (i.e. *phonemic awareness*) develops along with alphabetic literacy skills (Goswami, 2005; Ziegler & Goswami, 2005).

Different views have been expressed on the causal relationship between phonemic awareness and alphabetic literacy. The emergence of phonemic awareness has been regarded as either a prerequisite or a consequence of alphabetic literacy skills (Caravolas & Landerl, 2010; Nag & Snowling, 2012). Drawing on evidence from a variety of languages using alphabetic orthographies, Perfetti and Verhoeven (2017) have characterised the relationship between phonemic awareness and alphabetic literacy skills as reciprocal, the phonemic awareness acting as an *enabler* for alphabetic reading.

Attributing the emergence of phonemic awareness exclusively to the learning of alphabetic literacy skills can be questioned for at least two reasons. Firstly, the phonological and morphological structure of a language has been found to boost phonemic awareness as part of oral language skills, prior to and regardless of literacy learning. For example, Durgunoğlu (2006) demonstrated how the agglutinative morphology of Turkish alerted children and adult beginner readers to the importance of the ends of words. Consequently, Turkish literacy learners are found to be better able to manipulate word-final than word-initial phonemes. Likewise, Caravolas and Landerl (2010) reported the results of studies comparing the phonemic awareness skills of Czech and German children in the early stages of literacy learning that indicated that the Czech children demonstrated better awareness of phonemes in onset position and the German children better awareness of phonemes in coda position of a syllable. The authors interpreted the result as being due to differences in the syllable structure of the two languages: complex onset structures are common in Czech, and complex codas in German.

Secondly, as most of the evidence about a close relationship between phonemic awareness and literacy learning has been drawn from studies on languages using alphabetic orthographies, the results cannot be taken as evidence of phonemic awareness *not* developing as part of literacy learning in non-alphabetic orthographies.

Olson (1994/1998) has approach the relationship between PA and literacy learning from a different angle. Outlining the emergence of the world's writing systems from early graphic representations of words to alphabetic writing, he characterises the awareness of linguistic structures represented by a writing system as products rather than as preconditions of its development. Olson writes:

> Syllabic script made syllables as objects of consciousness and alphabets provided the model for thinking of speech as composed of sub-syllabic constituents, close to but not identical with, phonemes. (p. 259)

Following the same line of thought, Olson (1994/1998) posits a literacy learner's awareness of different phonological units emerging as a result, rather than as a prerequisite, of mastering the orthography representing those units. He further notes that once a reader has internalised the correspondences between the phonological units and the characters in a given writing system (or orthography), writing becomes *a model of speech* for him/her, making it very difficult to become aware of phonological units which are not represented in the orthography. This assumption has significant consequences for a transfer from one writing system and orthography to another.

The field of literacy studies has been dominated by research on languages using alphabetic orthographies, and the largest body of research results have been based on the English language, which has been characterised as an "outlier" among alphabetic orthographies because of its extreme opaqueness (Share, 2008; Share, 2017). However, over the past couple of decades more literacy studies, including research on the relationship between phonological awareness and literacy learning, have been published also on languages representing writing systems other than alphabetic. These studies include a number of studies on languages using the Brahmi script. As explained in Section 2.2.3, the Brahmi and Ge'ez scripts are typologically classified under the same script type, due to the similarities of their sound-symbol correspondences. Daniels (1996) calls them abugidas and Bright (2000) alphasyllabaries.

Regarding the relationship between phonological awareness and orthography, the *universal phonological principle* (UPP) postulates that word-reading and spelling activate phonology at the lowest linguistic level that the writing system encodes (Perfetti & Dunlap, 2008; Verhoeven & Perfetti, 2017). Regarding alphasyllabaries (i.e. abugidas), Verhoeven and Perfetti note that they "have a potential to activate both phoneme and syllable mappings" (p. 6). This makes study of the nature and extent of abugida readers' PA in general, and phonemic awareness in particular, of special interest, since even though the abugidas encode both consonant and vowel phonemes, the role of consonants is more prominent. In this regard, the study in Konso responds to a wider need for more information on the subject.

3.2 Phonological awareness and learning to read in an abugida: literacy studies on Brahmi

The history of the Brahmi script dates back to around 300-400 BCE (Karanth, 2005; Salomon, 1996). The orthographies of many South Asian languages are descendants of Brahmi.[16] Although Brahmi has been adopted by a large number of languages, the basic system of how the sound-symbol correspondences are denoted has remained very stable (Salomon, 1996).

The basic symbol unit in Brahmi is called *akshara*. Like the inventory of the Ge'ez fidels, the Brahmi inventory of characters includes akshara denoting vowels in word-initial position, akshara denoting consonants with an inherent vowel, and akshara denoting CV sequences with vowels other than the inherent vowel, the vowel being marked with a diacritic or with a secondary form (Karanth, 2005). However, unlike the Ge'ez script, Brahmi also includes more complex akshara to denote CCV and CCCV, and each consonant has a primary and a secondary form. Another difference from the Ge'ez script is that in Brahmi the inherent vowel can be nullified. (See Karanth 2005, Nag 2017, and Salomon, 2000 for a more comprehensive description of the Brahmi script.)

Despite the differences between the Brahmi and Ge'ez scripts, the two script types share basic characteristics that can be expected to pose similar challenges for literacy learning and result in similarities in the nature and extent of the learners' PA skills.

In a study on the development of PA and orthographic knowledge of Kannada[17] children in grades 1-4, Nag (2007) found a strong association between syllable awareness and orthographic knowledge. Phonemic awareness was slow to develop, but in grade 4 a strong association was found between phoneme sensitivity and knowledge of complex akshara. According to Nag, the result suggests that growing understanding of the sub-syllabic components of an akshara symbol may enhance children's phonemic awareness, and conversely, phonemic awareness may support the ability to decode complex akshara. This implies that, at this stage of literacy learning, phonemic awareness may act in a similar way to what has been found earlier in languages using alphabetic orthographies, and enable more fluent reading.

In another study, Nag and Snowling (2012) examined the associations between phonological awareness, reading skills and orthographic knowledge of Kannada children in grades 4-6. According to the results, more skilled readers performed better on both syllable awareness and phonemic awareness tasks. However, syllable awareness remained an important predictor of reading accuracy at all levels. Moreover, compared to findings on languages using alphabetic orthographies, the children's phonemic awareness remained low. The authors

[16] Orthographies descending from Brahmi are used for several languages in India, Sri Lanka, Tibet, Myanmar, Thailand, Laos, Cambodia, Philippines and Indonesia (Karanth, 2005).
[17] Kannada is a Dravidian language spoken by around 50 million people in Karnataka State in Southern India (Karanth, 2005).

also note that according to the curriculum, the children had learned English as a subject from grade 3, but only 12% of the children were able to read or write correctly everyday English words (e.g. 'boy'), and those children were not found to differ from the others in their Kannada PA or in their Kannada reading skills.

In line with the above studies, Karanth (2005), referring to the results of a series of studies on the PA of Kannada-speaking children and adults, non-literate and literate, reports that only those adults who were bi-literate in Kannada and English performed well in phoneme segmentation tasks.

Summarising the results of studies on the relationship between PA and literacy learning in Kannada, Nag (2017) notes that syllable awareness is important in literacy learning in Brahmi, but that phonemic awareness is also associated with growing orthographic experience. Nag additionally notes that the studies referred to were carried out in instructional contexts where the akshara were taught as units, without pointing out the sound-symbol correspondences of the sub-syllabic units denoted by diacritics within the akshara. This means that the low level of learners' phonemic awareness may be due to the method of instruction.

Wijaythilake et al. (2018) report on a study about the role of instruction in the development of phonemic awareness of children in Sinhala-medium [18] schools, grades 4 and 5 in Sri Lanka. According to the Sinhala language curriculum, in grade 4 children learn the most complex akshara symbols, but only in grade 5 are they taught about the phonemic components within complex akshara. In the study, the phonemic awareness and reading skills of children in the two grade levels was compared. The results indicated that, as a result of the exposure to complex akshara, the phonemic awareness of the grade 4 children improved somewhat, but there was no significant improvement in phonemic awareness until grade 5. The authors conclude that the explicit teaching of the phonemic element in an orthography plays an important role in the development of phonemic awareness.

Another finding of the study by Wijaythilake et al. (2018) was that although knowledge of complex akshara predicted good phonemic awareness, good phonemic awareness did not predict knowledge of complex akshara or better word-reading skills. This finding challenges earlier findings about the reciprocal relationship between the growth of PA and akshara knowledge (e.g. Nag, 2007, see above). Wijaythilake et al. note that further studies are needed to examine whether PA might predict the growth of word-reading skills at a later stage.

Mishra and Stainthorp (2007) studied the PA and reading of Oriya-speaking[19] children in grade 5, comparing a group of children in an Oriya-medium school and a group in an English-medium school in Orissa state in India. In the Oriya school the children had started learning English as a subject in grade 2, and likewise, in the English school, Oriya was a new subject in grade 2. According to the results, syllable awareness made a significant contribution to Oriya reading for the Oriya-medium children, while phonemic awareness did not make any

[18] Sinhala is an Indo-Aryan language spoken in Sri Lanka (Wijaythilake et al., 2018).
[19] Oriya is an Indo-Aryan language, spoken in Eastern India (Mishra & Stainthorp, 2007).

additional contribution. In contrast, for the English-medium children, Oriya phonemic awareness made a significant contribution to their reading in Oriya. The authors point out that the latter group had had exposure to phonemes as separate units because they had learned English literacy before learning Oriya literacy, and that this exposure may have facilitated their phonemic awareness in Oriya also. The authors conclude that awareness of smaller phonological units may contribute to literacy learning in a script which operates on larger units.

Taken together, findings from research carried out in languages using Brahmi suggest that syllable awareness plays an important role in the learning of literacy skills in an abugida. Phonemic awareness also contributes to fluent reading, but it does not develop very efficiently without instruction in sub-syllabic units. The Konso abugida teaching method uses word-initial CV units to introduce the fidels, and the teaching of phonemes as separate units is restricted to the teacher pointing out in the revision lessons the visual regularities of the vowel sounds (see Section 2.3.4). Because of this, it can be assumed, in line with the findings from Brahmi, that Konso abugida readers may not have developed extensive phonemic awareness.

3.3 Syllable awareness and literacy skills

3.3.1 Phonological and orthographic syllables

Syllable awareness is often measured by the ability to recognise, identify and manipulate syllable-sized units within words (or pseudowords) by deletion, substitution, blending and segmenting tasks. The focus of such studies is on syllables as units according to syllable peaks. But another approach to the study of syllable awareness is to focus on syllable boundaries. This is relevant especially in relation to ambisyllabic segments.

Studies of the processes involved in decisions about syllable boundaries, that is, *intuitive syllabification*, yield information not only about the subjects' phonological skills, but also about the influence of orthography on literate subjects' preferences for syllable boundaries when there is a mismatch between orthographic and phonological syllables (e.g. Goslin & Floccia, 2007; Sircar & Nag, 2013; Ventura, Kolinsky, Brito-Mendes & Morais, 2001). As explained in Section 2.3.3, such a mismatch occurs in the Konso abugida. Information about the processes involved in intuitive syllabification in a language helps to determine how syllables can be used in teaching decoding and spelling (Sircar & Nag, 2013).

Regarding intuitive syllabification, a relevant point of reference for Konso is again found in Brahmi. In the Brahmi script there is a disparity between the representation of coda consonants in orthographic and phonological syllables. In languages using Brahmi a coda consonant is written with an akshara of its own (i.e. CV.C.CV) or joint to the akshara which represents the following syllable (i.e. CV.CCV) (for more details see Nag, 2017). These patterns resemble the two types

of disparity between Konso phonological syllables and orthographic syllables in the Konso abugida (see Section 2.3.3).

Studies on Brahmi readers' decisions about syllable boundaries indicate that the subjects' knowledge of the sound-symbol correspondences of each akshara is involved in the process, and Brahmi readers tend to align with the akshara breaks in segmenting words (Nag, 2017). In a study amongst adult native speakers of Hindi, Ohala (1999) found that, while the subjects tended to place a syllable break in the middle of a consonant cluster (i.e. CVC.CV), the tendency was stronger for stimuli which were orthographically represented with three akshara (i.e. CV.C.CV) than for stimuli represented with two akshara (CV.CCV). Similar patterns for the influence of orthography on intuitive syllabification have been found amongst adult readers of Telugu (Murty, Otake & Cutler, 2007; Sailaja, 2007). Results from studies amongst Kannada-speaking and Bengali-speaking children (Nag, 2017; Sircar & Nag, 2013, respectively) also point to orthograhic influence, but the patterns are less uniform. Similarities in the disparity between orthographic and phonological syllables in Brahmi and in the Konso abugida suggest that Konso abugida readers' intuitive syllabification may also be influenced by the orthography.

3.3.2 Syllable awareness and learning alphabetic literacy skills

Drawing on evidence from a variety of languages and writing systems, Perfetti and Verhoeven (2017) write that syllable awareness has been found to be predictive of early literacy learning across writing systems, including languages using alphabetic orthographies. In line with this, syllables are used as a sub-stage in teaching decoding in languages with a complex morphology and a transparent alphabetic orthography, such as Turkish and Finnish. Durgunoğlu, Öney and Kuşcul (2003) report findings from an adult literacy programme in Turkish on which the learners were instructed to focus on syllables in reading complex words (see also Durgunoğlu & Öney, 2002). The method proved to be effective for learning to decode.

Likewise, in early literacy instruction for Finnish children, syllables are an important unit in teaching decoding skills (Aro, 2017). Lerkkanen (2006) notes that learning to use syllables as sub-lexical units in reading Finnish has been found to help literacy learners to achieve fluent word-reading skills. This is because in Finnish most words are multi-syllabic, and because of the complex morphology they get even longer in sentences. Lerkkanen also points out that in teaching syllables it is important to pay attention to them as a whole, including the coda. This was also found by A. Lehtonen and Bryant (2001), according to whom the ability to perceive syllables and syllable breaks correctly improved the spelling ability of Finnish children in the first three years of primary school. Konso shares with Finnish and Turkish the characteristics of complex morphology, making words long on the sentence level. Also, like Finnish and Turkish orthographies, Konso alphabetic orthography is transparent.

3.4 Phoneme quantity as a distinct aspect of phonemic awareness

The majority of literacy studies have been carried out in languages in which phoneme quantity does not denote meaning differences. Consequently, awareness of phoneme quantity has not received much attention in literacy studies. However, the ability to recognise, identify, and manipulate the quantity of phonemes is an important component of PA skills in literacy learning in languages which denote meaning differences by phoneme quantity and the orthography marks quantity differences. Such languages include Finnish, Hungarian, Italian and Welsh (A. Lehtonen & Bryant, 2004) as well as Japanese (Koda, 2017). In the case of Konso, with the transfer from abugida to alphabetic writing, quantity marking becomes explicit for all phonemes.

Comparing the role of quantity awareness and phoneme quality awareness in Finnish children's spelling performance, A. Lehtonen and Bryant (2004) found that quantity awareness predicts spelling performance better than phoneme quality awareness. The authors therefore suggest that *quantity awareness* should be regarded as a distinct feature of phonemic awareness.

In his study about the aspects of Finnish quantity, J. Lehtonen (1970) notes that the concept of quantity can be understood in different ways. For an ordinary speaker of a language, quantity differences are relevant only to the extent that they relate to different meanings, and normally this means a two-way distinction between short and long. However, the actual duration of phonemes in normal speech is not stable, but varies according to the surrounding phonemes and the grammatical context, as well as the speakers' idiolect and dialect. In this study I use the concept of quantity to refer to the differences between short and long vowels and geminate and non-geminate consonants insofar as they make meaning differences between words.

Studies about infants' quantity awareness skills in Finnish (Richardson, 1998) and Japanese (Ota, 2006) have indicated that in both languages, quantity awareness begins to emerge early (see also Aoyama, 2001 for both Finnish and Japanese). According to Richardson, Finnish infants at six-months were able to distinguish between geminate and single consonant /t/ in the pseudoword pair *atta-ata*. Likewise, according to Ota, Japanese children's ability to produce long and short phonemes emerged already at the age of one, although it took several years before the children's ability reached the level of adults. These studies on Finnish and Japanese deal with the epilinguistic level of quantity awareness, which is a pivotal skill for a mother-tongue speaker when oral communication requires distinguishing and producing quantity differences in phonemes in order to extract the correct meanings. The same is true also for Konso mother-tongue speakers, and a relevant question for the present study is whether and how quantity awareness reaches the level of metalinguistic ability required to read and spell correctly quantity differences in an orthography which marks it.

A. Lehtonen (2005) points out that there is no evidence that school-aged Finnish children with normal abilities could not distinguish the quantity of phonemes in speech. However, several studies on the spelling performance of Finnish literacy learners have shown that failing to spell long vowels and geminate consonants correctly is a typical and persistent error (e.g. Ahvenainen & Holopainen, 2005; Kulju & Mäkinen, 2017; A. Lehtonen, 2005; Lerkkanen, 2006). This can be seen as an indication of the different levels of phonological awareness required for oral language skills (the epilinguistic level) and literacy skills (the metalinguistic level). According to the results of a study by Kulju and Mäkinen, it was more difficult for Finnish children in grades 1 and 2 to master the correct spelling of a geminate consonant than to master the correct spelling of a long vowel.

The prominence of phoneme quantity in Konso phonology and the differences between the Konso abugida and alphabetic orthography in marking (and not marking) the quantity of phonemes make quantity awareness an important component in a study on Konso transfer literacy learning.

3.5 Grain size and literacy learning in different orthographies

To develop a unified framework to study the relationship between phonological processing and reading development in different orthographies, Ziegler and Goswami (2005) introduced the *psycholinguistic grain size theory* (PGST). Assuming a close link between reading and phonological processing, the PGST postulates that a literacy learner needs to identify shared *grain size* in the orthography and phonology, and the theory poses three problems related to the task: *availability*, *granularity*, and *consistency* problems.

The availability problem is related to the development of PA from bigger phonological units to smaller ones. Assuming that phonemes are not as readily available before literacy learning as are the bigger phonological units, the PGST postulates that the availability problem is harder to solve in an orthography that denotes phonemes than in an orthography that denotes bigger phonological units (e.g. syllables or morphemes).

The granularity problem is related to the number of symbols in the orthography. As there are fewer symbols to be learned in an orthography operating on a smaller grain size, such as phonemes, than in an orthography operating on a bigger grain size, such as syllables, the PGST assumes that, unlike the availability problem, the granularity problem is harder to solve in an orthography which operates on larger phonological units.

The consistency problem is related to how consistently the symbols of the orthography denote the sound units of the language. If each symbol denotes the same sound unit and if each sound unit is always denoted by the same symbol, the learning of literacy skills is less demanding than if there are inconsistencies in either direction.

Consequently, in terms of the PGST, as an abugida orthography primarily operates on the CV level and an alphabetic orthography on the phoneme level, the availability problem is easier to solve in learning literacy skills in an abugida than in learning literacy skills in an alphabetic orthography. In contrast, as the number of symbols in an abugida is larger than in an alphabetic orthography, the granularity problem is harder to solve in learning literacy skills in an abugida than learning literacy skills in an alphabetic orthography.

Additionally, the ease of solving the granularity problem in a given orthography is related to the consistency of the sound-symbol correspondences. Ziegler and Goswami (2005) note that consistency varies between languages, and in less consistent alphabetic orthographies, such as English, the reader cannot rely entirely on phoneme-symbol mappings but also needs to learn correspondences for larger phonological units, (e.g. rimes, syllables, or whole words). As an alphabetic orthography denotes the larger units with letter strings, literacy skills in a language with an inconsistent alphabetic orthography entail switching between different grain sizes, and this makes reading and writing more demanding.

Referring to sound-symbol correspondences in Kannada, Nag and Snowling (2012) note that the above concept of consistency does not hold in alphasyllabic scripts, such as the Brahmi-derived Indic scripts. The authors describe the script type as a script of mixed granularity, the akshara denoting both the large and the small grain size within the same character. They further note that, while good akshara knowledge requires at the same time knowledge of both the small and the large grain size, contrary to the prediction of the PGST, the presence of both the large and small grain size within one character offers the reader an advantage. This is because the script has a layer of orthographic units at the level of syllables, easily accessible to beginning readers, so there is room for the orthographic layer of phonemes to emerge later. In line with Nag and Snowling's notion about Brahmi, the Ge'ez script can also be characterised as a script of mixed granularity, because as with the Brahmi akshara, the Ge'ez fidels primarily denote CV units, but within the unit there are separate markings for the consonant and the vowel.

The relative difficulty of solving the availability and granularity problems has been studied by Asfaha, Kurvers and Kroon (2009) by comparing the reading skills of first grade children learning to read in the Ge'ez script in the Tigrinya and Tigre languages with the reading skills of children learning to read in the Roman script in the Saho and Kunama languages in Eritrea. The results indicated that the learners of the Ge'ez script acquired literacy skills more quickly, and Asfaha et al. concluded that, for early literacy learners, the availability problem is more difficult to solve than the granularity problem. This result is in line with Nag and Snowling's (2012) idea that the bigger grain size within alphasyllabic characters (i.e. abugida characters) enables literacy skills to emerge without extensive phonemic awareness. Because the study by Asfaha et al. involved only literacy learners in an early stage of the learning process, the results do not reveal whether, or to what extent, the phonemic awareness of the Ge'ez script readers

develops after they have gained basic literacy skills with the help of their understanding of the larger grain size of CV units.

Another study on the literacy skills of children learning to read in the Ge'ez script (in the Amharic, Harari, and Tigrinya languages) and children learning in the Roman script (in the Oromo, Sidaama, and Somali languages) was carried out by Piper and van Ginkel (2017). In comparing the relationship between the letter-naming skills and reading accuracy of the children in the six languages, the authors found that the difference between letter-naming and reading accuracy of children reading the Ge'ez script was smaller than of children reading the Roman script. These results, in line with those reported by Asfaha et al. (2009), point to the relative ease of solving the granularity problem as compared to the availability problem.

For the present study in Konso, the PGST offers a framework to examine the role of the different levels of phonological awareness in learning literacy skills in each of the two Konso orthographies. The results of the studies by Asfaha et al. (2009) and by Piper and van Ginkel (2017) point to the importance of a bigger grains size (i.e. CV) for early literacy learning in the Ge'ez script and the need for phonemic awareness as a pre-requisite for gaining alphabetic literacy skills. These results are in line with the results reviewed in Section 3.2 about the close association between syllable awareness and literacy learning in languages written in Brahmi, as well as with the prevailing view about the close link between phonemic awareness and alphabetic literacy learning, reviewed in Section 3.1. However, the characterisation of abugida as a script of mixed granularity, offering two phonological levels on which to operate at different stages of the literacy learning process (Nag & Snowling, 2012), as well as the evidence about the role of literacy instruction in enhancing abugida readers' phonemic awareness (Wijaythilake et al., 2018), make study of the nature and extent of abugida readers' PA a complex undertaking, with many variables to be taken into account.

3.6 Biliteracy and the transfer of literacy skills

Koda (2005) has developed the *transfer facilitation model* to examine how metalinguistic awareness transfers between first and second language and to explain the role of the transfer in promoting second language reading development. The transfer facilitation model assumes a close link between the development of PA and how the writing system encodes the elements of the spoken language. It searches for ways to an efficient transfer from one writing system to another by looking for similarities between the sound-symbol correspondences of the two writing systems. Koda writes:

> Careful analysis of writing system properties in a particular language should permit the identification of metalinguistic capabilities directly related to learning to read that language. Therefore, systematic comparisons of these capabilities in diverse languages should also permit the categorisation of shared learning-to-read requirements across languages. Such categorisation is essential in second-language research because it helps achieve accurate predictions of the extent to which transferred first-language competencies facilitate second-language reading development. (p. 313)

The transfer facilitation model is developed to identify shared learning-to-read requirements in the context of a transfer from one writing system (or orthography) to another in two different languages. However, assuming the sound-symbol correspondences of a writing system to be significant in moulding readers' PA, comparing two writing systems (or orthographies) and the metalinguistic capabilities required for efficient decoding in each should be applicable also in identifying similarities, as well as potential challenges, in transfer literacy learning when the transfer takes place within one language.

Therefore, in deciding on the focuses for the study in Konso and designing the data collecting instruments, I applied the principles of Koda's transfer facilitation model to analyse and compare the properties of the two Konso orthographies in order to identify the metalinguistic capabilities related to literacy skills in each. This identification process involved first pinpointing the similarities, then focusing on the differences. The earlier research on the role of phonological awareness in literacy learning in different orthographies, reviewed above (Section 3.1-3.5), guided me through the process. I have not found any studies on other languages which have dealt with a transfer from one writing system to another within one language.

3.7 The research problem and the research questions

Drawing on the theories and the research results about the interplay between literacy learning, orthography, and phonological awareness reviewed above, I formed three overarching research questions for the transfer literacy study in Konso:

1. What is the phonological awareness of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences?
2. How does the Konso abugida readers' phonological awareness change during the process of learning to read and write their language in an alphabetic orthography?
3. What is the role of phonological awareness in transfer literacy learning from abugida to alphabetic script in Konso, and what are the relevant points to pay attention to in Konso transfer literacy teaching?

To answer the research questions, a comparison of the differences between the sound-symbol correspondences of the two Konso orthographies led me to ap-

proach the topic from three perspectives: phonemic awareness, quantity awareness, and syllable awareness. To that end, I included in the data collecting instruments separate tests to measure PA from these three perspectives. For each PA test I assigned specific sub-research questions to focus on different aspects of the abugida sound-symbol corresponcences and their potential influence on the readers' PA. All the data collecting instruments, including the PA tests, are presented in detail in Section 4.4.

I expected that Konso abugida readers' PA would be influenced by the prevailing sound-symbol correspondences of the abugida, making a CV a salient unit for them, but single phonemes less salient. Moreover, since the abugida writing does not include extensive marking of phoneme quantity, I expected that the abugida readers' quantity awareness would not be strong. Therefore, I expected that the exposure to alphabetic writing would enhance the abugida readers' phonemic awareness as well as their quantity awareness. With regard to syllable awareness, I expected that the mismatch between the phonological syllables and the abugida sound-symbol correspondences would affect the abugida readers' intuitive syllabification.

I report the results of the study by looking at the topic from each of the three perspectives in turn (Chapters 5-7), and answer the three overarching research questions separately from each perspective. Thus, for example the first research question (RQ1) will be rephrased as follows: What is the *phonemic awareness* of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences? What is the *quantity awareness* of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences? What is the *syllable awareness* of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences?

At the beginning of each results section (Chapters 5-7), I briefly refer to the theoretical background relevant to the perspective dealt with in that section. I then review how the Konso abugida denotes the relevant sound-symbol correspondences (i.e. phonemes, quantity, and syllables), and how the Konso abugida teaching method has dealt with them. I also review how the Konso alphabetic orthography denotes these features, and what additional PA skills the transfer from abugida to alphabetic writing can therefore be assumed to require from learners.

Where relevant, I also introduce the Konso terminology used in the transfer literacy teaching to refer to phonemes, quantity, and syllables. Phonological awareness, understood as the ability to recognise, identify, or manipulate phonological units (Zieger & Goswami, 2005), does not presuppose mastery of a certain terminology. However, the Konso transfer literacy teaching involved describing to learners the characteristics of the phonological units denoted by the written characters of the two Konso orthographies. Mastering the terminology used for referring to each unit therefore played a role in understanding the units. This meant it was impossible to clearly distinguish between the learners' phonological awareness skills and their ability to understand the relevant terminology.

4 METHODS

4.1 Methodological choices

As explained in Section 2.3.1, my data collection began at the same time as the initial phase of the transfer literacy teaching programme in Konso, and I designed the research around the transfer process that was taking place there. This arrangement opened up the possibility of combining the effort to collect and analyse the data with the effort to develop an efficient transfer literacy teaching methodology to be directly applied to a particular language in a particular linguistic context.

I began the data collection during the first transfer literacy training workshops. This meant adopting the voluntary literacy teachers as the primary subjects of the study. I collected the main body of data from the teachers while they were first practising the alphabetic reading and writing of Konso in the teacher training workshops, and then started teaching the first transfer literacy courses in their home villages.

Another option might have been to collect the data mainly from the transfer literacy students in the villages, after the first teacher training workshops were over. But beginning the research simultaneously with the teachers' transfer literacy training made it possible to use some of the initial findings in developing the teaching methodology further before the transfer literacy teaching in the villages commenced. Also, had I waited until the teachers were trained, I would have missed the opportunity to document the beginning of the transfer literacy programme.

In addition, there were practical reasons why it was better to make the literacy teachers rather than their prospective students the main subjects for the study. Konso villages are scattered around the slopes of the Konso mountains, and the lack of public transport makes regular visits to the village churches difficult to arrange. Many villages are accessible only on foot or by motor bike. During the data collecting period, the mobile network coverage was limited, which made it difficult to make appointments in advance. Classes in the villages can be cancelled at the last minute because of other community affairs, so turning up for class observations or testing sessions according to a schedule prepared in advance would not have worked.

A big benefit of collecting the data mainly during the teacher training workshops was that I had a group of people, motivated to learn transfer literacy skills, gathered together in the same place for several days. Also, when deciding to collect the data from the teachers, I anticipated that the approach would give me a chance to meet at least some of the same people again afterwards, to follow up

their learning process and to include in the data their first experiences of teaching the transfer literacy courses. It would have been much more difficult to meet the same transfer literacy students in the villages over an equally long period of time.

However, while designing the data collecting instruments, I also had to take into account certain limitations. Firstly, although a certain number of people were invited to the teacher training workshops, there was no way of knowing how many trainees would appear. Therefore, I could not know the size of my sample beforehand. Secondly, each village church had the right to choose whom they would send to the workshops, and the recommendations sent to the churches about the kind of people they should choose had gone out before I had a chance to talk to the people who were in charge of the practical arrangements. Therefore, I could not have a say in the subjects' educational background, their previous experience as literacy teachers in the church, their level of abugida reading skills – or other factors that it would have been useful to control.

Thirdly, the training programme during the workshops had a very tight schedule with full days, so I had to design the data collecting instruments in such a way that the procedure would not take up much time or distract from the training. This ruled out extensive oral testing of many trainees, because it would have required taking them out of the training sessions one by one. Therefore, I had to keep the oral tests to a minimum and involve only a few participants, so that the testing could be done partly outside of class hours.

Instead, to get more data about the teachers' PA skills, I included in the data collecting instruments also PA tests which required written responses and so could be carried out as classroom activities involving all the trainees. Other data collecting instruments included short spelling and reading tests, the trainees' written reflections on the two orthographies, and field notes about my observations throughout the data collection period. It was easy to integrate the collecting of these types of data into the training programme. Each data collecting instrument is introduced in more detail in Section 4.4 and listed in Appendix 5.

Giving advice on how to select a research method for an applied linguistic study, Dörnyei (2007) encourages researchers to adopt a pragmatic approach and to mix methods. Dörnyei describes a pragmatic approach as an approach that is guided by the research topic and the research questions, and entails considering what sort of sample, what sort of support, and what resources are available. Dörnyei writes: "Feel free to choose the research method that you think will work best in your inquiry" (p. 307). In designing the study in Konso, I followed Dörnyei's recommendations and opted to use mixed methods.

In the Konso case, to get relevant data about the interplay between PA and orthography and about the role of PA in transfer literacy learning, it was necessary to test specific aspects of the transfer learners' PA over a period of time (i.e. to give PA tests at different time points during the transfer literacy training), as well as measure their emerging alphabetic reading and writing skills (i.e. spelling and reading tasks at different time points). However, in order to gain deeper insights into the trainees' phonological processing and its influence on their transfer learning process, it was also necessary to use less structured data collecting

instruments; these were the participants' written reflections on the orthographies, and my own observations, documented in my field notes.

Describing the benefits of using mixed methods, Dörnyei (2007) points out that mixing methods makes possible the multi-level analysis of complicated matters, and comparison of results from different types of data, which increases validity. For a mixed methods approach to bring about these benefits, the process of reporting the results must integrate the findings from the quantitative and qualitative analyses and one must let the results "talk to each other, much like a conversation or debate" (Bryman, 2007 p. 21). I anticipated that such interaction would come about when the results from different data sets were set side by side, complementing each other.

4.2 Data collecting phases

The overall time span of the data collecting period extended over three years and three months. Most of the data were collected during four phases in the field. Below I have described the main activities accomplished during each phase.

Phase 1, June 24th – August 8th, 2015

At the beginning of the first field phase I piloted the phonological awareness tests which I had prepared for the teacher training workshops. I then participated into the first two transfer literacy training workshops for the voluntary literacy teachers and collected data from the participants.

The first workshop (Workshop 1) ran from June 29th to July 10th. Because there was a shortage of trainers, I agreed to co-run the workshop together with my Konso colleague, with whom I had just finished drafting the transfer literacy teaching materials to be piloted in the workshop (see Sections 2.3.1 and 2.3.5). Twenty-nine teachers participated in the workshop. They did the PA tests prepared for the study, and I carried out the other data collecting activities as planned. After the workshop I started going through the data and worked on identifying the most important points to pay attention to during the second workshop.

The second workshop (Workshop 2) ran from July 27th to August 7th. There were 36 participants. The training was led by the Konso literacy coordinator, assisted by nine literacy teachers who had attended the first workshop and were then recruited as trainers for the second workshop. They and a few other teachers who had attended the first workshop continued to work as trainers in subsequent workshops for literacy teachers throughout the Konso language area.

During the second workshop I carried out the same data collecting activities as in the first workshop. In addition to testing the workshop participants, I also had the trainers do some of the tests again in order to document how their phonological awareness and alphabetic literacy skills were developing while they

trained others and continued to get more practice in alphabetic writing themselves. Unlike in the first workshop, this time I was not teaching any of the training sessions myself, but I was present all the time and participated in the trainers' de-briefing meetings in the evenings and gave my input in the discussions there. During the training sessions I also sometimes participated in the discussions, or stepped in when I saw a need to add or correct something.

Phase 2, January 30th – February 22nd, 2016

During the second data collecting phase, a four-day follow-up workshop was arranged for literacy teachers who had participated in one of the two initial workshops six months earlier and had then started teaching a transfer literacy class in their home village. The follow-up workshop ran from February 2nd to February 5th. Based on the initial analysis of the data collected during Phase 1, I had composed two more PA tests and an additional spelling task to be carried out during the training (i.e. phoneme deletion Tasks 2 and 3, explained in Section 4.4.2.1, and Dictation 2, explained in Section 4.4.3). Also, I collected data by discussing with the teachers their experiences regarding transfer literacy teaching over the past few months, and documented our discussions in my diary.

There were 32 participants in the follow-up workshop. Among them there were 7 literacy teachers who had participated in Workshop 1 during the first data collecting phase and had then been trainers in Workshop 2, and 10 other teachers who had just participated in one of the two initial workshops. In addition, the teachers had brought along 15 transfer literacy students from their villages. As with the initial workshops, the data collecting activities were integrated into the training programme, and everyone participated in the testing sessions. The performance of all participants has been included in the results as relevant.

Before the workshop I was involved in planning the training programme for it together with my Konso colleague. He and I were the facilitators of the whole programme, but during the training sessions we mobilised the best performing participants to do most of the teaching and to lead all the practice sessions in small groups.

During the field phase I also visited transfer literacy classes in four villages.[20] Three of the courses were run by teachers who had attended one of the two initial workshops during the first data collecting phase, and one by a teacher who had atteneded a workshop which I had not attended. While observing the classes, I focused on finding out whether the teachers had internalised the teaching method from the workshops or whether they had come up with different solutions to present the lessons. I also discussed with the students their transfer learning experiences.

[20] Villages and the dates of the visits: Orshale 8.2.16, Ohombo 9.2.16, Dokattu 11.2.16, and Laawa 14.2.16.

A force majeure gap in data collecting and Phase 3, July 14th – 31st, 2017

Because of severe unrest in the Konso language area from around August 2016 until the spring 2017 and the nationwide state of emergency from October 9th 2016 until August 4th 2017,21 the literacy teaching in Konso was on hold, and it was not safe to move around in the language area. This caused a delay in the progress of the transfer literacy teaching programme, and my third data collecting trip was postponed to July 2017. Then, transfer literacy training workshops were arranged for voluntary teachers again during the regular training season.

During the field phase I participated in two one-week teacher training workshops, one in Xolme, July 17th - 21st, and another in Faasha, July 24th - 28th. Unlike the initial workshops in the summer of 2015 and the follow-up workshop in 2016, I was not part of the training team, but I sat in on the daily programme and observed the lessons, taking notes. I paid special attention to how the teaching programme had changed since the first workshops, and which points the trainers emphasised most in their teaching. Amongst the trainers there were five people who had participated in Workshop 1 and after that had been trainers in other workshops. They had done the PA tests and the reading and writing tasks included in my data collecting instruments a number of times during the previous data collecting phases, and to continue monitoring their learning process, I got them to do the PA tests and the spelling tasks again. During our time together I also had plenty of discussions with them about the transfer learning process, and I documented their thoughts on my diary.

Phase 4, September 16th – 24th, 2018

During the fourth field phase I spent a week in the village of Daka Deri to participate a teacher training workshop there. The workshop ran from September 17th to Septemper 21st. As in the training workshops in Xolme and Faasha in July 2017 (Phase 3 above), I was not part of the training team. Rather, I observed the teaching, sitting in on all the training sessions and paying special attention to the content of the teaching programme and the teaching approach. I did not test the trainers but observed their performance throughout the week. I also discussed the training methodology and the trainers' teaching experiences with them. I documented my observations and the discussions in my diary, and in reporting the results of my study I refer to my notes when they are relevant.

[21] https://www.reuters.com/article/us-ethiopia-politics/ethiopia-lifts-emergency-rule-imposed-last-october-after-months-of-unrest-idUSKBN1AK0QV(retrieved Jan 26, 2018)

4.3 Introducing the participants

I collected written data and voice recordings from 65 literacy teachers and 15 transfer literacy students. The 65 teachers participated in the initial, two-week transfer literacy workshops in the summer of 2015, during the first data collecting phase. All the participants in the initial workshops were sent there by their local village churches to participate in the training workshop in order to be able to establish a transfer literacy class in their home church afterwards. Some of them I met and tested again during the later data collection phases, as they carried on as trainers in other teacher training workshops. The additional 15 subjects from whom I collected written data and voice recordings were transfer literacy students who attended the four-day follow-up workshop in February 2016, together with their teacher (data collecting Phase 2, see Section 4.2). Most of the test results reported in this study are from the 65 literacy teachers, but the transfer students also did the tests that were carried out in the follow-up workshop, and their results are included in the analysis. Below I present separately the profiles of the literacy teachers and the transfer students.

Of the 65 literacy teachers, 52 were men and 13 women. Forty-three had previously taught basic (abugida) literacy classes. Regarding their own educational career, 31 teachers were still attending formal education, while 24 were not. Ten teachers did not respond to the question about when they had had their formal education. The educational level of the teachers and the number of years since they had finished their education are shown in Tables 10 and 11.

I did not document the ages of the teachers, because not everyone knew what year they were born. Neither their educational level nor the number of years since the end of their formal education reveals their age, either, because until recently it was common in Konso families not to send all the children to school, or instead of sending all the children in the same school year, to send them turn and turn about to the lower grades over a period of several school years. There are, therefore middle-aged and older people who have not attended any formal education, or attended a couple of grades as children but then had a gap of several years and enrolled in school again when they were already adults. By my estimation, most of the teachers involved in the study were young adults. However, there were also fathers who were attending primary or secondary school at the time of the data collecting period, some of whom already had teenage children. Six of the teachers had served as literacy teachers for 10 years or more, one of them for 20 years.

TABLE 10 Educational level of the literacy teachers in the initial workshops (N=65)

Grade level	No. of respondents
No formal education	2
1-2	2
3-4	3
5-6	14
7-8	24
9-10	15
11 or more	5

TABLE 11 Years since the literacy teachers had finished their education (N=65)

Years since formal education	No. of respondents
Still at school	31
1-5	13
6-10	7
11-20	2
Over 20	2
No response	10

To make sure that the teachers were literate in the Konso abugida, they were given a reading-aloud task and a dictation task at the beginning of the training. The reading was done as a group activity, everybody reading aloud in turn a few sentences from a story. The activity was audio-recorded. The dictation task consisted of five single words and one sentence (see Appendix 6 for the task). The tasks were not rated, because their purpose was only to make sure that all the participants knew the Konso abugida. Because the tasks were given at the beginning of the workshops, there were 14 participants who had not yet arrived, but their abugida reading and writing skills were confirmed later, as the activities in the first days of the training involved spelling and reading also in the abugida.

To get an idea about the teachers' potential prior knowledge about Konso alphabetic orthography, they were asked to write down the alphabetic letters for Konso, if they knew them. Of the 51 teachers present, eight did not try, while others wrote anything from a few of the letters to most of them. Nobody knew the whole alphabet. In addition, when they did the dictation task, they were told to spell the words both in the abugida and in alphabetic letters, if they knew how to do so. Twenty-nine teachers tried the alphabetic spelling. Overall, the teachers' performance in the two alphabetic spelling tasks revealed that most of them were familiar with the alphabetic letters and had an initial idea of alphabetic spelling.

According to the present education policy in the Southern Nations and Nationalities Regional State where Konso Zone is located, the primary school Cycle 1, which covers grades 1-4, is taught in Amharic or in the local language, and the grades above that, that is, primary school Cycle 2, grades 5-8, and secondary school, grades 9-10, are taught in English. English is taught as a subject from grade 1, and Amharic continues to be taught as a subject throughout primary and secondary education. All of the participants in the present study had learned to

read and write first in the Konso or the Amharic abugida, and abugida writing was their primary means of written communication. On the whole, the level of Ethiopian primary and secondary school students' English skills tends to be very low, and the dominance of Amharic as the literacy language in Ethiopia and the Ge'ez script as the only script for Ethiopian languages until the 1990s have influenced people's perceptions of the correspondences between sounds and symbols.

To find out about the teachers' potential English literacy skills they were given an optional spelling task, in which they were asked to write down two short phrases: "Good morning" and: "It is a beautiful weather today." A total of 45 teachers ventured the task, but the results revealed that they had lots of problems in English spelling, and that their level of schooling did not correspond with their spelling skills. For example, one 10th grader wrote, *Good mornk. It is biwte Ful wathtoday* and another one wrote, *God moor nig It is a biuetfulle we ther to day*. One 5th grader wrote, *KTMRN E D WET U*, and another: *kedemirkes te is wde wtre*. One 8th grader wrote: *Kidmring It isa bwfil wasrto day.* There was one participant who spelled both phrases correctly. He was an 8th grader.

Of the 15 transfer students who participated in the follow-up workshop, nine were men and six women. Apart from two participants, one of whom had dropped out of school 9 years before and the other 12 years before (having reached grades 5 and 2, respectively), the others were still primary or secondary school students. Their levels varied from grade 5 to grade 10. Most of the transfer students were teenagers.

To refer to an individual participant in the subsequent sections, each participant has been assigned an identification code. The code consists of a personal number (from 1 to 80), followed by the number (or numbers) of the workshop(s) the participant attended: WS1 indicates the first workshop, WS2 the second workshop, and WS3 the follow-up workshop. The codes of those teachers who participated in the first workshop and then worked as trainers in the second workshop include both the numbers 1 and 2 (i.e. WS12), and the code of those participants who were trainers in the later workshops during the data collecting includes also the number 4. Therefore, for example WS1234 indicates that the person participated in the first workshop, worked as a trainer in the second workshop, participated in the follow-up workshop, and continued to work as a trainer during the later data collecting phases.

4.4 Instruments for data collecting

4.4.1 Transfer learners' written reflections on the two orthographies

The participants in the initial workshops were twice asked three open questions about the two orthographies for Konso, once at the beginning of the worshops and again towards the end of the two weeks of training. Those participants who attended the first of the two workshops as trainees and then went on to be trainers in the second workshop answered the questions also for a third time, at the end of the second workshop. The questions were presented orally, and the participants gave written answers. They were free to write as much as they wanted to, and they were told that they could use either the abugida or the alphabetic orthography as they liked. Below are the English translations of the questions. The original questions in the Konso language are presented in Appendix 7.

1. What are the differences between the old and the new orthography for Konso?
2. What do you think; is the new orthography difficult or easy to learn? What will the difficult points be?
3. Is it good or bad to switch over to alphabetic script? Why?

The goal of the questions was to get insights into the participants' perceptions of the two orthographies at different points in time during the transfer literacy learning process. I assumed that their answers would include their ideas about the relationships between the written characters and phonological categories in each orthography, and thus reveal some information about their phonological processing (cf. the overarching research question 1; RQ1). The questions were asked both at the beginning of the transfer training and after the subjects had had exposure to the alphabetic orthography, in order to make it possible to follow up how their perceptions might have changed with the exposure (RQ2). Open questions were used to gather information about each participants' thoughts without restricting their wording or guiding their thoughts about what they wanted to say. I assumed that examining the kinds of expressions they used in their answers would provide helpful insights into how to develop the transfer literacy teaching methdology to respond to the most difficult points in the learning process, and to identify precise expressions that could be used in teaching (RQ3).

To analyse the data, I transcribed the answers into a word document, using the orthography each participant had used, and without correcting any of the spelling errors. My approach to the analysis followed the principles of qualitative content analysis (see Dörnyei 2007, pp. 245-6). This meant that I did not have any predetermined categories in mind for grouping the participants' thoughts. Rather, having first read through their answers several times to get an overview, I then created categories for coding the data. I labelled the codes according to what

the responses revealed about the respondents' perceptions of the differences between the two orthographies. Although the three questions were designed to examine the participants' perceptions from different angles (i.e. differences they saw between the orthographies, reasons for the alphabetic orthography being easy or difficult, and attitudes towards the change), their answers did not strictly follow the intended focus of any given question. Quote 1 below serves as an example of this: it is an answer to the second question (i.e. whether the alphabetic orthography was difficult, and if so, why), but in responding, the participant also said what he thought was different in the two orthographies.

Quote 1 (14WS1)

> *ekokkoki waamalla kokkookiya fitallasini xata fitalla takka puussinaan amma or lakki taaki sessa puussam*
> 'It is difficult [to learn the alphabetic orthography] because fidels which were earlier written as one are now written as two or three.'

I use the answers to the open questions in reporting the results of the participants' phonemic awareness (Chapter 5) and quantity awareness (Chapter 6).

4.4.2 Phonological awareness tests

To examine the overarching research questions from the three perspectives that I identified as relevant aspects of PA for transfer literacy learning (i.e. phonemic awareness, quantity awareness, and syllable awareness, see Section 3.7), I composed separate tests to measure the participants' PA from each perspective. Due to the lack of previous PA test sets for Konso, I designed the tests by choosing types from amongst typically used PA test types (see Ehri, 2005 and Schatschneider, Francis, Foorman, Fletcher & Mehta, 1999). In designing the content of the tests and the specific test items, I applied the principle of Koda's (2005) transfer facilitation model to analyse the sound-symbol correspondences of the Konso abugida and of the new alphabetic orthography for Konso, in order to identify relevant focus points for each test.

The PA test set included two types of tests to measure phonemic awareness (consonant deletion and phoneme discrimination), two tests to measure quantity awareness (recognising and describing quantity in short pseudowords and recognising quantity in long pseudowords), and one test to measure syllable awareness (syllable segmentation). The phoneme discrimination tests and the test of quantity recognition in long pseudowords required written responses, and they were carried out during class time. Everyone who was present did the test, and all the responses were included in the analysis.

As for the tests which required oral responses, because of time constraints it was impossible to involve a large number of participants, so the oral tests were done by a smaller number of trainees outside the class. Because most of the participants lived a long way away from where the workshop was being held, on the first day of the workshops people arrived at different times. As we did not

start the training programme until the afternoon, by which time most of the trainees had arrived, I invited those participants who arrived early to do the oral tests for the first time while we were waiting for the others to arrive. I then tested the same people again later. All together 13 participants in Workshop 1 and 10 participants in Workshop 2 were involved in the oral testing during the initial workshops.

In the follow-up workshop (data collecting Phase 2, explained in Section 4.2), I used the same arrangement for choosing the subjects for the oral tests (consonant deletion, Test 2 and Test 3). The number of participants who did the oral tests in the follow-up workshop was 23. All the oral testing sessions in all the workshops were audio-recorded.

Apart from the consonant deletion Tests 2 and 3, the PA tests were done twice during the initial workshops, for the first time during the first days of the training, and for the second time towards the end of the training. This made it possible to measure whether or not there were any changes in the participants' performance due to their growing understanding of the alphabetic orthography. In addition, those participants who were working as trainers in the later workshops or participated in the follow-up training six months after the initial workshops did some of the tests more often.

Because the number of test items and the number of participants who did each test were small, no statistical analysis was applied to the data, and the numerical results include only descriptive statistics. However, to complement the quantitative data and to give in-depth insights into the participants' phonological processing, qualitative data, such as case studies of individual participants' performance and incidents which occurred during the testing, were included in the analysis.

4.4.2.1 Phonemic awareness tests

Deleting consonant phonemes

The data set included three oral phoneme deletion tests (see Appendix 8 for the tests). The participants did the tests individually. They were given one stimulus at a time and asked to delete a certain phoneme from it and say the rest. All the phonemes to be deleted were consonants. There were three different types of deletions in relation to the abugida orthography: a word-initial (onset) deletion, a word-medial, syllable-final (coda) deletion, and a word-medial, syllable-initial (onset) deletion. The different deletion types and their correspondences to the abugida spelling are presented in Table 12. No time limit was given, and the stimulus was repeated to the participant if he/she asked for it.

The first of the three different deletion tasks (labelled Test 1 in Appendix 8) consisted of nine stimuli, including three word-initial deletions (*Mana, Poyta, Kela*), two word-medial, syllable-final deletions (*uNta, paRka*), and four word-medial, syllable-initial deletions (*kalTa, damTa, parKa, karMa*). All the stimuli and the correct responses were meaningful words. Meaningful words were used to make the task easier.

Test 2 consisted of eight word-medial deletions. Four of the deletions were syllable-final (*koNdo, ruFta, loQta, kiRpa*) and four syllable-initial (*harKa, *tishMa, sipLa, *falKa*). The stimuli included both meaningful words and pseudowords. The correct responses were designed to be pseudowords, to make the task more demanding. However, making an unambiguous distinction between meaningful words and pseudowords turned out to be impossible, as some participants claimed there were meanings also to stimuli which had been included as pseudowords, while other participants did not recognise the meanings.

Test 3 consisted of five word-initial deletions (*Buubba, Maxxa, Jaqa, Xarsha, Loqta*). The stimuli were meaningful words, but the correct responses were designed to be pseudowords. English glosses of all the meaningful stimuli and responses are given in Appendix 10.

TABLE 12 Three types of stimuli in the consonant phoneme deletion tests

Type of deletion	Sample item*	Stimulus in abugida spelling	Correct response	Response in abugida spelling
Word-initial deletion	*Kela*	ኬለ	*ela*	ኤለ
Word-medial, syllable-final (coda) deletion	*paRka*	ፐርከ	*paka*	ፐከ
Word-medial, syllable-initial (onset) deletion	*karMa*	ከርመ	*kara*	ከረ

*The consonant to be deleted is written with a capital letter.

The goal of the tests was to get answers to the sub-research questions listed below. The number of the relevant overarching research question is marked in parenthesis at the end of each sub-research question. (See Section 3.7 for the overarching research questions).

I. Are the participants able to delete single consonant phonemes from words, and are there differences in the difficulty of deleting consonants from different word positions depending on the corresponding abugida sound-symbol correspondences? (RQ1)
II. Do the participants' skills in deleting a consonant phoneme from a word change during the transfer literacy learning process? (RQ2)
III. What kinds of errors do the participants make in consonant deletion tasks, and what do the errors reveal about the relationship between the participants' phonemic awareness and the Konso abugida sound-symbol correspondences? (RQ2)

I anticipated a word-medial, syllable-final deletion to be easier than a syllable-initial deletion both word initially and word medially. This was because in abugida writing, a syllable-final consonant is denoted by a fidel of its own, whereas a syllable-initial consonant, both word initially and word medially, is denoted by a CV fidel that represents a consonant together with an adjacent vowel. Therefore, if a syllable-final deletion was easier, the result would indicate that the participants' processing of the deletion tasks was affected by the abugida spelling rules.

To analyse the data, having counted the number of correct and incorrect responses and compared the numbers in each deletion type, I carried out a content-based error analysis of the incorrect responses to examine potential correspondences between the errors and the abugida orthography.

Phoneme discrimination, initial phoneme

The word-initial phoneme discrimination test consisted of 22 pairs of meaningful words. The participants listened to the words one pair at a time. They were asked to mark on a piece of paper whether the two words began with the same sound or with different sounds. The response did not require naming the sounds. There were both consonant-initial and vowel-initial words in the test set, and the words were predominantly nouns used in everyday language (see Appendix 8 for the test items and Appendix 10 for an English gloss for each word). All the trainees who were present during the testing session did the task.

The test included four different types of items (i.e. word pairs) in relation to the abugida orthography. The types and their relations to the abugida are shown in Table 13. Four practice items preceded the test items.

TABLE 13 Four types of items in the initial phoneme discrimination task

Initial phonemes of the items	Sample item	Abugida spelling	Relation to abugida spelling
Same CV*	*nata* *nama*	ነተ ነመ	Same fidel
Different CV	*kuta* *mana*	ኩተ መነ	Different fidel
Same C, different V	*takma* *teyla*	ተክመ ቴይለ	Two fidels from the same family, different order
Different C, same V**	*miisa* *liilana*	ሚሰ ሊለነ	Two fidels from different families, same order

*The task type also included vowel-initial stimuli

**The task type also included items with one vowel-initial and one consonant-initial stimulus

The specific sub-research questions for the test were as follows:

IV. Are the participants able to distinguish word-initial phonemes as separate units, and is difficulty in distinguishing the phoneme related to abugida sound-symbol correspondences? (RQ1)
V. Do the participants' skills in word-initial phoneme discrimination change over the course of the transfer literacy learning process? (RQ2)

Regarding answers to sub-research question IV, my assumption was that distinguishing the initial phonemes as separate units might be difficult for the participants, but that it might be easier in a word pair where the abugida writing supported it. In other words, items in which the two words began with the same fidel (e.g. **ነተ - ነመ**) and items in which the two words began with fidels belonging to different families and represented different orders (e.g. **ኩተ - መነ**) would be easier than either items in which the two words began with fidels from the same family but represented different orders (e.g. **ተክመ - ቴይለ**), or items in which the two words began with fidels from different families but represented the same order (e.g. **ሚሰ - ሊለነ**). If the assumption was correct, it would suggest that the participants processed the task through abugida writing. Regarding sub-research question V, my expectation was that through the exposure to the alphabetic orthography the participants' skills in distinguishing the initial phonemes would improve.

Phoneme discrimination, final phoneme

The word-final phoneme discrimination test was similar to the word-initial discrimination test. The task consisted of 12 pairs of meaningful words, and the participants had to mark on a piece of paper whether the two words ended with the same sound or with different sounds. Because Konso nouns normally end with the vowel /a/, the words for the test were taken from different word classes, including pronouns, proper names and verb forms (see Appendix 8 for the test items and Appendix 10 for the English gloss for the words). All the words ended with a vowel. As in the word-initial discrimination task, also in the word-final task there were four different types of items in relation to the abugida orthography (see Table 14), and four practice items preceded the test items.

TABLE 14 Four types of items in the final phoneme discrimination task

Final phonemes of the items	Sample item	Abugida spelling	Relation to abugida spelling
Same CV	*karma* *xorma*	ከርመ ኾርመ	Same fidel
Different CV	*tika* *hale*	ትከ ሀሌ	Different fidel
Same C, different V	*anti* *unta*	አንት ኡንተ	Two fidels from the same family, different order
Different C, same V	*kide* *dame*	ክዴ ደሜ	Two fidels from different families, same order

The goal of the task was to get answers to the following sub-research questions:

VI. Are the participants able to distinguish word-final phonemes as separate units, and is difficulty in distinguishing the phoneme related to abugida sound-symbol correspondences? (RQ1)

VII. Do the participants' skills in word-final phoneme discrimination change over the course of the transfer literacy learning process? (RQ2)

As in the initial phoneme discrimination task, I assumed that the task might be difficult, but that identifying the final phoneme as the same or different might be easier in a word pair written either with the same final fidel (e.g. ከርመ - ኾርመ) or with two fidels from different families and different orders (e.g. ትከ - ሀሌ) than in a word pair written either with fidels from the same family representing different orders (e.g. አንት - ኡንተ) or with fidels from different families but representing the same order (e.g. ክዴ - ደሜ). If the assumption was correct, it would indicate that the participants processed the task through abugida writing. Also, I assumed that through exposure to the alphabetic orthography, the participants' ability to distinguish final phonemes would improve.

4.4.2.2 Quantity awareness tests

Recognising and describing phoneme quantity in short pseudowords

The task of recognising and describing phoneme quantity in short pseudowords was carried out orally. It consisted of eight pairs of two-syllable pseudowords (see Appendix 8 for the task). The only difference between the two stimuli in each pair (i.e. each item) was either the length of the vowel in the first syllable or a non-geminate versus geminate consonant word medially. In five of the items the difference was in vowel length, including one item for each of the Konso vowels

(i.e. *taada - tada, luuma - luma, riila - rila, soma - sooma, reka - reeka*[22]), and in three items the difference was between geminate and non-geminate consonant (i.e. *kuda - kudda, tima - timma, ketta - keta*). The items in which the difference was in vowel length preceeded the items with a geminate and non-geminate consonant.

The participants did the test individually. They were told that they would hear pairs of words which had no meaning, and that there would be something different in the sounds of the two (pseudo)words. They were to listen to the stimuli and say what the difference between them was. There was no time limit, and the stimuli were repeated as many times as the participant wanted. No practice items preceded the test items, because examples of correct responses would have affected the participants' perceptions and given them terminology for describing the differences. Pseudowords were used so that the participants would not start looking for meanings, but rather pay full attention to the sounds. The goal of the test was to get answers to the following sub-research questions:

VIII. Do the participants recognise the difference between long and short vowels at the beginning of transfer literacy learning, and if they do, how do they describe it? (RQ1)

IX. Do the participants recognise the difference between geminate and non-geminate consonants at the beginning of transfer literacy learning, and if they do, how do they describe it? (RQ1)

X. Do the participants' skills in recognising and describing quantity change during the transfer literacy learning process? (RQ2)

The task made it possible to compare differences between the participants' ability to recognise and describe vowel length and gemination. As the Konso abugida marks vowel length for /a/ and /i/, whereas gemination is not marked for any of the consonants, I assumed that the participants might have learned to pay conscious attention to vowel length but less so to gemination. In that case they would be able to recognise and describe the difference between long and short vowels better than the difference between geminate and non-geminate consonants. However, because the abugida does not mark length for all vowels, I reckoned that the inconsistency in the system might have confused participants' conceptions about vowel length, in which case there would be no difference between their ability to recognise vowel length and their ability to recognise gemination. As for any possible change in the participants' skills during the training (sub-research question X), I assumed that their performance would improve after exposure to the alphabetic orthography.

The test also aimed to find out what terms the participants would use in describing vowel length and gemination, and whether they would use the same

[22] After the data collecting phase I was told that *reeka* could be interpreted as a real word, meaning 'dispute'. In addition, there were participants who claimed meanings for some of the other stimuli, although nobody else seemed to recognise them as meaningful words. This made it impossible to draw a definite line between meaningful and meaningless stimuli.

terminology for both or make a distinction between the two. Konso terms conventionally used for describing vowel length are *ideri*, 'is long' and *ikumma'i*, 'is short', and the terms for describing geminate and non-geminate consonants are *ikokkoki*, 'is tense' and *inukkulli*, 'is lax', respectively.[23] By finding out what terms the participants used, I wanted to get some ideas about what kind of terminology it would be good to use in transfer literacy teaching to describe phoneme quantity, and whether it would be useful to describe vowel length and gemination as two different phenomena, or whether it would be more helpful for transfer learners if both were described using the same terms (RQ3).

Unlike the other PA tasks, this task required the participants to respond in their own words rather than by giving restricted, structured responses. To analyse the data, I made a rough transcription of the responses in a word document and listed the terms the participants used for describing vowel length and gemination. I then examined whether the participants had recognised and described consistently the quantity difference in each item. I looked for common patterns in the responses and chose a few responses as case studies to illustrate points about the participants' thought processes in more detail. For those responses I prepared a word-for-word transcription and an English translation.

Recognising phoneme quantity in long pseudowords

Another task designed to examine the participants' quantity awareness also consisted of pairs of pseudowords. As in the task of recognising and describing the quantity of short pseudowords above, so too in this second quantity awareness task the two (pseudo)words in each pair differed only by the quantity of one sound (see Appendix 8 for the task). However, the stimuli were longer (3-5 syllabi), and before the participants did the task it was explained to them that the difference between the two pseudowords in each pair was in the quantity of one vowel or one consonant.

All the stimuli followed Konso phonotactics. There were eight items (i.e. pairs of pseudowords). In five of the items the difference was in consonant quantity (i.e. *norolayta - norrolayta, pukulampaya - pukkulampaya, lelisankayta - lelissankayta, kiraleppata - kiralepata, deypannaytima - deypanaytima*), and in three in vowel quantity (i.e. *xirafeta - xirafeeta, kerompiilota - kerompilota, shuurmata - shurmata*).

All the participants who were present in the session did the task. They were given one item at a time and asked to write down whether the long or the geminate sound was in the first or in the second pseudoword, and which sound it was. Two practice items preceded the test items, one with a long vowel and the other with a geminate consonant. While doing the test, care was taken that there was enough time for everyone to respond before the next item was given. The goal of the task was to get answers to the following sub-research questions:

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[23] Alternative expressions for vowel length are *nessa a dera* 'long sound' and *nessa a kumma'a,* 'short sound', and for geminate and non-geminate consonants *nessa a kokkoka* 'tense sound' and *nessa a nukkulla* 'lax sound'. The term *a kokkoka* can also be translated as 'strong' or 'difficult', and the term *a nukkulla* as 'weak' or 'easy'.

XI. Do the participants recognise phoneme quantity in long pseudowords at the beginning of their transfer literacy training? (RQ1)
XII. Does the participants' ability to recognise the phoneme quantity in long pseudowords change with transfer literacy training? (RQ2)

Unlike in the task of recognising and describing phoneme quantity in short pseudowords, in this task the participants were given the terminology in which to respond, and they only needed to recognise the long or the geminate sound and to name it accordingly. Therefore, given that quantity is a semantic feature of Konso, and a mother-tongue speaker's oral language skills necessarily include the ability to hear the quantity of phonemes in speech in order to unravel meanings (i.e. epilinguistic level of PA), I thought that the participants might be able to recognise the quantity difference already at the beginning of the transfer learning. However, I also considered that the participants were not used to consciously processing the quantity of all sounds or to dealing with pseudowords, so they might have some difficulty in doing the task at the beginning of the training. If that was the case, I assumed that their performance would improve after exposure to the alphabetic orthography.

4.4.2.3 Syllable segmentation test

The syllable segmentation test consisted of 15 stimuli, and 27 syllable breaks were included in the analysis. Ten of the breaks were in between two open syllables (e.g. *ku-ta*), nine were in the middle of a consonant cluster (e.g. *poy-ta*), and eight in the middle of a geminate (e.g. *nap-pa*). The test is presented in Appendix 8.

The test was carried out orally and each participant did it individually. The participants were asked to segment the stimuli into parts in the way they thought was appropriate. No time limit was given, and the stimulus was repeated to the participant if he/she asked for it. Three practice items preceded the test items. The goal of the test was to get answers to the following sub-research questions:

XIII. Are the participants able to segment words into syllables according to syllable peaks at different points in time during their transfer literacy learning process? (RQ1, RQ2)
XIV. Do the participants comply with the phonological syllable structure when segmenting words into syllables? (RQ1)
XV. How do the participants segment consonant clusters at different points in time during their transfer literacy learning process? (e.g. *kar-ma*; **ከርመ** *ka. r. ma*) (RQ1, RQ2)
XVI. How do the participants segment geminates at different points in time during their transfer literacy learning process? (e.g. *nap-pa*; **ነፐ**; *na. ppa*) (RQ1, RQ2)

The first question (XIII) aimed to find out whether the participants could segment words into syllable-sized units according to syllable peaks. As the Konso syllable structure is simple, and research findings from other languages have shown that syllable awareness develops along with oral language skills, I thought that the

participants would be able to segment words into the right number of syllables in line with the syllable peaks. However, considering that the concept of a syllable had not been used in Konso abugida teaching, and the participants were not used to breaking words into parts apart from extracting the initial fidel from a keyword in learning new fidels (see Section 2.3.4), I expected that at the beginning of the transfer literacy learning the participants could find syllable segmentation difficult and possibly also have difficulties in understanding how to do it.

The other three sub-research questions stemmed from the disparity between *phonological syllables* and *orthographic syllables* in the Konso abugida (see Section 2.3.3), and aimed to identify the potential influence of the abugida on segmenting consonant clusters (question XV) and geminates (question XVI). I hoped that finding out about the transfer learners' tendency towards intuitive syllabification would help to determine how big a role syllables and phonological syllabification rules should play in the transfer literacy teaching method (RQ3). As for prior assumptions regarding the results, taking into consideration the earlier results from Brahmi about the influence of sound-symbol correspondences in the orthography on readers' decisions about syllable boundaries (e.g. Nag, 2017, see Section 3.3.1), I assumed that Konso abugida readers would align with the orthographic syllabification, and so follow the abugida fidel breaks.

To analyse the results, I counted the number of syllables segmented according to the syllable peaks and examined whether the segments followed the phonological syllables. I then carried out a content-based error analysis of items that containted a consonant cluster or a geminate consonant, in order to look for potential links between the syllabification patterns and the orthographic syllables of the Konso abugida.

4.4.3 Spelling test

To examine transfer literacy learners' alphabetic spelling performance at different points in time during their transfer literacy learning process and to look for potential relationships between spelling errors, the abugida sound-symbol correspondences and the transfer learners' PA skills, I included two dictation tasks (Dictation 1 and Dictation 2) in the data set (see Appendix 9 for the tasks). Dictation 1 was given twice in the initial workshops, and all the participants who were present did the task. In addition, seven participants did the task for a third time while serving as trainers in the second initial workshop. Dictation 2 was composed for the follow-up workshop, and all the participants present in the session did it.

The items analysed from Dictation 1 included 20 meaningful words. Ten of them were presented as single words, and the other ten in three sentences. The length of the words in the task varied from two to four syllables. In selecting the words, I looked for items which would include both long and short vowels and geminate as well as non-geminate consonants. I selected mostly words which

contained only frequently used letters, but also some which included less frequent letters and might therefore be more difficult to spell.[24]

Dictation 2 contained eight meaningful words, all of which included a consonant cluster. The length of the words varied between two and four syllables. The task was designed to investigate the patterns in the ways transfer literacy learners spelled consonant clusters, and the potential influence of the disparity between phonological syllables and the abugida orthographic syllables on spelling performance.

Both dictations were administered by a mother-tongue speaker. Each word or sentence was said to the participants up to three times. Care was taken to give enough time for all the participants to write each stimulus before moving on to the next one. In analysing the results, I counted all spelling errors and classified them, using content-based error analysis to identify the problem areas in spelling. While analysing the results of Dictation 1, I created error categories according to the results. I had no prior assumptions about the nature of the error types. Single words and words in sentences were treated in the same way, applying the same error categories to both. In analysing the results of Dictation 2, I used the error categories created while analysing the results of Dictation 1.

I report findings from the error analysis of Dictation 1 in all the results sections (i.e. Chapters 5-7) to illustrate the links between the participants' spelling performance and their phonemic awareness (Section 5.4), quantity awareness (Section 6.4), and syllable awareness (Section 7.2). The findings from the results of Dictation 2 are reported in Section 7.2, which addresses the question of participants' syllable awareness.

4.4.4 Word-reading test

To examine the participants' accuracy in reading in the alphabetic orthography and to look for potential links between reading errors, abugida writing, and the participants' PA skills, the task of reading aloud a list of words and short sentences was included in the data set (see Appendix 9 for the task). The participants in the initial workshops did the task twice during the workshop. Their performance was audio-recorded. The time given for the task was 90 seconds. If the participant did not finish within that time, the task was left incomplete. The task consisted of thirteen single, meaningful words and two short sentences.

In selecting the reading words, I included some words that I anticipated would be easy to read, and others which were more difficult. To that end, the length of the words varied from two to six syllables; some of the words contained only open syllables, while others also contained consonant clusters and geminates. Most words were composed of frequently used letters, but some contained also less frequent letters. I anticipated that shorter words with frequently used letters would be the easiest to read.

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[24] To determine the frequency of letters, reference was made to the frequency count of Konso abugida fidels that was carried out in 1997 in connection with deciding on the sequence for presenting the fidels in the Konso abugida primer.

On the list there were five words that made a meaningful word also when the quantity of one or more of the phonemes was altered (i.e. *kalata* 'praise'; *kallaata* 'life'; *kuuta* 'peak of roof'; *kutta,* 'dogs' and *damma* 'let us eat'), and three words that made a meaningful word even if the reader confused the word-medial open versus closed syllables (i.e. *kalata*; *kallaata* and *kalta* 'departure'). In this study I report what the results of the word-reading test revealed about the participants' quantity awareness (Section 6.5) and syllable awareness (Section 7.3), and I focus on the results gained from analysing the errors the participants made in reading the words listed above. I used content-based error analysis to identify and classify the errors.

4.4.5 Diary notes

Throughout the data collecting period I carried my diary with me and wrote down my observations from the training sessions as well as from the discussions I had with the trainees during our free time. I also documented my visits to transfer literacy classes and the discussions I had in the local literacy office with the Konso literacy coordinator and with literacy teachers who came to the office for errands. I wrote mostly in my mother tongue, Finnish, but occasionally also in Konso or Amharic, especially when I wanted to document the exact expressions that I heard people using while they were talking about a particular issue.

At the beginning of Workshop 1, I mainly documented what we did in the training sessions each day and what I had discussed with the workshop participants, so the notes were rather general. However, after the first PA tests had been done and I had observed the training sessions for a few days, I started to identify the points that were most troublesome for the transfer learners, and therefore seemed most relevant for the study. Consequently, my observations were gradually geared towards the trouble spots and my diary notes became more focused. I started to write mostly about incidents that seemed relevant for explaining the results obtained through the other data collecting instruments. During the last data collecting phases (i.e. Phases 3 and 4, see Section 4.2) my focus was on finding out how the transfer training programme and the teaching methdology had developed, and on what the contents of the transfer literacy training workshops for the teachers were like (RQ3).

After each field phase I created a word document and transcribed there the notes from my original diary notes. If meanwhile I had had any further thoughts about a particular observation or point in my original notes, I added those thoughts as footnotes to the original notes, with the date of the addition. The total length of the notes converted to word documents is over 33 000 words.

In reporting the results from each of the three perspectives (i.e. phonemic awareness, quantity awareness and syllable awareness, Chapters 5, 6 and 7 respectively), I have included relevant citations from my diary notes and reported incidents from the notes to complement the analysis of the results from other data sets. The citations are English translations from the original notes. I have attached to each citation a code indicating the date when the original note was documented (e.g. D010715 stands for a citation from July 1st, 2015).

4.5 Ethical considerations

I was granted a research permit for my fieldwork by the Institute of Ethiopian Studies (IES) at Addis Ababa University before my first field phase in June 2015. The University required biannual progress reports and annual renewal of the permit, and I renewed it accordingly until the end of the study.

At the beginning of the data collecting period, IES wrote a letter to the Konso Special Woreda Administrative Office to inform the local authorities that I would be doing field work in the language area. Also, because the data were collected under the EECMY literacy programme, I signed an agreement with the Konso parish administrative office. The agreement gave me permission to carry out research activities in connection with the transfer literacy teaching programme, and I committed myself to reporting regularly to the parish authorities on the progress of the research and to submitting copies of all presentations and publications arising from the data.

At the beginning of the data collection, those literacy teachers and transfer learners who participated in the study and handed in any written documents, or whose voice was recorded for research purposes, were given preliminary information about the study; this meant all those teachers who participated in the initial workshops in the summer of 2015, and the transfer learners who participated in the follow-up workshop in February 2016 (see Section 4.3 for a description of the participants). In the orientation it was explained that information would be collected from them for a study that would eventually be published abroad, but that was also designed to develop a good transfer literacy teaching programme for the Konso language. They would be asked to do tests and answer questions. I would also write notes on the training sessions they participated in. Their names would not appear in the publications and their performance would not affect them during the training workshops or afterwards. They would, however, need to answer using their own names, because they would do the same tests more than once and the results of the different rounds would have to be compared. Participation in the data collecting activities would be voluntary, and they would have the right to withdraw from the study at any time until the publication of the results. After the orientation they signed an agreement to participate in the study and to permit the use of the data collected from them.

Because of my history in Konso literacy work (see Section 2.3.1), it was easy for me to set the study up and to carry out data collecting activities during the initial transfer literacy training phase. Many of the literacy teachers who participated in the workshops had heard of me, and some of the long-term teachers knew me personally. As I was also a trainer in the first workshop, despite the orientation to the effect that the research would be carried out during the workshop, the participants barely thought of me as a researcher or of the research activities as anything different from the other class activities. In the other workshops I was also present in almost all the training sessions and participated in the class discussions, and I had the feeling that the participants regarded me more as

a trainer than as a researcher. It was more difficult for me to get an authentic or accurate impression of the transfer literacy classes in the villages: it is uncommon for a European to pay a visit to a more remote rural location, and people want to see the visitor. It was therefore difficult to know if the people who sat in the transfer literacy class in the church were real students or if they had come to see a visitor, and the presence of people who were not normally in the class naturally altered the dynamics during the lessons.

I made an effort to communicate in the Konso language as much as possible, but because I had not used the language regularly since I had moved away from the language area, I had forgotten some of the language, and during the training sessions in the workshops there were occasions when I had to ask someone to translate for me the conversations that took place during the session. Also, in the oral testing sessions I occasionally had to switch over to Amharic to express my thoughts clearly. This happened especially during the initial stages of the data collecting period. As all the trainees who participated in the testing were able to understand Amharic, I did not need to use an interpreter in face-to-face conversations. Nevertheless, my restricted Konso skills may have caused misunderstandings in the individual testing situations and made it more difficult for the participants to understand the instructions for the oral PA tests.

5 PHONEMIC AWARENESS AND ITS ROLE IN THE TRANSFER

According to a large body of research, there is a reciprocal relationship between the development of phonemic awareness and the learning of alphabetic literacy skills (e.g. Perfetti & Verhoeven, 2017). Studies have also indicated that the association between syllable awareness and literacy learning in Brahmi is close, whereas Brahmi readers' phonemic awareness is slow to develop (Nag, 2007; Nag & Snowling, 2012).

Like the Brahmi akshara, the Konso abugida fidels primarily denote sound-symbol correspondences in CV sequences, and therefore Konso abugida readers have mostly operated on sound-symbol units bigger than a phoneme. But because Konso abugida fidels also denote single vowels in the initial position and single consonants in the coda position of closed syllables, readers have some exposure to dealing with phonemes.

The Konso abugida teaching method has used word-initial CV fidels as a basic teaching unit (see Section 2.3.4), and that may have strengthened the link between the symbols (i.e. fidels) and CV units in the minds of Konso abugida readers. However, because in the revision lessons (see Appendix 3) literacy teachers have been advised to explain to students the visual regularities of the vowel signs in each order, if the teachers have followed the advice, the learners have been guided to extract the vowel sounds from the preceding consonants. As for the coda consonants, denoted by the same fidels with C+/i/-sequences (i.e. the sixth-order fidels), the Konso abugida teaching method has not given any tools to process them as separate units.

Consequently, as Konso alphabetic orthography denotes each phoneme with a separate symbol, it can be assumed that a transfer from the Konso abugida to alphabetic orthography calls for the strengthening of learners' understanding of phonemes as separate units of the language – that is, their phonemic awareness. Designing an efficient transfer literacy teaching method therefore involved finding out about the level of abugida readers' phonemic awareness skills.

New terminology was needed to teach alphabetic literacy skills. To explain to transfer learners the difference between the sound-symbol correspondences of the alphabetic letters and the abugida fidels, new terms were introduced to refer to consonants and vowels. The terms adopted for the purpose were *halamtoota* for a consonant and *halisoota* for a vowel. The terms are derived from the verb *haleeta*, to call. *Halisoota* (vowel) containts the idea of someone causing someone else to be called, whereas *halamtoota* (consonant) refers to 'one that is called'. The terms were new to the transfer learners, and so far as I know, before the Konso alphabetic orthography was developed there were no terms for consonants and vowels in the language. A third term, designed to be used to refer to phonemes

in the transfer literacy teaching programme, was *nessa*. The term is used frequently in everyday language to denote both 'sound' and 'voice'.

In this Chapter, I first review what the participants' answers to the open questions regarding the two orthographies revealed about their phonemic awareness. I then report the results of the consonant deletion tests and examine the potential connections between the Konso abugida sound-symbol correspondences and the participants' ability to delete consonants from different word positions. Following that, I present the results of the phoneme discrimination tests and discuss the challenges for transfer learners in perceiving consonants and vowels as independent units. I then give a brief account of the overall results from Dictation 1, and examine potential links between the transfer learners' spelling performance and their phonemic awareness. Finally, I draw together the results from the different data sets and answer the overarching research questions from the perspective of phonemic awawereness.

5.1 Phonemic awareness and transfer learners' reflections about the two orthographies

5.1.1 Reflections at the beginning of transfer literacy training

At the beginning of the transfer literacy training programme, one of the participants in the first workshop wrote about the difference between the Konso abugida and the new alphabetic orthography as follows:

Quote 2[25] (11WS12)

ዋሸን ኦከፐ ከር ከር ቸኔ፥ ላትን፥ ኦ ፑስነን ፍተለሶ ሌከን
አኾንሶ፥ ፍተለሶ ኦ ፑስነን ሌካንን ቻን

'A difference [between abugida and alphabetic orthography] is that when writing in the alphabetic orthography, there are many fidels, whereas when writing in Konso [abugida] there are not many fidels.'

This description captures well the perception which many transfer literacy learners expressed at the beginning of their learning process about the differences between the two orthographies. They had realised that the alphabetic orthography required more characters to write each word than the abugida did, and therefore many beginning learners concluded that it would be difficult, if not impossible, to master the new orthography. When I visited a transfer literacy class in the village of Laawa (14.2.2016), the teacher told me that five of his students had given

[25] All quotes from the participants' answers have been recorded following the original spelling used by the participant. The quotes revealed ample spelling errors, reflecting the difficulties the participants had in following the spelling rules of the orthography they chose to use. A systematic analysis of the spelling errors is beyond the scope of this study. Most participants chose to write their answers in the abugida both at the beginning and at the end of the training.

up and quitted coming to the class almost as soon as the course began, after they realised that one fidel needed to be divided into more symbols and that many symbols were needed to write each word. Likewise, in the follow-up training for teachers in February 2016, several participants who had started to teach a transfer literacy class in their home village said that to start with, their students had been concerned when they saw words written in the alphabetic orthography and realised how long each word was.

During the whole data collecting period nobody expressed the opposite view or concluded that the alphabetic orthography would be easy because the overall number of symbols to be mastered was lower than in the abugida. The transfer learners did not regard the need to master new symbols as an obstacle to learning – after all, they had already mastered the 147 abugida fidels (and those who were fluent readers of Amharic also around hundred additional symbols, as the Amharic abugida contains that many more symbols than the Konso abugida). Therefore what was difficult for the transfer learners was not learning new symbols, but learning how to join the symbols together to form words.

The learners' impression coincides with the concept of the *psycholinguistic grain size theory* (see Section 3.5) that an orthography with smaller grain size is more difficult for a literacy learner to master than an orthography with larger grain size. In terms of the PGST, Konso transfer literacy learners found the *availability problem* harder to solve than the *granularity problem*. Their impression was in line with the results reported by Asfaha et al. (2009) from Eritrean languages using Ge'ez versus Roman script, and by Piper & van Ginkel (2017) from Ethiopian languages (see Section 3.5).

Sixteen of the 51 participants who at the beginning of the initial workshops answered the open questions about the two orthographies for Konso wrote that in the alphabetic orthography, the abugida fidels needed to be divided into more symbols (see Section 4.4.1 for the questions). Some participants illustrated the difference by transcribing abugida fidels into alphabetic letters, but their answers did not reveal to what extent they had understood what each letter stood for (e.g. Quotes 3 and 4). Others tried to describe the difference more precisely and pointed out that one fidel became two different symbols (e.g. Quote 5).

Quote 3 (33WS2)

ፍተለ አልኬለ ፑርሳሜን 1. **አሳፐ ኬ** 2. *Latin ke*

'The difference between the fidels: 1. Abugida: **ኬ** 2. Alphabet: *ke*'

Quote 4 (63WS23)

ፍተለ አፈ ለትን አሰፐሀ ka **ፍተለ አፈ ሳፐ አሰፐሀ ከ**

'The alphabetic fidel looks like this: *ka.* The abugida fidel looks like this: **ከ**'

Quote 5 (59WS2)

ፍተለ ሳፐ ቆተ ተከ ተከ ኮዴ መለ ቀለሌተ ፍተለ ለይትነቱ ቆተ ፍተለ ተክ እስፐልንኬተ ለክ ቀፐኖ መለ እኮኮክ

'Because each abugida fidel is one, they are easy. Alphabetic fidels are difficult because one fidel has two spellings.'

The answer by 59WS2 (Quote 5) illustrated that those transfer learners who had understood that one abugida fidel had to be marked with two symbols still approached the alphabetic orthography from the point of view of the abugida: despite the fact that they are written with two symbols, the two components of a CV fidel were considered to belong together, and that made it difficult to mark them with two separate symbols.

A similar conception of phonemes marked by one CV fidel being a unit rather than two separate components was reflected in the transfer learners' reactions to different tasks they were asked to do throughout the data collecting period. For example, on Day 3 of Workshop 1, when my colleague used the word **ማከ** (i.e. *maaka* 'snake'), to teach how the fidel **ማ** (i.e. *maa*) is broken down into the alphabetic letters <m> and the double <aa> to indicate a long vowel sound, I had written in my diary:

> One of the well-performing trainees asked what the long component in *maaka* was: was it the *aa* or the *maa*. My colleague said it was the *maa*, but it seemed to me that the trainee thought it should be the *aa*. It is interesting how this thing is perceived! (D010715)

The incident revealed how the trainee considered separating the consonant and the vowel, denoted by one fidel, but hesitated as to whether it was possible to label the length to the vowel alone, without considering the preceding consonant. The trainer chose to explain the matter through abugida writing and thus interpreted the /m/ and the /aa/ as belonging together.

Another similar incident took place on the same day, revealing that there were more participants who were uncertain about the relationship between the consonant and the vowel within one fidel. I was observing the participants learning how the fidel **ሲ** (i.e. *sii*) was broken down into <s> and the double <ii> in spelling the word *siita* (**ሲተ**) 'tail', when I wrote in my diary:

> When we went on to lesson 5, a lively conversation broke out and the trainees disagreed about whether the *ii* or the *sii* was long. Then some trainees realised that in the lesson there was not only *sii* **ሲ** but also *kii* **ኪ**; *mii* **ሚ** and *nii* **ኒ** [they found these from the reading exercise in the words: *siina* **ሲነ**; *kiisa* **ኪሰ**; *miisa* **ሚሰ** and *niike* **ኒኬ**]. (D010715)

The incident made it clear that, as with 59WS2 above (Quote 5), the learners processed a vowel as being closely connected to the preceding consonant, so they viewed a CV sequence that corresponded to an abugida CV fidel as one unit. Nevertheless, they had started to process the question of how closely the consonant and the vowel were connected. Similar conversations also took place on other occasions during the two initial workshops, indicating that the starting

point in processing the question was the CV fidel as a firm unit, and understanding that the fidel contained two independent components was difficult.

An additional complication in separating the consonant and the vowel was the difficulty of pronouncing a consonant without an adjacent vowel. One participant wrote:

Quote 6 (27WS123)

እኮክ መነ መለ ፍተለ ለትን ሀሌተኤ አከተ መል ኮኮክ።

'It [alphabetic orthography] is difficult, because saying alphabetic fidels aloud is very difficult.'

The thought that 27WS123 expressed in Quote 6 suggested that he had the idea that all the alphabetic letters denoted separate components and that he wanted to deal with them as such, but he struggled because he found it difficult to make consonant sounds.

Another participant's (6WS1) answer revealed that, unlike 27WS123, he had interpreted the concept of a sound from the point of view of the abugida sound-symbol correspondences. As he saw it, the consonant and the vowel denoted by one CV fidel made up one sound. He wrote:

Quote 7 (6WS1)

ፍተለ አአፈኾን አዮተ፥ ተከ እስን ነሰ ቀፕናተ እኤተንን። ፍተለ አላትን ለኬ ከ ሴሰ ኦልን ኔሰ ተከ ሀሌን።

'One Konso [abugida] fidel can make a sound alone. Two or three alphabetic fidels make one sound together.'

Generally speaking, the participants' written reflections on the two orthographies at the beginning of the transfer literacy training revealed that they understood that alphabetic writing required dividing an abugida fidel into two symbols. However, less clear for them was what exactly each of the alphabetic symbols stood for, and how the alphabetic symbols representing one abugida fidel related to each other. Generally, rather than regarding the consonant and the vowel denoted by one abugida fidel as two independent units, they tended to perceive them as components that were closely related to each other. This suggests that their phonological awareness was influenced by the abugida sound-symbol correspondences, which made the concept of a phoneme less clear for them.

5.1.2 Reflections after exposure to the alphabetic orthography

At the end of the initial workshops 55 participants answered the open questions about the two orthographies. Of them, 22 now expressed a similar thought to the one already expressed by 16 participants at the beginning of the training, that one abugida fidel needs to be divided into more alphabetic symbols (e.g. Quotes 8-10). Compared to the answers at the beginning of the workshops, the descriptions at the end of the workshops were somewhat longer and more elaborate – for example, the idea of one fidel becoming two (or more) alphabetic characters was expressed more precisely (cf. Quotes 8-10 and Quotes 3-4). However, most answeres were still very general.

Quote 8 (9WS1)

ፍተለ ኦልከፐ ፑርሰም። መነ መለ ፍተለ ሰፐ ቶከ አለትን ለክ

'The [abugida and alphabetic] fidels are different, because one abugida fidel is two alphabetic [fidels].'

Quote 9 (30WS23)

ዋ እሽን ኦልከፐ ፑርሰማኔ ፍተለ ሰፐ ተከ ለቲንፐዬ ለኪ ኮዳ እኤተንን። ሴመለ ኦልን ፐሀንን።

'A difference is that one abugida fidel can make two alphabetic [fidels]. Therefore, they are not similar.'

Quote 10 (22WS1)

puussowwa assaaba takka otton alaatini opa orinneyye kara kutta lakki koddin

'When one abugida charater is transcribed to alphabetic script, many times it becomes two.'

Examining further the participants' answers from the point of view of phonemic awareness, at the end of the initial workshops nine participants used the concepts of vowel and consonant in describing the alphabetic orthography (e.g. Quotes 11-13).

Quote 11 (3WS1)

ፑሶወ አፍተለ ሳፓ ካ አላቲን ወ እሽን ኦልኬለ ፑርሰምየነ ፑሶወ አሰፐ ኦልኬለ ቆተምንቻን አክሞስ ምነኤው ፍተለ አሀሌን እሾ አሀላመ ኦልከረ አካንንቻን። መ ኾር ኦቶን ፍተለ አላቲን ፑሰወሹ አነፐፒንኖ ታክ ታፍንኖዬ ፋለተ አሀሌነ እሾ አሀላመኤ ከረ አከን

'The difference between the abugida and the alphabetic characters is that the abugida characters do not separate consonant and vowel fidels. But when the alphabetic fidels are read or written, we find vowel and consonant fidels.'

Quote 12 (12WS123)

Puussota asaapaka a laatin waa ishin olkapa pursamaane, a saapa puussowwa a halena lakopa sookininkito ma olopa'ew puusammi -> a laatin xoori ahaleenitoka ahalaamo'e olkela reeini ka xawe xawe puusin.

'The difference between abugida and alphabetic characters is that in abugida the vowels do not come out but are written together [with the consonant], whereas in alphabetic writing vowels and consonants are separated and written on their own.'

Quote 13 (15WS1234 – Date: 08.07.2015)

ፍተለ አለትን ወ እሽን ፐርሳማኔ ኦቶ ሀሌነኔዬ ቆተ ለክ ለክ ቀፕነን መለ ሀለተኔ ሰል ከ ኦቶ ፑስናኔዬ ከሱ ኦረ ቀርቀር

ፍተለ አሰፐ ኾር ቆተ አሀለነ ከ አሀለመ ኦል ከረ ቸን መለ አከሴ አን ለትንን ኮለንኖ ምኤ አን ኦልከለ አን አሬኽን አንክኖ

ፍተለ ሀረየ ኮለተ አከተን ቀለሌተ ማነ መለ ኦቶ ኮለነን ቆተ አከተ ኤኖው አነፐፐመን መለ አኽዮ ዴሰ ቀለሌተ

'The alphabetic fidels are different because when they are said aloud there are two, and therefore it is easy to say them, and that is also helpful for writing.

Abugida fidels mark consonants and vowels together, so they are not separated as we have learned about the alphabetic letters.

The new fidels are very easy to learn, because when we learn them, they can be read right away, and I find that easy.'

The response of 15WS1234 (Quote 13) indicated that learning to separate consonants and vowels had helped her to understand the nature of alphabetic writing. She wrote her thoughts about the differences between the orthographies again a month later, after she had been a trainer in Workshop 2. Having got some experience of teaching others about the alphabetic orthography, she reiterated the thoughts she had expressed at the end of her own two weeks of training, but also added a note about the role of learning first to read the abugida (Quote 14):

Quote 14 (15WS1234 – Date: 06.08.2015)

ወ እሽን ፐርሰመኔ ኽተዬ ፍተለ ሀሌነ ከ አሀለመ ኦልኬለ አከንንቻን/ሬኽምቸን አመ ኤቴ ለትን ተአመርኖዬ/ኮለንኖዬ ፍተለ ሀሌነ ከ ሀለመኤን ኦልከለ አክኔ።

ኣፐለኤው ኦቶ አነፐፐኖዬ እከ ኦልከለ ለአይን አከተ ፐቃር።

እኑኩል ማነ መለ ወ እሽን ኑኩለ ኦቶን አነፐፐኖዬ ቆተ አሀለነ ከ አሀለሞ ኦልከፐ ቻን መለ ኦቶን አነፐፐናዬ ኽዮ ዴሰ አከ አነ ከል ከ ኦልከለ አነ ለአይን ሴመለን እን እኑኩል መ ኦረን ኡፐንን ቀረዬ ኮኮነተ እኤተንሰ

አሴ ክዴትዮ ኦረ ሰፐን ኮለንን ቀረዬ ሸኪይተ ኡልሰተ እኤተንሰ ክዴትዮ

'The difference [between the orthographies] is that earlier, consonant and vowel fidels were not separated. Now, as we have learned, in the alphabetic orthography there are fidels for consonants and vowels.

Also, when reading, and they are separate, that is very good.

> The alphabetic orthography is easy, because when the consonants and vowels are separated, I understand very well; it is clear and therefore easy. But it can be difficult for people who do not know, I mean, for people who have not learned the abugida.'

15WS1234's thought reflected the importance she gave to abugida literacy skills as a foundation for learning alphabetic literacy skills. Based on her own experience, she reasoned that knowing about the sound-symbol correspondences of the abugida (CV) fidels was the best starting point for learning alphabetic sound-symbol correspondences and understanding consonant and vowel phonemes as separate units. This intuition is in line with the theory about the order of mastering sound-symbol correspondences of different sizes, starting from bigger sound-symbol units and then progressing to smaller units (e.g. Ziegler & Goswami, 2005). Moreover, it points to the importance of a transfer literacy learner understanding the different nature of consonant and vowel sounds.

Two years later, 15WS1234 worked as a trainer in the teacher training workshops in Xolme and Faasha. One day she began to talk about the time when she had written the above thoughts about the two orthographies (Quotes 13 and 14). She told me how she had felt when starting to learn alphabetic literacy skills in Workshop 1. She had been overwhelmed, she said, and contrary to what could have been expected from what she had written after two weeks of transfer literacy training (Quote 13), the very first steps in getting to know the Konso alphabetic orthography had not been easy for her. I documented her recollections in my diary at the time.

> 15WS1234 recalled the first two weeks of training two years ago. She told me that from Monday to Thursday of the first week [29.06.-02.07.2015] she had not understood anything. Together with 8WS1, she had been wondering whether it was worth coming back for the second week [after the weekend at home]. But then, on one occasion, when she and 8WS1 had been doing an exercise/practising reading together, she had discovered the sound-symbol correspondences of fidels denoting short and non-geminate CV units. Vowel length and gemination had still been too difficult. (D270717)

She did not tell me what kind of exercise she and her co-trainee (8WS1) had been doing when she began to understand the sound-symbol correspondences of the alphabetic orthography, but her description and her reflections on the differences between the orthographies (Quote 13) indicated that realising how the consonants and vowels function and relate to each other in alphabetic writing had been a key discovery for her, and had enabled her to learn alphabetic literacy skills. This incident points to a close connection between phonemic awareness and alphabetic literacy learning.

During the teacher training workshop in Xolme (17.7.17), I discussed consonants and vowels with 15WS1234, and asked her how she explained them to her students. She said that for consonants she explained that the lips touch (*hiibba olquda kayni*), or showed the students how the tongue moves when consonants such as /ɠ/ or /ɗ/ are pronounced and said, *arraapinno asse are quda kayini: q, d* 'our tongue moves here like this: /ɠ/, /ɗ/'.

On the same day in Xolme (17.7.17), I had documented in my diary how another trainer (2WS14) explained consonants and vowels to the trainees. He noted that vowels are pronounced on their own (*issin halaammi*), whereas consonants require another letter in order to be said aloud (*fitala isqudopa teyanni*). He further described to the trainees the difference between consonants and vowels by explaining that vowels can be long (*ideri*) and consonants tense (*ikokkoki*). I will discuss the use of the Konso terms for referring to phoneme quantity in more detail in Chapter 6.

In another teacher training worshop in Daka Deri, when I was discussing consonants and vowels with the Konso literacy coordinator (20.9.18), he said that in his experience, understanding the nature of consonants and vowels was the most important pre-requisite for learning alphabetic literacy skills. He described an incident from the training in Daka Deri when the trainees had been divided into groups according to their level, and one of the trainers (28WS14) had explained to the group of slow learners how each CV fidel consists of a consonant and a vowel, and how the sound of each of the two components are produced. The explanation had been very helpful for some of the trainees, to the point that after the session they had announced that they no longer needed to be in the group of slow learners. They wanted to join a more advanced group because they now understood what they needed to know in order to follow the teaching there.

5.2 Deleting a consonant phoneme

To examine the participants' phonemic awareness in more detail, oral phoneme deletion tests were included in the data set. The test type is explained in Section 4.4.2.1 and the test items are presented in Appendix 8. The purpose of the tests was to find out whether the participants could delete consonant phonemes from words, and to what extent their ability to delete consonants from different word positions was related to the Konso abugida sound-symbol correspondences. I assumed that deleting a word-medial, syllable-final consonant would be easier than deleting a syllable-initial consonant, because in terms of abugida writing, a final deletion equals deleting a whole fidel (e.g. *paRka* ፐርክ without *r, paka* ፐክ), whereas an initial deletion results in more changes in the written form of the stimulus (e.g. *parKa* ፐርክ without *k, para* ፐረ and *Poyta* ፖይተ without *p, oyta* ኦይተ). If the assumption was correct, it would suggest that, although doing the task orally, the participants would process it through abugida writing.

Below I first examine the results of the first consonant deletion task (Test 1), which the participants did at the beginning and at the end of the initial workshops in the summer of 2015, and which five participants did again while serving as trainers in the second initial workshop and while attending the follow-up workshop in February 2016. I then move on to examine the results of the other

two consonant deletion tasks (Tests 2 and 3), which were carried out in the follow-up workshop. Finally, I compare the results from the tests and draw overall conclusions from all of them.

5.2.1 Consonant deletion Test 1

All together 13 participants in the first workshop (Workshop 1) and 10 participants in the second workshop (Workshop 2) did the first oral consonant deletion test twice during the two-week training. One participant (20WS1) found the test too difficult in the first round of testing and could not respond. I therefore report the results of only the 22 participants who did the test twice during the workshops. All of them did the test for the first time on Day 1 of the workshop (Round 1). The participants in Workshop 1 did the test for the second time (Round 2) on Day 9, and the participants in Workshop 2 on Day 8.

Sub-research question I: Are the participants able to delete single consonant phonemes from words, and are there differences in the difficulty of deleting consonants from different word positions depending on the corresponding abugida sound-symbol correspondences?

The results indicated that the participants had difficulty in the task of deleting a single consonant phoneme from a word and constructing the correct response from the remaining phonemes. The proportion of correct responses in Round 1 was 55.6%, and in Round 2 it was 66.7%. The results are presented in Table 15.

TABLE 15 Results of consonant deletion Test 1, Rounds 1 and 2 (N=22)

	R1, No. of responses	%	R2, No. of responses	%
Correct	110	55.6%	132	66.7%
Incorrect	85	42.9%	64	32.3%
Missing*	3	1.5%	2	1.0%
Total	198		198	

*Three of the responses labelled as missing were uttered unclearly (in Round 1, two responses, and in Round 2, one response) and two were empty responses.

Counting the number of correct responses in each of the different task types also indicated differences in the difficulty of deleting a consonant phoneme from different word positions. The results showed that the most difficult of the three deletion tasks was the word-initial deletion and the easiest the word-medial, syllable-final deletion. The number of correct responses for each task type in the two rounds of testing are presented in Tables 16-18, and the percentages are summarised in Figure 1.

TABLE 16 Results of the word-initial deletion task, Test 1 (N=22)

	R1, No. of responses	%	R2, No. of responses	%
Correct	19	28.8%	31	47.0%
Incorrect	44	66.7%	33	50.0%
Missing*	3	4.5%	2	3.0%
Total	66		66	

*Three of the responses labelled as missing were uttered unclearly (in Round 1, two responses, and in Round 2, one response) and two were empty responses.

TABLE 17 Results of the word-medial, syllable-initial deletion task, Test 1 (N=22)

	R1, No. of responses	%	R2, No. of responses	%
Correct	54	61.4%	66	75.0%
Incorrect	34	38.6%	22	25.0%
Total	88		88	

TABLE 18 Results of the word-medial, syllable-final deletion task, Test 1 (N=22)

	R1, No. of responses	%	R2, No. of responses	%
Correct	37	84.1%	35	79.5%
Incorrect	7	15.9%	9	20.5%
Total	44		44	

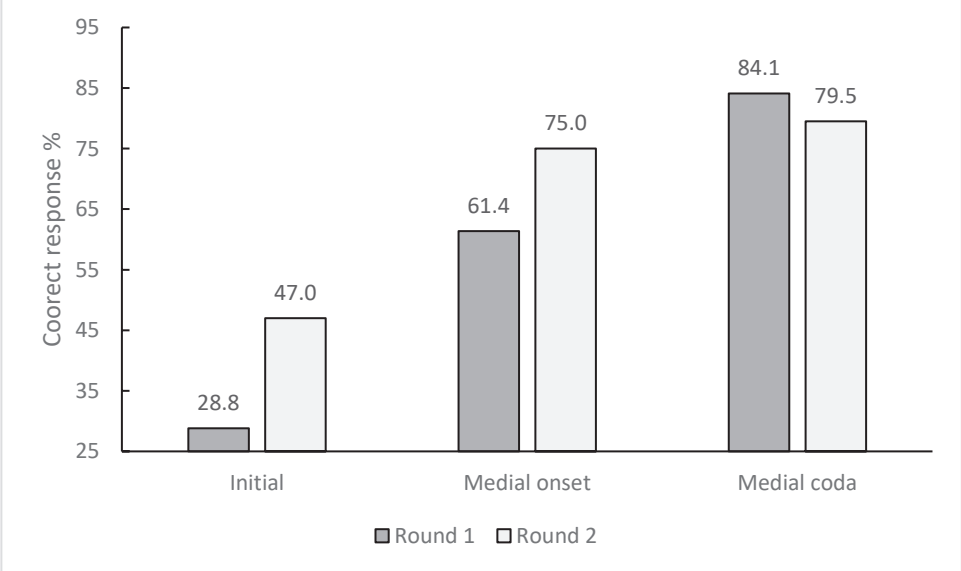

FIGURE 1 Percentages of correct responses in each type of consonant deletion task, Test 1, Rounds 1 and 2 (N=22)

The better performance in syllable-final deletion as compared to syllable-initial deletions was in line with expectations. As explained in Section 4.4.2.1, in terms of abugida writing, the syllable-final deletion is less complicated than both types of syllable-initial deletions, because deleting a syllable-final consonant is equivalent to simply deleting the sixth-order fidel, which in syllable-final position denotes a consonant phoneme alone. Syllable-initial deletions require more adjustments in the written form: deleting the syllable-initial consonant of a word-medial syllable is equivalent to deleting the final fidel of the stimulus and modifying the word-medial fidel to denote a different order of the same family, while deleting a word-initial consonant is equivalent to deleting the word-initial fidel and inserting a different fidel in its place.

Similar results for the relationship between orthography and readers' ability to delete phonemes from different word positions have been reported in Brahmi-derived scripts in India (Wali, Sproat, Padakannaya & Bhuvaneshwari, 2009). Based on earlier studies on the phonological awareness of Brahmi readers, reported by Padakannaya (2001, according to Wali et al., 2009) and by Sproat (2006), Wali et al. have postulated the *Minimal edit distance hypothesis* (MEDH). Applying the MEDH, the difficulty of a phoneme deletion can be calculated by the number of *editing operations* needed to transform a written stimulus into a correct, written response. The assumption behind the hypothesis is that readers of alphasyllabaries (i.e. abugidas) can carry out phoneme manipulation tasks in contexts where the script supports it. In testing the hypothesis, Wali et al. used data from Tamil, a Brahmi-derived script. The results supported the assumption of the MEDH. Similar results for the influence of the script have been reported from a phoneme deletion task in Telugu (Sailaja, 2007). A point to note is that in the Tamil test reported by Wali et al., the stimuli were given in written form, allowing direct visual processing of the task, which can be assumed to make written processing of the task more likely. In the Telugu test reported by Sailaja, the task was presented orally.

Applying the assumption of the MEDH to the Konso deletion tasks, the editing operations needed to transform the graphic forms of the three types of stimuli to the graphic forms of the correct responses are presented in Table 19. The English gloss of all the Konso words in Table 19 and in all the subsequent sections is given in Appendix 10.

TABLE 19 Editing operations in the three types of consonant deletion tasks

Type of task	Example	Stimulus in abugida spelling	Editing operations	Response	Response in abugida spelling
Word-medial, syllable-final deletion	*paRka* without r	ፕርክ	delete ር	*paka*	ፕክ
Word-medial, syllable-initial deletion	*parKa* without k	ፕርክ	delete ክ, modify ር to ረ	*para*	ፕረ
Word-initial deletion	*Poyta* without p	ፖይት	delete ፖ, insert ኦ	*oyta*	ኦይት

In terms of editing operations, a syllable-final deletion requires only one editing operation, whereas both types of syllable-initial deletions require two operations. Moreover, assuming that modifying an existing fidel is easier than inserting a different fidel, the results were in line with the MEDH: of the three different types of deletion tasks, a syllable-final deletion was the easiest, and of the two syllable-initial deletions, a word-medial deletion was easier. However, the difference between the difficulty of deleting a syllable-initial consonant from a word-medial position and from a word-initial position cannot be explained by the MEDH alone, given the big difference in the results.

Sub-research question II: Do the participants' skills in deleting a consonant phoneme from a word change during the transfer literacy learning process?

As can be seen from Table 15, there was some improvement in the participants' performance between Round 1 and Round 2. This could be attributed to the participants' growing understanding of the fact that the alphabetic orthography denotes each phoneme with a symbol of its own. However, only 66.7% of the responses in Round 2 were correct, which indicates that after two weeks of training, the participants still found consonant deletion difficult.

Looking at the participants' performance in each of the three different deletion types, the results revealed that the syllable-final deletion had not improved in Round 2, but in both rounds the participants were better able to delete a syllable-final consonant than a syllable-initial consonant (Tables 16-18). As regards the two types of syllable-initial deletions, the results of the word-medial deletion task had improved by 13.6% (i.e. from 61.4% to 75.0% correct responses) and of the word-initial deletion task by 18.2% (i.e. from 28.8% to 47.0% correct responses).

Five of the participants of Workshop 1 who were trainers in Workshop 2 did the test for a third time at the end of Workshop 2 (Round 3) and for a fourth time during the follow-up workshop six months later (Round 4). Their performance in the different rounds of testing indicated that the word-initial deletion

remained difficult throughout the testing period, whereas the results of the word-medial onset deletion improved (Table 20).

TABLE 20 Number of correct responses in the consonant deletion tasks, Test 1, Rounds 1-4 (N=5)

Type of task	R1, No. of correct responses	R2, No. of correct responses	R3, No. of correct responses	R4, No. of correct responses
Word-initial deletion (max 15)	4	6	7	5
Word-medial, syllable-initial deletion (max 20)	13	15	17	18
Word-medial, syllable-final deletion (max 10)	9	9	8	10
Total (max 45)	26	30	32	33

Sub-research question III: What kinds of errors do the participants make in consonant deletion tasks, and what do the errors reveal about the relationship between the participants' phonemic awareness and the Konso abugida sound-symbol correspondences?

An error analysis of the incorrect responses in the word-initial and word-medial, syllable-initial deletion tasks revealed that in most of the incorrect responses the participants failed to separate the adjacent vowel from the consonant to be deleted. The syllable-final deletions contained too few errors for it to be possible to find patterns and categorise the error types, so the syllable-final deletion was not included in the error analysis.

In word-initial deletions the failure to separate the adjacent vowel from the preceding consonant resulted in the following types of errors:

- In the CV.CV stimuli (*Mana* መነ, *Kela* ኬለ)
    - deleting the word-initial CV syllable; the error is equivalent to deleting the first fidel (e.g. *Mana->*na* ነ)
    - metathesis; reversing the order of the two CV syllables (i.e. the fidels) of the stimulus (e.g. *Mana->nama* ነመ)
- In the CVC.CV stimulus (*Poyta* ፖይተ)
    - deleting the word-initial CVC (i.e. the closed syllable); the error is equivalent to deleting two fidels of the three-fidel word (i.e. *poyta->*ta* ተ)
    - deleting the word-initial CV sequence; the error is equivalent to deleting the word-initial fidel and adding the vowel /i/ or the vowel /o/ to the coda consonant (i.e. *Poyta->*yita* ይተ, **yota* ዮተ), the latter containing also a metathesis

The error types described above accounted for around 70.5% of all errors in the word-initial deletion task in Round 1 (i.e. 31 of 44 errors) and around 54.5% of the errors in Round 2 (i.e. 18 of 33 errors). These types of errors accounted for almost half of all the responses in Round 1 (49.2%), but in Round 2 this was reduced to 28.1% of all responses. Other types of errors were classified as miscellaneous, as no clear patterns were found between individual errors. The results of the error analysis are presented for each stimulus in Tables 21 and 22 for Rounds 1 and 2, respectively.

TABLE 21 Results of the error analysis, word-initial deletion task, Test 1, Round 1 (N=22)

Stimulus	Correct response	Failure to separate C and V	No. of errors where C and V not separated (% of all responses)	Total no. of errors (%)	Total no. of responses
Mana	*ana*	**na*	7	11	19
		nama	2		
Kela	*ela*	**la*	11	15	22
Poyta	*oyta*	**ta*	4	18	22
		**yita*	4		
		**yota*	3		
Total			31 (49.2%)	44 (69.8%)	63

TABLE 22 Results of the error analysis, word-initial deletion task, Test 1, Round 2 (N=22)

Stimulus	Correct response	Failure to separate C and V	No. of errors where C and V not separated (% of all responses)	Total no. of errors (%)	Total no. of responses
Mana	*ana*	**na*	4	8	21
Kela	*ela*	**la*	8	12	21
Poyta	*oyta*	**ta*	3	13	22
		**yita*	3		
Total			18 (28.1%)	33 (51.6%)	64

In the word-medial, syllable-initial deletions, the failure to separate the adjacent vowel from the consonant to be deleted resulted in deleting the final CV sequence or replacing it with the vowel /i/. In terms of abugida writing, both errors are equivalent to deleting the word-final CV fidel. The error type can be interpreted in terms of the MEDH, as the erroneous response required only one editing operation, as demonstrated below,[26] while the correct response required two editing operations.

parKa ፐርክ delete ክ **par* ፐር
parKa ፐርክ delete ክ **pari* ፐር

These types of errors are presented in Tables 23 and 24. In Round 1, twenty out of 34 errors, that is, about 58.8% of the errors, included a failure to separate the adjacent vowel from the preceding consonant, and in Round 2 the corresponding figures were 13 out of 22 erroneous responses (59.1%). However, there was a difference in the percentages of these types of errors in Round 1 and Round 2: in Round 1 they occurred in 22.7% of all responses, whereas in Round 2 they occurred only in 14.8% of all responses.

TABLE 23 Results of the error analysis, word-medial, syllable-initial deletion task, Test 1, Round 1 (N=22)

Stimulus	Correct response	Failure to separate C and V	No. of errors where C and V not separated (% of all responses)	Total no. of errors (%)	Total no. of responses
kalTa	*kala*	**kal*	3	12	22
		**kali*	4		
karMa	*kara*	**kar*	1	5	22
		**kari*	1		
damTa	*dama*	**dam*	2	9	22
		**dami*	2		
		**da*	2		
parKa	*para*	**par*	1	8	22
		**pari*	4		
Total			20 (22.7%)	34 (38.6%)	88

[26] Exceptions to this are the two erroneous responses for *damTa* ድምተ as **da* (see Table 23), which required two editing operations to delete both ተ and ም.

TABLE 24 Results of the error analysis, word-medial, syllable-initial deletion task, Test 1, Round 2 (N=22)

Stimulus (R2)	Correct response	Failure to separate C and V	No. of errors where C and V not separated (% of all responses)	Total no. of errors (%)	Total no. of responses
kalTa	*kala*	**kal*	1	8	22
		**kali*	2		
karMa	*kara*	**kar*	1	3	22
		**karri*	1		
damTa	*dama*	**dam*	2	3	22
		**dami*	1		
parKa	*para*	**par*	3	8	22
		**pari*	2		
Total			13 (14.8%)	22 (25.0%)	88

The results of the error analysis revealed that in both types of syllable-initial deletion the participants had difficulty separating the consonant and the vowel attached to it and written with one (CV) fidel, so they either deleted both, or, in the initial deletions where the stimulus included only open syllables, moved the initial CV sequence after the final CV. Therefore, their processing of the deletion test seemed to be heavily influenced by abugida writing. Throughout the data collecting period, when trainees practised phoneme deletion tasks, I observed similar patterns in the errors they made.

5.2.2 Consonant deletion Tests 2 and 3

The consonant deletion test in the initial workshops (Test 1) was very short, but the results pointed to a clear difference in the difficulty of deleting a consonant in different word positions. Therefore, to get more data on this matter, I composed two additional consonant deletion tests for the February 2016 follow-up workshop (Test 2 and Test 3, see Appendix 8). As the results of Test 1 had indicated that word-medial, syllable-final consonant deletion was easier than word-medial, syllable-initial deletion, Test 2 compared the two types of word-medial deletions to find out if a similar difference in the relative difficulty of the two task types would be found again. Test 3 included only word-initial deletions. The aim of Test 3 was to get more data on the types of errors the participants made in word-initial deletions in order to examine the relationships between the errors and abugida writing.

Twenty-three participants in the follow-up workshop did the tests at the beginning of the workshop. The results of Test 2 were similar to the results of Test 1, giving further evidence of the relative ease of deleting a syllable-final consonant as compared to deleting a syllable-initial consonant. As with Test 1, the

difference between the two task types was small. The results are shown in Table 25.

TABLE 25 Results of the word-medial consonant deletion test (Test 2) in the follow-up workshop (N=23)

	Syllable-final deletion (%)		Syllable-initial deletion (%)	
Correct	72	(78,3%)	61	(66,3%)
Incorrect	20	(21,7%)	31	(33,7%)
Total	92		92	

Likewise, the results of Test 3 were similar to the results of Test 1 as regards the difficulty of a word-initial consonant deletion. Only 28.3% of the responses were correct. The results of the error analysis were also similar to the corresponding results of Test 1, and 65.4% of the errors were due to failure to separate the adjacent vowel from the consonant to be deleted (i.e. 53 erroneous responses out of the total of 81 errors). The erroneous responses therefore tended to follow the same three patterns as in Test 1: they included the final CV syllable alone (e.g. *buubba* ጹጹ -> **ba* ጳ), or they included a reversal of the two CV syllables in CV.CV stimuli (e.g. *jaqa* ጨቀ -> **qaja* ቀጨ), or they included a deletion of the word-initial CV fidel and the addition of a vowel to the coda consonant in CVC.CV stimuli (e.g. *loqta* ሎቅተ -> **qita* ቅተ). The number of errors of these types for each item are presented in Table 26. As in Test 1, the remaining errors were of different types, and it was impossible to identify a unifying pattern between them.

TABLE 26 Results of the error analysis of the word-initial deletion test (Test 3) in the follow-up workshop (N=23)

Stimulus	Correct response	Failure to separate C and V	No. of errors where C and V not separated (% of all responses)	Total no. of errors (%)	Total no. of responses
Buubba	**uubba*	**ba*	10	11	21
Maxxa	**axxa*	**xa*	12	17	23
		**xama*	2		
Jaqa	**aqa*	**qa*	7	15	23
		**qaja*	1		
Xarsha	**arsha*	**sha*	4	20	23
		**risha*	9		
Loqta	**oqta*	**ta*	1	18	23
		**qita*	3		
		**qota*	4		
Total			53 (46.9%)	81 (71.7%)	113

5.2.3 The overall results of the consonant deletion tests, and further observations

The results of the three oral consonant deletion tests indicated that deleting a word-medial, syllable-final consonant was the easiest of the three types of deletion tasks. Of the two types of syllable-initial deletions, the word-medial deletion was easier than the word-initial deletion.

The results were in line with my expectations and suggested that the participants' processing of the deletion tasks was influenced by Konso abugida spelling conventions, even though the tests were carried out orally. As a syllable-final consonant is written with a fidel of its own, it was easier to delete it than to delete a syllable-initial consonant, which is written with the adjacent vowel as a CV symbol. The result was also in line with the MEDH, proposed by Wali et al. (2009), which assumes a close link between abugida readers' phonemic awareness and abugida sound-symbol correspondences.

The results also indicated a noticeable difference in the difficulty of deleting a syllable-initial consonant in word-medial position and in word-initial position. Unlike the finding that it was relatively easy to carry out a syllable-final deletion, this result was unexpected, and cannot be interpreted as caused by the influence of abugida writing only. Additional reasons for the relative ease of deleting the word-medial consonant can be sought in Konso morphology. As noted in Section 2.3.2, the inventory of Konso inflectional and derivational affixes includes single consonants as infixes and suffixes, but not as prefixes (e.g. *ikala* 'he will return' vs. *ikalta* 'she will return' and *alawa* 'brother' vs. *alawta* 'sister'). It is therefore possible that the structure of the language influenced Konso speakers' ability to manipulate phonemes, making it easier to delete a word-medial, syllable-initial consonant than a word-initial consonant. This assumption is in line with earlier studies on the influence of morphology on mother-tongue spearkers' phonemic awareness (Durgunoğlu, 2006; Caravolas & Landerl, 2010). However, if morphological patterns play a major role in guiding Konso mother-tongue speakers' ability to manipulate phonemes in different word positions, a word-medial, syllable-initial deletion should be easier than a word-medial, syllable-final deletion. This is because Konso infixes typically represent syllable-initial consonants. (See Examples 5-8 in Section 2.3.2.)

An additional reason for the difficulty with a syllable-initial deletion may be attributed to the Konso abugida teaching method. As explained in Section 2.3.4, the teaching method was based on learning new fidels with the help of keywords beginning with the fidel to be learned. This might have made the participants' perception of the initial CV sequences so close that it was difficult for them to separate the C and the V particularly in a word-initial position. Earlier studies indicate that the teaching method influences the development of literacy learners' PA skills (e.g. Seymour, 2005; Wijaythilake et al., 2018). The results of all the three consonant deletion tests are summarised in Figure 2.

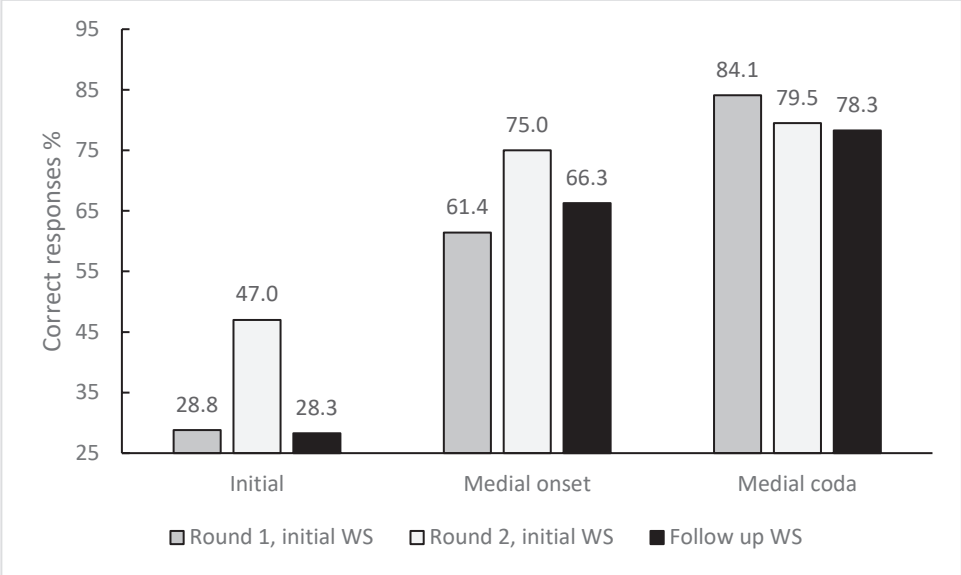

FIGURE 2 Percentages of correct responses in the three consonant deletion tasks

One problem related to the deletion tasks was the difficulty of pronouncing a consonant without producing a slight vowel sound when releasing the air. When telling the participant which consonant was to be deleted, I tried to release the air with as small a schwa or /i/-sound as possible, but this was difficult, especially for plosives, and the reactions of some of the participants in Round 1 indicated that they were confused because they also heard a vowel.

Because both the number of participants who did the tests and the number of stimuli in each test was very small, it is not possible to draw any far-reaching conclusions based on the results. However, in all the teacher training workshops during the data collecting period the trainees did phoneme deletion exercises which were similar to the tasks in the tests included in this study, and in every case, they struggled most with word-initial deletions. Similar results about the differences in the difficulty of a deletion task depending on the word position of the consonant to be deleted were obtained in another study, where a group of Konso farmers (N=32) did a comparable task with 27 stimuli (Ahlberg, Eklund, Otieno & Nieminen, 2019). It can be concluded that the results of the phoneme deletion tests call for more testing with a variety of words and pseudowords.

5.3 Phoneme discrimination

Phoneme discrimination tests were included in the data set with the aim of finding out about the participants' ability to distinguish phonemes as separate units in word-initial and word-final positions, and about the potential influence of abugida sound-symbol correspondences in this. To that end, both the word-initial and word-final phoneme discrimination tests contained four different kinds of word pairs in relation to the abugida sound-symbol correspondences (see Section 4.4.2.1 and Appendix 8). I assumed that identifying the initial or the final phoneme as the same or different would be easier if the abugida writing supported it. Therefore, if the two words to be compared began or ended with either the same or a different fidel, the task would be easier than if the words began or ended either with fidels belonging to the same family but representing different orders, or with fidels belonging to different families but representing the same order (for sample words see Tables 13-14).

All together, 48 participants (23 participants in Workshop 1 and 25 participants in Workshop 2) did the tests twice during the workshops. The tests were done for the first time at the beginning of the workshop on Day 1, before any teaching had taken place (Round 1), and for the second time in Workshop 1 on Day 8 and in Workshop 2 on Day 9 (Round 2). In addition, five participants of Workshop 1 did the word-initial discrimination test again when they worked as trainers in Workshop 2 (Round 3), and thirteen participants, including the five, still again six months later, during the follow-up workshop (Round 4).

Below, I first report the results of the word-initial discrimination test from Rounds 1 and 2 and examine the differences between the performance of the participants in the two workshops. I then present the results of the 13 participants who did the test more times, and report the results of the word-final discrimination test. I then compare the initial and the final discrimination tasks in relation to the abugida sound-symbol correspondences, and report further observations on the complication of phoneme discrimination tasks.

5.3.1 Word-initial phoneme

Sub-research question IV: Are the participants able to distinguish word-initial phonemes as separate units, and is difficulty in distinguishing the phoneme related to abugida sound-symbol correspondences?

The results of the two rounds of testing during the initial workshops indicated that the participants performed quite well in the task of distinguishing the initial phoneme. The mean score of the correct responses for the total of 22 stimuli was 17.67 (80.3%) with the standard deviation 4.17 in Round 1, and 19.54 (88.8%) with the standard deviation 4.08 in Round 2. A more detailed distribution of the correct responses is shown in Table 27.

TABLE 27 Distribution of correct responses in the initial phoneme discrimination task, Rounds 1 and 2 (N=48)

No. of correct responses (Max=22)	R1, No. of participants	R2, No. of participants
8-10	4	3
11-15	8	5
16-19	15	5
20-21	10	9
22	11	26

Comparing the number of correct responses for the different types of items revealed that regardless of the good overall perfomance, there were differences in the difficulty of identifying the initial phonemes as the same or as different, depending on how the stimuli were related to abugida writing. In both rounds of testing, the participants performed best in tasks where the two words in the word pairs began with the same fidel[27] (e.g. *nata - nama*; **ነተ - ነመ**) and the next best in tasks where the two began with a fidel from a different family and represented a different order (e.g. *kuta - mana*; **ኩተ - መነ**). In these two task types, a correct response coincided with abugida writing. The performance was lower in tasks where the two words in the word pair began with two fidels belonging to the same family but represented a different order (e.g. *takma - teyla*; **ተክመ - ቴይለ**) and in tasks in which the word pair began with a fidel belonging to a different family but represented the same order (e.g. *miisa - liilana*; **ሚሰ - ሊለነ**).[28] The results of the different task types are presented in Tables 28-29 and in Figure 3.

[27] The stimuli in which both words in the pair began with the same fidel included three consonant-initial word pairs and two vowel-initial word pairs. In Round 1, both types of word pairs elicited 93.8% correct responses. (Vowel-initial: Range 1-2; Mean 1.875; SD .334; Consonant-initial: Range 1-3; Mean 2.813; SD .491).
In Round 2 the consonant-initial word pairs elicited 97.2% correct responses (Range 1-3; Mean 2.917; SD .347) and the vowel-initial 93.8% (Range 0-2; Mean 1.875; SD .393).

[28] The stimuli in which the word pair began with a fidel belonging to a different family but represented the same order included four consonant-initial word pairs and four word pairs in which one word began with a vowel and the other with a consonant.
In Round 1 the word pairs where both words began with a consonant elicited 79.8% correct responses (Range 0-4; Mean 3.19; SD 1.142) and in word pairs where one word began with a vowel 73.5% (Range 0-4; Mean 2.94; SD 1.142).
In Round 2 the percentage of correct responses in word pairs in which both words began with a consonant was 83.6% (Range 0-4; Mean 3.33; SD 1.26) and in word pairs where one began with a vowel and one with a consonant 82.3% (Range 0-4; Mean 3.29; SD 1.22).

TABLE 28 Results of the initial phoneme discrimination task, Round 1 (N=48)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	5	2-5	4.69 (93.8%)	.719
Different fidel	4	0-4	3.44 (86.0%)	1.009
Same family, different order	5	0-5	3.42 (68.4%)	1.609
Different family, same order	8	1-8	6.13 (76.6%)	2.150
Total	22	8-22	17.67 (80.3%)	4.168

TABLE 29 Results of the initial phoneme discrimination task, Round 2 (N=48)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	5	2-5	4.79 (95.8%)	.617	+2%
Different fidel	4	2-4	3.81 (95.3%)	.532	+9.3%
Same family, different order	5	0-5	4.31 (86.2%)	1.274	+17.8%
Different family, same order	8	1-8	6.63 (82.9%)	2.393	+6.3%
Total	22	9-22	19.54 (88.8%)	4.084	+8.5%

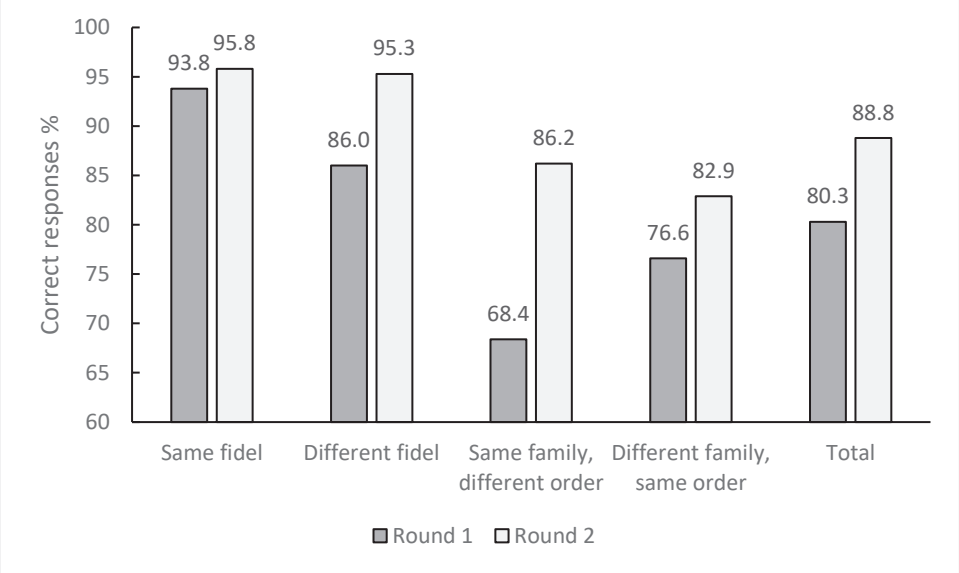

FIGURE 3 Percentages of correct responses in the initial phoneme discrimination task, Rounds 1 and 2 (N=48)

The number of items in each task type was small, and the differences between the participants' performance in the different tasks was also small. Therefore no far-reaching conclusions can be drawn based on these results. However, the slightly better performance in tasks where abugida spelling supported the correct response was in line with the assumption that the participants would be influenced by abugida writing when processing the task, and would interpreted the initial fidel as a unit representing the initial sound.

Sub-research question V: Do the participants' skills in word-initial phoneme discrimination change over the course of the transfer literacy learning process?

The overall results of the two rounds of testing, presented in Tables 28-29 and Figure 3, demonstrate that there was some improvement in participants' skills between Round 1 and Round 2. This was in line with the assumption that exposure to the Konso alphabetic orthography would improve the participants' understanding of phonemes as separate units. The biggest difference between the two rounds was in the task in which the initial fidels of the two words in a pair belonged to the same family but represented a different order. This suggested that the participants developed a better understanding of the word-initial consonant as a separate unit.

However, an incident which took place when the participants in Workshop 1 did the test for the second time showed up a difficulty they had in understanding consonants and vowels on equal terms, and their different conceptions of what was meant by a sound. According to the instructions for the task, they were to mark on a piece of paper whether the two words in each item began with the same or with a different sound. Even though practice items were done together before the test items (see Appendix 8), when the test began, there were participants who were confused. They were wondering whether they were supposed to distinguish a consonant from an initial CV sequence, or a vowel, or the whole CV sequence denoted by one fidel. I wrote in my diary:

> The phoneme discrimination task provoked a lot of discussion. When we told the participants to mark whether the two words they heard began with the same sound or with different sounds, (*nessa* ድምጽ[29]) many participants seemed to be very confused. Afterwards, when I discussed with 22WS1 [who was one of the people who were confused while doing the task], he claimed that I had said [earlier during the workshop] that 'a consonant cannot give a sound on its own' *nessa issin daanninco*, and according to him, he and a few other trainees from amongst those who normally perform well had concluded that *nessa* is a vowel.
> During the tea break [right after the task had been done in class] there was a lively dispute going on between the participants about the question, some claiming that a consonant was also a sound, *nessa* [and others that it was not]. I decided to use the opportunity this offered, and I continued the discussion in class after the break. Apparently, many people thought that only a vowel qualified as a phoneme [as the first sound]. My colleague wrote on the blackboard: *nama, para* [to illustrate that the consonant was also a unit of its own and thus qualified as the first sound]. 12WS123 would still not accept a consonant as a sound [and people were still confused].

[29] We used the Konso word *nessa,* which in everyday language is used for 'sound' and 'voice', and in addition to that the equivalent Amharic word ድምጽ while explaining the task to the participants.

> Then I wrote:
> **ነ-ፐ ነ-ኔ ፐ-ፔ**[30]
> and asked if **ነ** and **ፐ** belonged more closely together than **ነ** and **ኔ** or **ፐ** and **ፔ**. Everybody agreed that the latter **[ነ-ኔ**, and **ፐ-ፔ]** belonged more closely together. Then we described this by the [Amharic] expression: **አንድ ቤተሰብ ናቸው** 'they belong to one family'. It was at this point that people started to understand. (D080715)

After the participants saw on the blackboard the abugida fidels and realised how in terms of abugida writing fidels with the same consonant belonged to the same family, they understood what was meant by the initial sound in the discrimination task.

The misconception about an initial sound was reflected in some participants' responses. For example, two participants (23WS123 and 11WS12) who normally performed well in the classroom had correctly recorded the initial sound as different for word pairs which began with different fidels and as the same for word pairs which began with the same fidel. But apart from one response by 11WS12, they had both incorrectly recorded the initial sound as the same for word pairs in which the initial fidels of the words belonged to a different family but represented the same order (e.g. *miisa - liilana*; **ሚሰ - ሊለነ**) and as different for word pairs in which the initial fidel belonged to the same family but represented a different order (e.g. *takma - teyla*; **ተክመ - ቴይለ**). The responses followed the logic which 22WS1 had explained to me in the conversation reported above, in other words, they had interpreted the vowel to be the initial sound (see Table 30). 22WS1 himself had responded correctly to all items, even though he had first been confused when the instructions for doing the test were given.

TABLE 30 The number of correct responses of 23WS123 and 11WS12 in the initial phoneme discrimination task, Round 2

Type of task	23WS123	11WS12
Same fidel	5/5	5/5
Different fidel	4/4	4/4
Same family, different order	0/5	0/5
Different family, same order	0/8	1/8

Judging from the consistency of the responses of 23WS123 and 11WS12, they had understood that CV fidels included two components. However, they did not interpret the components as equal, or realise that both vowels and consonants are referred to as sounds. The participants' confusion regarding the instructions for the discrimination task and the variety of ideas they had about the meaning of "initial sound" reflects the difficulty of processing phonological units apart from through the conventional sound-symbol correspondences of a familiar orthography.

Similar challenges were revealed in the participants' answers to the open questions reported in Section 5.1, as they wrote that it was difficult to divide abugida fidels into two symbols (e.g. Quote 5). In the same way, the results of the

[30] **ነ** /na/; **ፐ** /pa/; **ኔ** /ne/; **ፔ** /pe/

consonant deletion tests (Section 5.2) indicated that deleting a syllable-initial consonant, written with the same abugida fidel with an adjacent vowel, was more difficult than deleting a syllable-final consonant, written with a fidel of its own. These findings indicate that abugida readers view consonants and vowels as a unit.

Because of the confusion in Workshop 1 when the participants did the task for the second time, I compared the results of the initial discrimination test in Workshops 1 and 2. The comparison showed that the participants' performance in Workshop 2 had improved from 78.7% of correct responses in Round 1 to 94.4% in Round 2, while the performance of the participants in Workshop 1 was almost the same in the two rounds of testing (see Tables 31-34 Figures 4-5).

TABLE 31 Results of the initial phoneme discrimination task, Workshop 1, Round 1 (N=23)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	5	2-5	4.83 (96.6%)	.650
Different fidel	4	1-4	3.57 (89.3%)	.896
Same family, different order	5	0-5	3.43 (68.6%)	1.805
Different family, same order	8	1-8	6.22 (77.8%)	2.486
Total	22	9-22	18.04(82.0%)	4.467

TABLE 32 Results of the initial phoneme discrimination task, Workshop 1, Round 2 (N=23)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	5	2-5	4.61 (92.2%)	.839	-4.4%
Different fidel	4	2-4	3.65 (91.3%)	.714	+2.0%
Same family, different order	5	0-5	4.09 (81.8%)	1.593	+13.2%
Different family, same order	8	0-8	5.87 (73.4%)	3.005	-4.4%
Total	22	9-22	18.22 (82.8%)	5.266	+0.8%

TABLE 33 Results of the initial phoneme discrimination task, Workshop 2, Round 1 (N=25)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	5	2-5	4.56 (91.2%)	.768
Different fidel	4	0-4	3.32 (83.0%)	1.108
Same family, different order	5	0-5	3.4 (68.0%)	1.443
Different family, same order	8	1-8	6.04 (75.5%)	1.837
Total	22	8-22	17.32 (78.7%)	3.934

TABLE 34 Results of the initial phoneme discrimination task, Workshop 2, Round 2 (N=25)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	5	4-5	4.96 (99.2%)	.200	+8.0%
Different fidel	4	3-4	3.96 (99.0%)	.200	+16.0%
Same family, different order	5	2-5	4.52 (90.4%)	.872	+22.4%
Different family, same order	8	3-8	7.32 (91.5%)	1.376	+16.0%
Total	22	14-22	20.76 (94.4%)	2.006	+15.7%

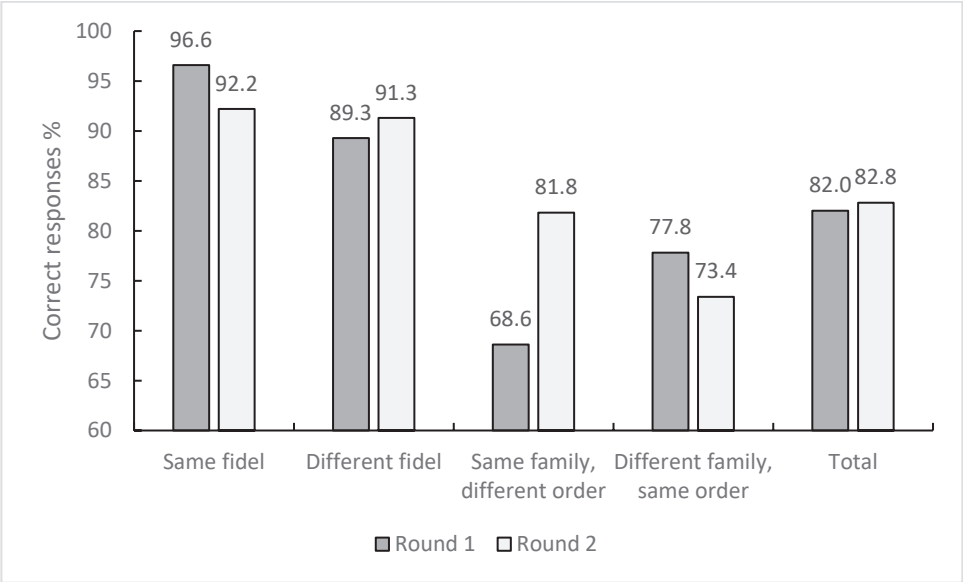

FIGURE 4 Percentages of correct responses in the initial phoneme discrimination task, Workshop 1, Rounds 1 and 2 (N=23)

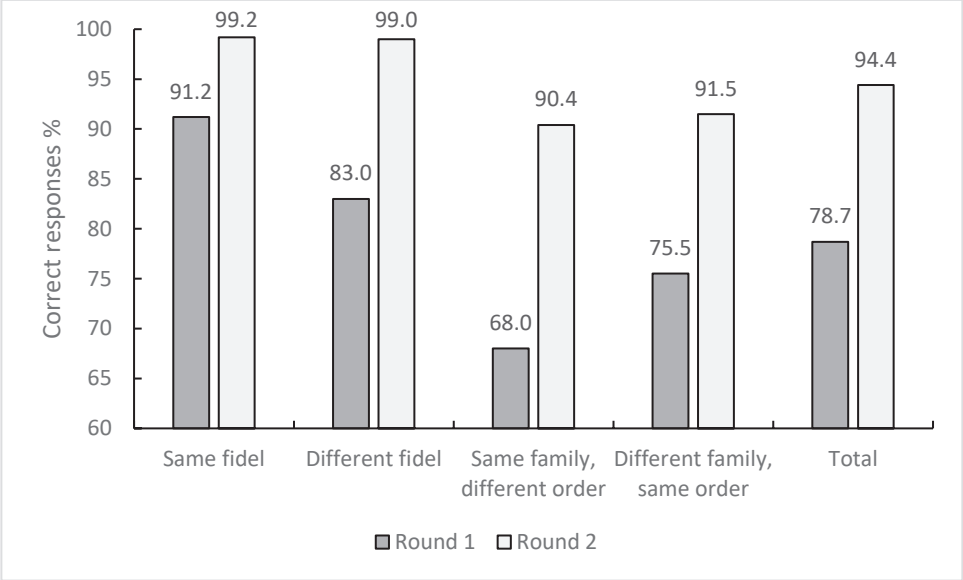

FIGURE 5 Percentages of correct responses in the initial phoneme discrimination task, Workshop 2, Rounds 1 and 2 (N=25)

The better performance in Workshop 2 can be attributed at least partly to the confusion experienced in Workshop 1. All the trainers in Workshop 2 had attended Workshop 1 as trainees, so they remembered the incident. Because of this, they were better able to explain to the participants in Workshop 2 how the phoneme discrimination task was to be done. The participants in Workshop 2 were also given an additional phoneme discrimination exercise during the training. When they were doing the exercise, I wrote in my diary:

> One of the trainers had the participants do the phoneme discrimination exercise. Some participants who normally perform well had a problem understanding that a consonant is *nessa*. But how nice to see how the trainers have learned this and explain it well. Some of the students also understand it well. (D300715)

The diary note indicated that the participants in Workshop 2 also struggled with the idea of a consonant as the initial sound, but since the trainers had learned how to explain that the concept of the initial sound referred to both vowels and consonants, it was not difficult for the trainees to identify whether a word-initial phoneme was the same or different.

Six months later, in the follow-up training workshop, when the participants were doing a phoneme discrimination exercise, I wrote in my diary:

> Discriminating initial and final sounds does not seem to be a problem at all for those who know – or were present in the summer workshops [in Workshop 1 or Workshop 2]. (D020216)

My observation was supported by the results of the same phoneme discrimination test when a smaller number of participants did it again more times. Five participants who worked as trainers in Workshop 2 did the test for the third time during the workshop (Round 3), and thirteen participants, including the five, did

it again during the follow-up workshop six months later (Round 4). Four of these participants had already scored the maximum number of points (22/22) when they did the task for the first time, and the performance of the others improved gradually. The number of correct responses for each of the thirteen participants in all the rounds of testing are presented in Table 35.

TABLE 35 Number of correct responses in the initial phoneme discrimination task, Rounds 1-4

Code of the participant	R1 (beginning of WS 1 or WS2)	R2 (end of WS 1 or WS2)	R3 (trainers of WS 2)	R4 (follow-up training)
13WS1234	22	22	22	22
15WS1234	22	22	22	22
12WS123	22	12	22	22
18WS1234	16	22	21	22
25WS1234	10	11	20	18
55WS23	22	22	-	22
30WS23	21	22	-	22
43WS23	21	22	-	22
57WS23	19	21	-	21
27WS123	10	9	-	22
45WS23	16	20	-	22
2WS14	13	22	-	22
37WS23	12	19	-	21

5.3.2 Word-final phoneme

Sub-research question VI: Are the participants able to distinguish word-final phonemes as separate units, and is difficulty in distinguishing the phoneme related to abugida sound-symbol correspondences?

Turning to the task of distinguishing the word-final phoneme, the results of both rounds of testing indicated that the task was easy. The mean score of the correct responses for the total of 12 stimuli was 10.60 (88.3%) in Round 1, and 10.83 (90.3%) in Round 2. The distribution of the correct responses is shown in more detail in Table 36.

TABLE 36 Distribution of correct responses in the final phoneme discrimination task, Rounds 1 and 2 (N=48)

No. of correct responses (Max 12)	No. of participants, R1	No. of participants, R2
4-6	6	4
7-9	4	5
10-11	8	8
12	30	31

As could be expected from the good overall performance, the differences in difficulty of the four task types were small. However, according to the results, the task in which the final fidel in both words in the word pair was the same was the easiest of the four task types. This result was in line with the assumption about the ease of identifying the final sound as the same when supported by abugida writing. The results of the different task types from both rounds of testing are presented in Tables 37-38 and in Figure 6.

TABLE 37 Results of the final phoneme discrimination task, Round 1 (N=48)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	3	0-3	2.81 (93.7%)	.571
Different fidel	2	0-2	1.73 (86.5%)	.574
Same family, different order	4	0-4	3.52 (88.0%)	.989
Different family, same order	3	0-3	2.54 (84.7%)	.967
Total	12	4-12	10.60 (88.3%)	2.377

TABLE 38 Results of the final phoneme discrimination task, Round 2 (N=48)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	3	2-3	2.96 (98.7%)	.202	+5.0%
Different fidel	2	0-2	1.83 (91.5%)	.476	+5%
Same family, different order	4	0-4	3.46 (86.5%)	1.091	-1.5%
Different family, same order	3	0-3	2.58 (86.0%)	.767	+1.3%
Total	12	5-12	10.83 (90.3%)	1.938	+2.0%

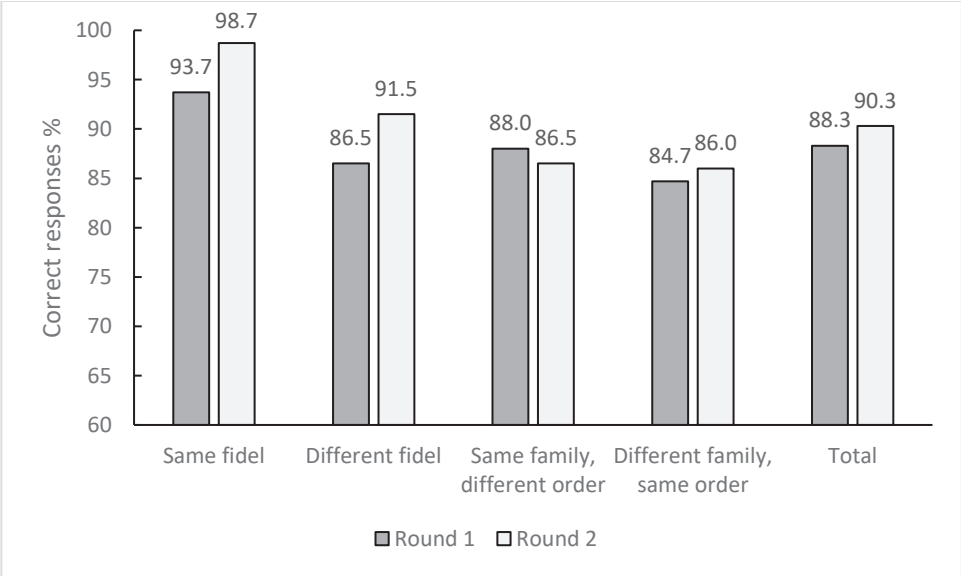

FIGURE 6 Percentages of correct responses in the final phoneme discrimination task, Rounds 1 and 2 (N=48)

Sub-research question VII: Do the participants' skills in word-final phoneme discrimination change over the course of the transfer literacy learning process?

As the participants already performed well in Round 1, there was not much room for improvement in Round 2. Consequently, the mean scores of the correct responses in the two rounds were very close (Tables 37-38). However, because of the confusion over the task of distinguishing the initial phoneme in Round 2 during Workshop 1, I compared the performance of the participants in Workshops 1 and 2 also in the task of distinguishing the final phoneme. The comparison revealed that, as in the task of distinguishing the initial phoneme, the participants' performance in Workshop 1, Round 2, was also poorer in the task of distinguishing the final phoneme. Moreover, while the performance of participants in Workshop 2 had improved in Round 2, the performance of participants in Workshop 1 was slightly better in Round 1 than in Round 2 (Tables 39-42 and Figures 7-8).

TABLE 39 Results of the final phoneme discrimination task, Round 1, Workshop 1 (N=23)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	3	0-3	2.74 (91.3%)	.752
Different fidel	2	0-2	1.78 (89.0%)	.518
Same family, different order	4	0-4	3.35 (83.8%)	1.152
Different family, same order	3	0-3	2.48 (82.7%)	.994
Total	12	4-12	10.35 (86.3%)	2.604

TABLE 40 Results of the final phoneme discrimination task, Round 2, Workshop 1 (N=23)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	3	2-3	2.91 (97.0%)	.288	+5.7%
Different fidel	2	0-2	1.74 (87.0%)	.619	-2.0%
Same family, different order	4	0-4	3.04 (76.0%)	1.430	-7.8%
Different family, same order	3	0-3	2.43 (81.0%)	.843	-1.7%
Total	12	5-12	10.13 (84.4%)	2.367	-1.9%

TABLE 41 Results of the final phoneme discrimination task, Round 1, Workshop 2 (N=25)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD
Same fidel	3	2-3	2.88 (96.0%)	.332
Different fidel	2	0-2	1.68 (84.0%)	.627
Same family, different order	4	1-4	3.68 (92.0%)	.802
Different family, same order	3	0-3	2.60 (86.7%)	.957
Total	12	5-12	10.84 (90.3%)	2.173

TABLE 42 Results of the final phoneme discrimination task, Round 2, Workshop 2 (N=25)

Type of task	No. of items	Observed range of correct responses	Mean (%)	SD	Difference with R1
Same fidel	3	3	3 (100%)	.000	+4.0%
Different fidel	2	1-2	1.92 (96.0%)	.227	+12.0%
Same family, different order	4	3-4	3.84 (96.0%)	.374	+4.0%
Different order, same family	3	1-3	2.72 (90.7%)	.678	+4.0%
Total	12	8-12	11.48 (95.7%)	1.159	+5.4%

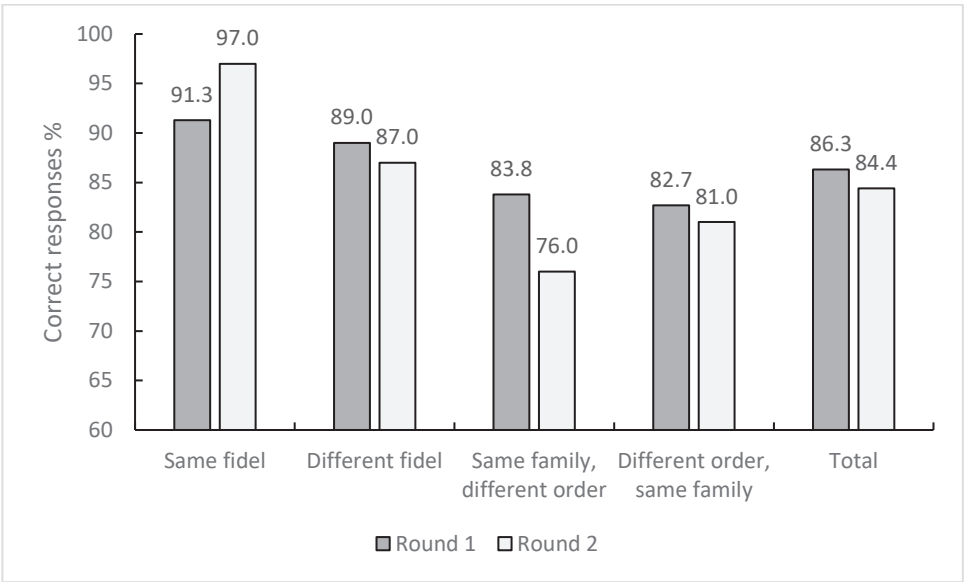

FIGURE 7 Percentages of correct responses in the final phoneme discrimination task, Workshop 1, Rounds 1 and 2 (N=23)

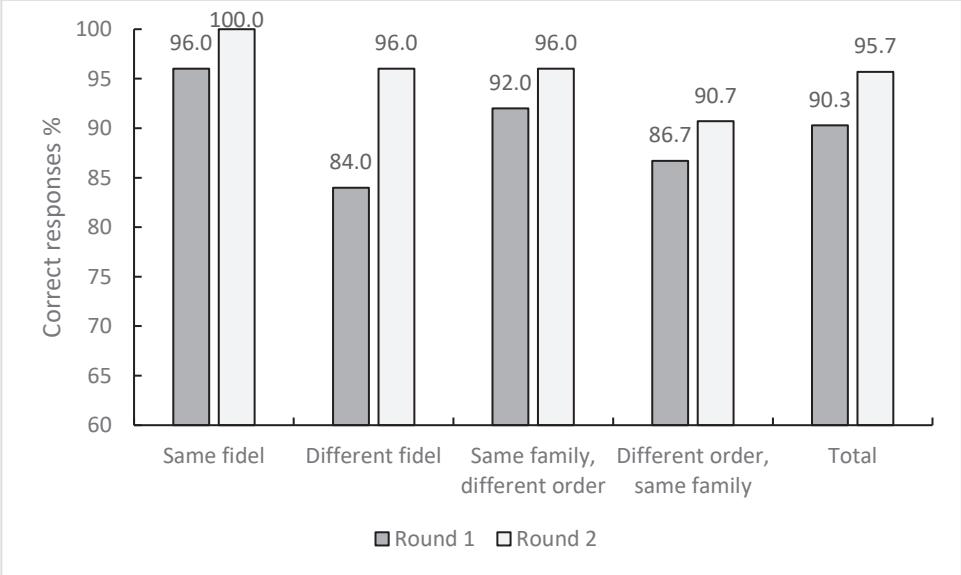

FIGURE 8 Percentages of correct responses in the final phoneme discrimination task, Workshop 2, Rounds 1 and 2 (N=25)

The lack of improvement in the results for Workshop 1 can be attributed to the confusion about the instructions for the task and the different interpretations given to the concept of a sound by different participants. However, if the participants had interpreted a sound to refer to vowels but not to consonants while doing the word-final task, they would have responded correctly to all items.

Another point worth making is that, given that the word-initial discrimination task involved predominantly consonants while the word-final task involved only vowels, if an abugida reader processed the task through fidels, the two tasks were quite different. In the follow-up workshop, when we discussed the literacy teachers' experience of the difficulty of the phoneme discrimination tasks, one participant (12WS123) said that in his experience, distinguishing a final phoneme was easier than distinguishing an initial phoneme.

In addition to the differences between the initial and final discrimination tasks in relation to consonant and vowel sounds as well as to abugida writing, it is possible that the morphological structure of the Konso language makes Konso mother-tongue speakers more alert to the endings of words than to the beginnings. Word-final vowels frequently carry grammatical functions such as aspect (e.g. *ikala* 'he will return' and *ikale* 'he returned'), and it is possible that this characteristic of the language has made distinguishing a word-final phoneme easier for them than distinguishing a word-initial phoneme. Findings about the effects of morphology on speakers' phonemic awareness in Turkish (Durgunoğlu, 2006) as well as Czech and German (Caravolas & Landerl, 2010) support this view.

5.3.3 The difficulty of perceiving a consonant and a vowel on equal terms

In interpreting the results of the phoneme discrimination tasks, it is important to note that the number of stimuli in all the different types of items was small and that for the responses there were only two alternatives, which left a 50% possibility of a chance correct response. In addition, in many of the stimuli for distinguishing the initial phoneme and in all the stimuli for distinguishing the final phoneme, the CV fidel in focus was also a CV syllable. Because of this, in items where the correct response was the same phoneme, the respondent could also come up with the correct response by processing the task in terms of the equivalent syllables. All of this means that no firm conclusions about the participants' ability to distinguish phonemes can be based on these results.

More revealing than the numerical results were in fact the participants' reactions while they were doing the task. The confusion in Workshop 1 when the participants did the task for the second time indicated the difficulty for an abugida reader of perceiving consonants and vowels on equal terms, without considering the other phoneme represented by the same abugida fidel. Their reactions indicated that they were processing the task through abugida sound-symbol correspondences, even if they understood that the fidels included two components.

When I was observing the transfer literacy training for teachers during the later data collecting phases in 2017 and 2018 (Phases 3 and 4, see Section 4.2), phoneme discrimination tasks had been adopted as an exercise type in the training programme. Contrary to my experiences during Workshop 2 and the follow-up training six months later about the ease of the discrimination tasks after the terminology issue had been dealt with, when the trainees were doing the exercises, the difficulty of considering both vowels and consonants on equal terms was still quite evident. This shows that, the phoneme discrimination tasks continued to be difficult, and there were occasions when both the trainer and the trainees were confused. On one such occasion, during the teacher training workshop in Faasha, I wrote in my diary:

> One of the trainers led a phoneme discrimination exercise… But he had understood that in both the initial and the final task the consonant of the CV fidel was the component to pay attention to, thus assuming that for example *-ta* and *-to* ended with the same sound… I stepped in to explain. The trainees seemed to find this rather complicated. Nobody got all the responses correct. (D250717)

Part of the problem was that the task of distinguishing the final phoneme was always done immediately after the task of distinguishing the initial phoneme, and the two task types had become confused in the minds of the trainees. In the initial discrimination task, the trainees had to learn to pay attention to the family of the fidels, but when moving on to the final task, they had to pay attention to the order of the fidels. This sudden switch made the tasks more complicated, and it was difficult for the trainees to handle the two components of an abugida fidel as separate, but equal components in a word.

On another occasion, which I documented a year later during the teacher training workshop in Daka Deri, a trainer who was leading a phoneme discrimination exercise took the same view as some of the participants in Workshop 1, and interpreted the vowel of the CV sequence in focus as the phoneme to be considered. Another trainer stepped in to correct the misconception, but he had developed his own way of describing the relationships between sounds and symbols to transfer learners. I wrote in my diary:

> One of the trainers led the phoneme discrimination exercise. He misinterpreted the vowel as the first phoneme and explained that in *siina* and *kiisa* the first sound was the same, but in *dikla* and *damta* it was different. 28WS14 stood up to correct the mistake… and explained that *K* is *nessa*, *KA* is a *fidel*, and only *A* can be a fidel on its own. (D180918)

The explanation given by 28WS14 regarding the terms *nessa* and *fidel* is illustrative of the challenge in transfer literacy teaching: how can teachers describe the relationship between sounds and symbols in terms that resemble abugida writing and are therefore easy to understand, but at the same time enhance the learners' phonemic awareness and help them understand the nature of alphabetic writing?

Different ways of understanding the concept of a sound were revealed also in the participants' responses to the open questions at the end of the initial workshops. Seven participants used the term *nessa* to describe the differences between the two orthographies. Similarly to the response by 6WS1 at the beginning of the two weeks of training (Section 5.1, Quote 7), also at the end of the training, in four answers, the abugida fidel was regarded as containing one sound, and alphabetic letters were not interpreted as representing sounds alone (e.g. Quotes 15-16).

Quote 15 (49WS2)

ወ እሽን ኦከበ ቡርሰሚ ፊተለ እንግልሰኛ ኔሰ [ተ]ከ ከ ፊተለ ለክ ኮድን

'The difference [between abugida and alphabetic orthography] is that English fidels [i.e. alphabetic characters] make one sound and two fidels.'

Quote 16 (41WS2)

Fitalani. Maana malla, fitala saapa nesa fitala takka kapa [qapa] oori ama fitala la'tini nesa halleta takka kapa fitala laki taaki fitala sessa nefo kodda etanini.

'[They differ] by the fidels, because abugida fidels have one sound, whereas in alphabetic fidels two or even three fidels can be used to utter one sound.'

In contrast, three participants used the term *nessa* to represent phonemes, assigning one *nessa to* each alphabetic letter (Quote 17), or two *nessa* to one abugida fidel (Quote 18).

Quote 17 (4WS123)

እፓቃር መነ መለ ዋ መለ ለአየምተ አለትን ነስ ከ ፍተለ ኦሎፐኤ ኮለን አስፐ ፍተለ ፓተ ኮለን።

'It is good [to change to the alphabetic script] because in the alphabetic script fidels and sounds are learned together. In the abugida only fidels are learned.'

Quote 18 (2WS14)

ሳፐ ፍተለ ተከ ኦቶ አነፐፕነኔዬ ቀረን ዴሰ ኔሰ ለክ ኦሎፐ ሀለ እኤተንን

'When one abugida fidel is read, two sounds can be uttered.'

Overall, the reactions of the transfer literacy learners while doing a phoneme discrimination task and their written reflections on the two orthographies revealed that it was difficult for them to perceive consonants and vowels on equal terms. In the training sessions this emerged as misunderstandings and different conceptions of the term *nessa*, which was meant to be used in transfer literacy teaching to refer to all phonemes.

5.4 Phonemic awareness and spelling performance

Phonological processing skills are known to play an important role in the learning of spelling skills (e.g. Caravolas, Hulme & Snowling, 2001; Keilty & Harrison, 2015). To examine possible links between Konso transfer literacy learners' spelling performance, Konso abugida sound-symbol correspondences, and different aspects of the learners' PA skills, spelling tasks were included in the data set (i.e. Dictations 1 and 2, see Section 4.4.3 and Appendix 9). Below I present an overview of the results of Dictation 1 and examine in more detail the spelling errors which pointed to deficiencies in the spellers' phonemic awareness. I will also deal with the participants' spelling performance to examine possible links between spelling errors and transfer literacy learners' quantity awareness and syllable awareness, in Sections 6.4 and 7.2, respectively.

Dictation 1 was carried out twice during the initial workshops, first on Day 5 (Round 1), and again on Day 9 (Round 2). A total of 53 participants (28 participants in Workshop 1 and 25 participants in Workshop 2) did the task in both rounds. The number of words analysed from Dictation 1 were ten single words and ten words that were presented in short sentences. Thus, if all the participants had written each word, the total number of responses would have been 1060. However, in both rounds there were responses that could not be analysed due to unclear handwriting (17 responses in Round 1 and 13 in Round 2). Also, in Round

1, one participant (65WS2) wrote 10 of the words in abugida spelling, and three participants had misheard or misinterpreted one word each and spelled the wrong word, so those responses were excluded from the analysis. In addition, there were 3 empty responses in Round 1 and 15 in Round 2. This made the total number of responses included in the analysis 1027 in Round 1 and 1032 in Round 2. The responses excluded from the analysis were mostly words that were part of a sentence (in items 7-9, see Appendix 9).[31] The excluded responses were given by eight participants in Round 1 and seven participants in Round 2, and four of them were by the same participants on both rounds.

The error categories which emerged from a content-based error analysis of the responses were: quantity errors, use of a wrong symbol, vowel omission, and misspelling a consonant cluster. In addition, a small number of errors (15 in Round 1 and 17 in Round 2) were labelled as unclassified. They were a variety of different errors, each error type occurring so few times that I did not create separate error categories for them. Responses that were too different from the target words for it to be possible to identify specific errors I labelled as non-words; of these there were 30 in Round 1 and 12 in Round 2.

Except for the non-words, I counted different types of errors in each response separately. Consequently, an erroneous response could contain more than one error. However, quantity errors were not counted in responses which contained several other errors (e.g. **xprrtta* for *xampirteeta*) or in responses in which the geminate consonant in the correct spelling of the target word would have caused an illegal string of three consonants, due to a vowel omission (e.g. *arpa* for *arrapa*). The length of the word-final /a/ was not included in the error analysis. (See Section 2.3.2, Footnote 10 for the reasons for excluding the length of the word-final /aa/ from this study.) Sample errors of the different error types are shown in Table 43, and the percentages of the different error types in Table 44.

[31] In Round 1, of the 33 excluded responses, 30 were in items that were part of a sentence. In Round 2, of the 28 excluded responses, 27 were part of a sentence.

TABLE 43 Sample errors of each type, Dictation 1

Target word	Sample error	Type of error
fura	**fra*	Vowel omission (initial vowel)
arrapa	**arrpa*	Vowel omission (medial vowel)
mana	**man*	Vowel omission (final vowel)
arrapa	*arrappa*	Quantity error (geminate consonant)
arrapa	**arapa*	Quantity error (non-geminate consonant)
qapa	**qaapa*	Quantity error (long vowel)
qaaleta	**qaleta*	Quantity error (short vowel)
pinanta	**penanta*	Wrong symbol (vowel)
qapa	**qaba*	Wrong symbol (consonant)
pinanta	**pinanita*	Consonant cluster error (vowel insertion)
pinanta	**pinata*	Consonant cluster error (coda omission)
caatta	**aatta*	Unclassified
qaaleta	**qaata*	Unclassified
pinanta	**biinantta*	Wrong symbol, two quantity errors (long vowel, geminate consonant)
pinanta	**pnaanta*	Vowel omission and quantity error (long vowel)
pinanta	**bniat*	Non-word

TABLE 44 Numbers of different types of spelling errors, Rounds 1 and 2 (N=53)

Error types	R1, No. of errors	(%)	R2, No. of errors	(%)
Quantity error	513	(62.6%)	425	(63.1%)
Wrong symbol	139	(17.0%)	86	(12.8%)
Vowel omission	96	(11.7%)	90	(13.4%)
Consonant cluster error	56	(6.8%)	56	(8.3%)
Unclassified error	15	(1.8%)	17	(2.5%)
Total no. of errors	819		674	

Looking for links between the transfer learners' spelling performance and their phonemic awareness, the error type that pointed most directly to poor phonemic awareness was vowel omission. In Round 1 around 11.7%, and in Round 2 around 13.4% of the spelling errors involved omitting a vowel from a CV sequence. The omissions occured in all word positions: word-initial CV (e.g. **fra* instead of *fura*), word-final CV (e.g. **man* instead of *mana*), and word-medial CV in target words which were longer than two syllables (e.g. **arrpa* instead of *arrapa*). An equivalent spelling error involving omission of a consonant occurred only in word-medial consonant clusters (see Section 7.2), and word initially in one response in Round 2, with the spelling *caatta* as **aatta*.

As abugida spelling (and reading) calls for paying attention first of all to consonant characters, and the marks for vowels are visually less prominent, it can be assumed that, in spelling, Konso abugida readers are not used to paying so much attention to vowels as to consonants. This assumption is in line with the characterisation of the nature of the Ge'ez fidels by Getatchew (1996), who describes all the Ge'ez fidels as characters with "an independent identity" rather

than as systematically constructed sets of characters that include a basic (consonant) character and a (vowel) modification (see Section 2.2.2 for the quote by Getatchew).

Results on the relative ease of correctly spelling consonants as compared to vowels have also been reported in Hebrew literacy learning (Ravid, 2005; Ravid & Haimowitz, 2006). Hebrew orthography is a consonant-based abjad, and as with the Konso abugida, the nature of the written characters can be assumed to have affected the literacy learners' understanding of consonants and vowels and made them view consonants as the more prominent units. However, unlike Semitic Hebrew, Konso morphology is not based on consonant roots – an additional feature of Hebrew language, which makes Hebrew literacy learners more apt to pay attention to consonants than to vowels.

Coming back to Konso transfer learners' spelling performance in Dictation 1, vowel-omission errors were committed at least once by 29 participants in Round 1 and 36 participants in Round 2. This suggests that while spelling a CV sequence, it was easy for a respondent to miss out a vowel even if he or she seemed to have mastered the rule of writing vowels as separate symbols. However, analysing the types of errors committed by participants with the most difficulties with alphabetic spelling indicated that vowel omission was a typical error particularly for poor spellers. As an example, the responses of one participant in Round 2 who had considerable difficulties in alphabetic spelling (20WS1) are presented in Table 45.

TABLE 45 Performance of 20WS1 in Dictation 1, Round 2

Targeted spelling	Response	Errors
arrapa	**airpa*	Vowel omission, unclassified error
nyelqa	**nyqa*	Vowel omission, consonant cluster error
pinanta	**pnnta*	Vowel omission (x2)
xampirteeta	**xprrtta*	Vowel omission (x3), consonant cluster error
fuura	*furra*	Quantity error (x2)
fura	**fare*	Wrong symbol (x2)
fuurra	*furra*	Quantity error
maana	**mmna*	Vowel omission, quantity error
manna	*mina*	Wrong symbol, quantity error
mana	*ma*	Unclassified error
Qaaleta	**qlta*	Vowel omission (x2)
Waaqa	**wq*	Vowel omission (x2)
caatta	-	(Empty response)
daanni	**dna*	Vowel omission, wrong symbol
kiishe	**keshu*	Wrong symbol (x2), quantity error
Kusse	**Kuss*	Vowel omission
qapa	*qapa*	-
Koyye	**kiy*	Wrong symbol, vowel omission
xoori	**xra*	Vowel omission, wrong symbol
ikerite	-	(Empty response)

There were other participants besides 20WS1 amongst the poor spellers who frequently omitted vowels when spelling. For example, one participant (21WS1) committed 7 vowel-omission errors in Round 1, although 9 of her 20 responses were either non-words or could not be analysed because of her poor handwriting. In Round 2, she made 12 vowel-omissions errors. Another participant (65WS2) who had considerable difficulties in spelling made 3 vowel-omission errors in the 5 responses in which it was possible to classify the spelling errors he committed in Round 1. His other responses could not be included in the error analysis, because he spelled 10 words in abugida fidels, left 2 items empty, and spelled 3 words so poorly that they had to be counted as non-words. In Round 2, he made 8 vowel-omission errors, even though he responded to only 9 of the 20 items.

Frequent vowel-omission errors by poor spellers suggested that one of the difficult areas for early transfer literacy learners is the marking of a vowel in spelling CV sequences. In her review of cross-linguistic research on alphabetic spelling development, Caravolas (2004) notes that all alphabetic orthographies are based on the *alphabetic principle*, which she defines as "the idea that graphemes represent phonemes in spoken language" (p. 4). Consequently, understanding the alphabetic principle is a pre-requisite for gaining alphabetic spelling skills. Durgunoğlu and Öney (2002) write:

> Decoding depends on the discovery of the alphabetic principle, the realization that phonemes, the smallest units constituting spoken language, correspond to letters in the printed word. (p. 246)

Thus, the Konso transfer literacy learners' error of omitting a vowel in alphabetic spelling pointed to their lack of understanding of the alphabetic principle, and shortcomings in their phonemic awareness skills.

5.5 Drawing together the results on phonemic awareness

Research question 1 What is the phonemic awareness of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences?

At the beginning of the transfer literacy training, the learners' reflections on the two orthographies revealed that they understood that the alphabetic orthography marks the components of a CV fidel with two symbols (i.e. alphabetic letters). However, they did not consider the components to be independent units, and they did not have a clear understanding of the sound-symbol correspondences of the two components separately from each other. Rather, they regarded consonants and vowels as complementing each other and belonging together.

The difficulty of considering consonants and vowels as separate units was reflected also in the results of the PA tests, which were designed to measure the transfer learners' phonemic awareness (i.e. the consonant deletion and the phoneme discrimination tests). In the consonant deletion tests, the participants found it hard to detach a consonant from an adjacent vowel. Instead, they tended to

delete the whole CV sequence from the stimulus. Deleting a syllable-final consonant, represented by a fidel of its own, was easier. Likewise, while doing the phoneme discrimination tests, the transfer learners had difficulties understanding that the consonant and vowel denoted by one CV fidel were regarded as separate units and that either one of them could stand alone as the initial or the final sound of a word.

A link between abugida sound-symbol correspondences and problems in the transfer learners' phonemic awareness was also reflected in the spelling performance of those learners who had greatest difficulty complying with alphabetic spelling rules. According to the analysis of spelling errors in Dictation 1, a typical error for poor spellers was a vowel omission. In abugida spelling a consonant is the visually prominent component of a CV fidel and vowels are marked with modifications to the consonant characters, so the error of omitting a vowel points to the influence of abugida spelling. Alphabetic spelling requires discovering the alphabetic principle and understanding that written characters denote phonemes (Caravolas, 2004; Durgunoğlu & Öney, 2002), including both consonants and vowels.

The results of the phonemic awareness tests, the spelling performance of poor spellers, as well as the transfer learners' reflections on the differences between the Konso abugida and the new alphabetic orthography therefore showed that in the early stages of the transfer literacy learning process, the learners' phonemic awareness was limited and reflected the abugida sound-symbol correspondences. The results were in line with the expectations set for the study. The results are also in line with earlier findings about the slow emergence of phonemic awareness amongst abugida readers in languages written in the Brahmi script.

Research question 2 How does the Konso abugida readers' phonemic awareness change during the process of learning to read and write their language in an alphabetic orthography?

During the transfer literacy training the learners were introduced to the concepts of vowels and consonants, as well as the correspondences between the two types of phonemes to abugida fidels and to alphabetic letters. At the end of the initial transfer literacy workshops, the participants' reflections on the differences between the Konso abugida and the alphabetic orthography indicated that for some learners the concepts had become clear. Their responses showed that understanding the nature of consonants and vowels had helped them to better understand the sound-symbol correspondences of alphabetic orthography and had increased their phonemic awareness. But there were also learners who, at the end of the training, continued to describe the difference between the two orthographies by comparing the number of characters needed for writing a CV sequence. Their descriptions did not reveal whether they had understood what each character stood for, and this suggested that their conception of phonemes as independent units was still vague.

Examining the difference between the transfer learners' performance in the consonant deletion tests and the phoneme discrimination tests at different points in time during their transfer literacy learning process showed that they made slow improvement. In the consonant deletion Test 1, the participants' ability to delete a syllable-initial consonant was slightly better in Round 2 than in Round 1. Also, the error analysis of the types of errors committed by the participants revealed that the number of errors in which the participants failed to separate the adjacent vowel from the consonant to be deleted had reduced in Round 2 (see Tables 21-24). These results suggested that the learners' understanding of consonants and vowels as separate units had improved as their alphabetic literacy skills improved. However, the performance of those participants who did Test 1 four times during the data collecting Phases 1 and 2, and the results of Test 3, revealed that detaching a consonant from an adjacent vowel in word-initial position remained difficult throughout the data collecting period.

As for the spelling patterns of the transfer learners at different points in time during the training, according to the results from analysing the spelling errors in Dictation 1, the numbers and percentages of vowel-omission errors in Rounds 1 and 2 were similar (Table 44). The similar number of vowel omissions in both rounds of the test suggested that the two weeks of transfer literacy training had not been enough for weak spellers to discover the alphabetic principle and learn to mark a vowel with a symbol of its own.

Drawing the above results together, the transfer learners' ability to recognise, identify, and manipulate phonemes grew gradually in tandem with their transfer literacy learning. The result was in line with the expectation that exposure to alphabetic literacy would enhance the learners' phonemic awareness. However, the improvement in the learners' phonemic awareness skills was slow, and throughout the data collecting period the abugida sound-symbol correspondences continued to influence learners while they were doing tasks which required understanding that each consonant and vowel phoneme is a separate unit.

Research question 3 What is the role of phonemic awareness in transfer literacy learning from abugida to alphabetic script in Konso, and what are the relevant points to pay attention to in transfer literacy teaching?

During the data collecting period, the role of phonemic awareness in understanding the nature of alphabetic writing was most clearly reflected on occasions when learners discovered how the alphabetic characters that represented a given abugida fidel related to consonant and vowel sounds. The learners' understanding of sound-symbol correspondences had been influenced by the abugida CV fidels, which made it difficult for them to have more than a hazy concept of consonants and vowels as separate units. They first had to recognise the two types of phonemes embedded in each CV fidel before they could understand the nature of alphabetic orthography. This made teaching about consonants and vowels an important component of the transfer literacy teaching.

In the initial stages of the Konso transfer literacy teaching programme, an additional difficulty that the learners had to overcome in order to make sense of the concept of a phoneme was the terminology used in the teaching. An everyday Konso term for a sound was used to refer to both consonant and vowel phonemes. However, because the learners' conception of the two components of a CV fidel made them perceive consonants and vowels as different but as functioning together as one unit, it was hard for them to understand how they could be referred to on equal terms. The confusion revealed on the one hand how important it is to define key concepts precisely and clearly when teaching differences in the sound-symbol correspondences of two orthographies and, on the other hand, how challenging it is to assign clear definitions to the concepts. In any case, it became clear that for a Konso transfer literacy learner it is important to understand that the sound string of the language consists of vowels and consonants. Whether or not they can both be referred to by the same term (e.g. as sounds) is less important for the learning process.

6 QUANTITY AWARENESS AND ITS ROLE IN THE TRANSFER

Quantity awareness has been identified as an important component of PA in literacy learning in languages which denote semantic differences by the quantity of phonemes and quantity is marked in the orthography. As described in Section 3.4, based on Finnish children's PA tests and spelling performance, A. Lehtonen and Bryant (2004) found a connection between quantity awareness and spelling performance, and therefore suggested that quantity awareness should be regarded as a distinct aspect of phonemic awareness.

Despite both gemination and vowel length being frequent semantic features in Konso, the Konso abugida only marks length for /a/ and /i/, and leaves the quantity of all the other phonemes unmarked (see Section 2.3.3). In each unit of the Konso abugida primer there are separate lessons to introduce the orders denoting the short and long /a/ and /i/, but the primer does not systematically deal with the quantity of the remaining three vowels or of any consonants (see Section 2.3.4). However, it is virtually impossible to completely avoid dealing with the quantity differences of all sounds when teaching literacy skills in the Konso abugida, as throughout the primer the reading exercises for the lessons include words that have different meanings if the quantity of one phoneme (other than /a/ or /i/) is altered. Therefore, while practising reading words out of context, learners may realise that altering the quantity of a sound alters the meaning of the word, and this may make them wonder which pronunciation is correct. If the teacher follows the instructions and uses the opportunity to demonstrate that more than one pronunciation can produce a meaningful word, even if the fidels are the same, learners get some exposure to the fact that the quantity of all sounds can make meaning differences. Even so, abugida literacy learners have not needed to mark the quantity differences of phonemes other than /a/ and /i/ in writing.

As for the transfer literacy learning in Konso, because the quantity of all phonemes is marked in the alphabetic orthography, mastering the spelling rules requires the ability to recognise, identify and manipulate the quantity of all phonemes. Consequently, a transfer from the abugida to alphabetic writing can be expected to require the expansion of the transfer learners' quantity awareness. This meant that, designing an efficient transfer literacy teaching method for Konso involved finding out about abugida readers' level of quantity awareness.

As explained in Section 4.4.2.2, in Konso the quantity of vowels is described in terms of length, using the expressions *ideri,* 'is long' and *ikumma'i,* 'is short' (or alternatively *nessa a dera* 'long sound' and *nessa a kumma'a* 'short sound'), and the quantity of consonants in terms of tenseness, using the expression *ikokkoki* 'is tense' for geminate sounds and *inukkulli* 'is lax' for non-geminate sounds (or *nessa*

a kokkoka and *nessa a nukkulla*, respectively). The terms were in use before the Konso alphabetic orthography was developed, but because describing the quantity of consonant phonemes in specific terms is not relevant when learning the Konso abugida, the terminology may not have been used in Konso abugida lessons. Semantically, the Konso terms are derived from the Amharic terminology for phoneme quantity.[32] According to primary school teachers, students from grade 2 onwards in Amharic-medium schools are made aware of gemination as a semantic feature in Amharic, but the Amharic terms for describing the quantity differences of consonants and vowels are taught later. Consequently, those Konso transfer literacy learners in the present study who had attended formal education up to the higher grades had learned the Amharic terminology for vowel length and gemination.

When the Konso transfer literacy lessons were drafted, before the initial workshops, it was decided that the quantity of vowels and the quantity of consonants would be introduced to learners as two separate features, using the existing Konso terminology. This approach also aligned with the Amharic convention of making a distinction between the two features. An alternative approach would have been to introduce the quantity of both vowels and consonants as one feature and to use the same terminology to describe both, for example by describing all phonemes as either long or short. This would have been in line with the alphabetic spelling rules of marking long vowels and geminate consonants in the same way: by doubling the relevant character. During the data collection, I wanted to find out whether learners found the decision to describe vowel length and gemination in different terms helpful, and to that end I observed what kind of terminology the learners used for each of them.

In this chapter, I first review what the participants' abugida spelling patterns and their written reflections on the two orthographies revealed about their quantity awareness. I then examine the results of the two PA tests, which were designed to show the participants' ability to recognise and describe the quantity of phonemes. Following that, I look at the participants' ability to spell quantity and to distinguish quantity differences in reading single words. I also discuss the difficulty of mastering the metalinguistic level of quantity awareness required for alphabetic literacy. Finally, I draw together the results and answer the overarching research questions from the perspective of quantity awareness.

[32] In Amharic, the vowels are described as 'long' (**የሚረዝም** /jæmiræzm/) or 'short' (**የሚአጥር** /jæmiat'r/), geminate consonants as 'tight' or 'tense' (**የሚጠብቅ** /jæmit'æbk'/), and non-geminate consonants as 'lax' (**የሚላላ** /jæmil:al:a/).

6.1 Literacy skills and the learners' understanding of the role of phoneme quantity in the Konso language

At the beginning of the data collecting period I realised that the participants were not consistently marking vowel length for /a/ and /i/ when they wrote in the abugida. For example, 27 of the 51 participants who did the abugida spelling task on Day 1 of the initial workshops (see Section 4.3 and Appendix 6), misspelled the long /a/ as short in the word *daassata* (i.e. spelling *ደሰተ for ዳሰተ). Likewise, 18 participants misspelled the long /i/ as short in the word *hiippampayta* (i.e. *ህፐምፐይተ for ሂፐምፐይተ). This indicated that many learners were not used to paying conscious attention to the quantity of the phonemes /a/ and /i/ when writing, despite the abugida spelling rule to mark length for the two vowels in word-medial position.

Phoneme quantity did, however, come up at the very beginning of the transfer literacy teaching as an important characteristic of the Konso language. According to the programme schedule for the initial teacher training workshops, the alphabetic spelling rules for vowel length were to be introduced on Day 3, and for gemination on Day 4. However, as soon as the participants started practising alphabetic reading and writing in the first transfer literacy lessons, they came up with minimal pairs which differed only by the quantity of one phoneme, and it was necessary to address the issue well before the time originally planned. On the second day of the first workshop, I wrote in my diary:

> Clearly the quantity of sounds is going to be – is already – the biggest challenge for learners. (D300615)

When the participants answered the open questions about the two orthographies on Day 1 of the initial workshops, only 3 of the 51 respondents mentioned the differences between the two orthographies in marking (or not marking) the quantity of sounds. (See Section 4.4.1 and Appendix 7 for the questions). In contrast, at the end of the workshops, 27 of the 55 participants who answered the questions mentioned the difference in quantity marking either as a difficult point to learn or as a difference between the two orthographies – or both. In addition, 9 more participants referred to quantity marking indirectly by writing that the alphabetic orthography showed more clearly how to pronounce each word.

Many of the answers at the end of the training indicated that participants found the alphabetic orthography difficult because of the need to pay attention to quantity in spelling and reading (e.g. Quotes 19-20)

Quote 19 (41WS2)

Ikokkoki wa opa kokkoka nefo fitala kokkonasa, derasa ka kummaasa qara akata ana kalini kinini.

'It is difficult [to learn the alphabetic orthography], because I really do not understand how the fidels are made tense, long and short.'

Quote 20 (6WS1)

ፈተለ ሃረየ እፐቃርመ ኾር ሴዴ ኮኮነንቶ ከረ አነ ፑን፥ ፐሀነኤ kk tt yy **ኪንቶ ከ ኮኮነንቶ ሴዴ ኦፐ አነ ዳካን ኸዮ።**

'The new fidels are good but for me gemination is very difficult, for example I cannot handle *kk, tt, yy*.'

However, even though the participants found the extensive quantity marking difficult, they also appreciated it because it made the orthography transparent. Many participants pointed out that the alphabetic orthography made meanings clear just by the spelling, whereas with the abugida one had to use the context to interpret what a word meant (e.g. Quotes 21-23).

Quote 21 (43WS23)

እኮክ ቆተ ቀንሳ ኮኮናሳ ኑኩላሳ ከ ዴረሳ ቀፐቶ ማለ
እፐቃር ክደደ ሴኔ ሳፐ ኦልኬለ ለአይሰተ ኦረን ከማ መለ

'It is difficult [to learn the alphabetic orthography] because it marks tense, lax, and long.
It is good [to change to the alphabetic orthography] because in the abugida it is difficult to understand the meanings of words [due to the lack of showing the quantity of the phonemes].'

Quote 22 (19WS1)

ፍተለ ሰፐት ዴሰ ለትኔተ ቱልሰ እፐቃር ማነ መለ ቱርከሜወት ታኮ ፑሶወ ከሱ ኦልኬለ ሬን ከ ለአይንይ ፐሀነኤ ኩተ ቶመ ቶለ

'It is good to transfer from the abugida to the alphabetic orthography because in the alphabetic orthography the characters are separated, and meanings are clear, for example:
ኩተ [*kuta*, 'dog'; *kutta*, 'dogs'; *kuuta*, 'peak of roof']
ቶመ [*toma*, 'wooden bowl'; *tooma*, 'copse'; *toomma* 'let us clear the copse']
ቶለ [*toola*, 'family'; *toolla*, 'families']).'

Quote 23 (14WS1)

epaqaari waamalla paqaariya xatta oto ***ከረ*** *kidan anpino kara tak karra orra kallinkito amma xoor xawwa xawwa'e puussami*

'It is good [to transfer to alphabetic orthography] because earlier **ከረ** could be read *kara* ['inside'] or *karra* ['ground squirrel'] and people did not understand, but now they are written differently.'

As regards the use of the terminology to express quantity differences in vowels and consonants, 20 of the 27 participants who explicitly wrote about the quantity of phonemes used both terms, *ikokkoki* 'tense' and *ideri* 'long', and thus made a distinction between the quantity of consonants and vowels (Quotes 24-25).

Quote 24 (48WS23)

> *nesane, haletane, pahana'e ka, kaa, kka… ippaqarri mana mala oni kininoye oton kolanoye fiita Akokkoka ka Annukula olikela rexeta ini etanina yi kaammo adeerra ka akkumaa'a ale kela rexeta ini etanina.*
> '[the orthographies differ] by sound and pronunciation, for example ka, kaa, kka… it is good, because when we learn to distinguish tense and lax fidels we can make differences and then we can also differentiate between long and short.'

Quote 25 (55WS23)

> **ወ እሽን ኦልኬለ ፑርሰመኔ፡ ፍተለ ሳፐ አዬረ ከ አኩመአ ቀፐ ዲሼይ አኮኮከ ከ አኑኩለ እንቀፖ። አላትን ኾር አዬረ ከ አኩመአ እኾ አኮኮከ ከ አኑኩለ ፕሰ ኦልኬለ ሬኽን።**
> 'The difference is that the abugida fidels show only long and short, but not tense and lax, whereas the alphabetic orthography shows both long and short and also tense and lax.'

The remaining 7 participants who also referred to quantity in their answers did not distinguish between 'long' (vowels) and 'tense' (consonants). Some of their answers revealed that they realised that the quantity of phonemes was a feature that was marked in the alphabetic orthography, but that they found it confusing and had not fully understood the spelling rules (e.g. Quote 26).

Quote 26 (64WS2)

> *ikokkoki – waa mala kkokokitai:- fittala a Hallena isho a Hallamma otto lakilaki olikama orraneye atta akima Hallenan qoota kokokito malla*
> 'It is difficult because when two vowel and two consonant fidels come together it is difficult to know how to pronounce them.'

The big difference in the number of participants who referred to quantity in their answers at the beginning and at the end of the training made it clear that before the training learners were not aware that the Konso alphabetic orthography marks the quantity of each sound. Besides, their abugida writings showed clearly that they were not used to consistently marking the quantity of /a/ and /i/ with the correct fidel, and therefore that they were not used to paying conscious attention to quantity of sounds when writing. Overall, they probably were not aware of the fact that the Konso language makes so many meaning differences by quantity alone, or at least had not needed to consciously process quantity of phonemes as a feature of the language that requires constant attention. Naturally, in the context of transfer literacy training the feature was given more attention than it ever gets in oral, everyday language use, because when a trainee made a quantity

error and misspelled a word on the blackboard, everybody started coming up with other potential spellings which could also make a meaningful word, if only the quantity of one or two phonemes was altered. Often, such situations resulted in a long list of words on the blackboard – words which in a different context would be unlikely to be linked or thought of on one and the same occasion.

Consciously practising quantity marking in a literacy lesson boosted the transfer learners' understanding of how important a role phoneme quantity plays in the Konso language. This points to the difference between epilinguistic and metalinguistic levels of PA: as mother-tongue speakers of Konso, in speech all the learners could fluently express and interpret the meaning differences caused by altering the quantity of phonemes. However, they may well have done that without consciously processing the feature – until they faced an orthography in which they had to pay attention to the quantity of every sound in a word.

6.2 Recognising and describing phoneme quantity in short pseudowords

To examine the participants' ability to recognise and describe phoneme quantity, pairs of two-syllable pseudowords that differed only by the quantity of one vowel (*taada - tada, luuma - luma, riila - rila, soma - sooma, reka - reeka*) or one consonant (*kuda - kudda, tima - timma, ketta - keta*) were included in the oral PA test set (see Section 4.4.2.2 and Appendix 8 for the test). The participants were orally given one pair (i.e. one item) at a time, and they had to say what the difference was between the two pseudowords. The purpose of the task was to find out whether participants were able to recognise quantity differences, and if they were, how they described vowel length and gemination; that is, would they use the terms *ideri* and *ikumma'i* for 'long' and 'short' vowels and *ikokkoki* and *inukkulli* for 'tense' and 'lax' consonants, and if not, what kind of expressions would they use. By finding out about their use of terminology I hoped to get insights into the most appropriate terminology to use in transfer literacy teaching for the quantity of consonants and vowels, and whether the practice of referring to vowel length and gemination using different terms – and thus regarding them as different features – was helpful to learners.

The test was given to the 13 participants of Workshop 1 who did the oral tests. They did the test at the beginning of the workshop (Round 1), and again towards the end, on Day 9 (Round 2). Below I first describe the participants' overall performance in Round 1, and then present two case studies (Case studies 1 and 2). Case study 1 demonstrates how one of the participants (12WS123) processed the difference between geminate and non-geminate stimuli at the beginning of the transfer literacy training. Case study 2 reports the responses of one participant (28WS14) to all eight items in Round 1 and illustrates how literacy skills may influence the processing of an oral quantity awareness task and lead to conclusions based on orthographic representations. After the case studies, I

describe the main points in the performance of all the participants in Round 2, and compare it with their performance in Round 1. Finally, I summarise the results and discuss what the participants' ability to recognise and describe quantity of phonemes showed about the nature and extent of their quantity awareness during the initial stages of their transfer literacy learning.

Sub-research question VIII: Do the participants recognise the difference between long and short vowels at the beginning of transfer literacy learning, and if they do, how do they describe it?

When the participants did the test in Round 1, three respondents first attempted to find a meaning difference between the two stimuli within an item, even though they had been told that all the stimuli were meant to be meaningless. When I explained the task again, they understood that they were supposed to consider only the sound structure of the stimuli, and responded accordingly.

Seven participants recognised and described vowel length correctly in all five test items. In addition to using the terms 'long' and 'short', one of them (2WS14) first said 'big' and 'small' for the first item (*taada - tada*), and another (22WS1) 'tense' and 'lax', but having thought for a while, both concluded that the difference was in length.

One participant (15WS1234) described the difference correctly in four items, but hesitated when responding to *reka - reeka*. She thought aloud and repeated the stimuli, pronouncing the length difference correctly. She wondered whether there was a difference in length, but concluded that the sounds in both stimuli were short. It is likely that she considered the written forms and came up with that response because there is no difference in the abugida spelling of *reka* and *reeka* (i.e. ሬከ).

Two participants (18WS1234 and 5WS1) used the terms 'tense' and 'lax' instead of 'long' and 'short' to describe vowel length. Both consistently labelled the long vowels 'lax' and the short vowels 'tense'. Their responses thus indicated that they were able to recognise the difference, but did not use the conventional terminology for vowel length. One participant (28WS14) described vowel length in terms of spelling. I will report his responses in detail below (Case study 2). Two participants (1WS1 and 9WS1) found the task too difficult to do.

Three of the participants (2WS14, 5WS1 and 27WS123) used the Amharic terminology in their responses. This was probably partly due to my having used Amharic in explaining the task to them. Also, though, the educational level of the three was high: two of them had completed the 10th grade, and one the 8th grade, so they had learned about quantity differences at school in Amharic, and therefore were used to the Amharic terminology. In evaluating their responses, I interpreted the terms they used as referring to the equivalent Konso terms.

Overall, recognising the difference between short and long vowels in two-syllable pseudowords was not difficult for most of the participants in this small sample. Moreover, although the abugida spelling rules mark length only for /a/

and /i/, there was only very little difference in the participants' ability to recognise and describe the length of different vowels. However, not all the participants were used to using the terms 'long' and 'short' to refer to vowel quantity.

Sub-research question IX: Do the participants recognise the difference between geminate and non-geminate consonants at the beginning of transfer literacy learning, and if they do, how do they describe it?

Following the five items in which the difference between the stimuli was in the length of a vowel, the participants were given items in which they had to recognise and describe gemination. When they heard the first item (i.e. *kuda - kudda*), they tended to hesitate and took time before responding. Four participants first assumed that the difference was still in vowel length. To confirm their assumption, they repeated the stimuli, but altered the length of a vowel, saying: *kuda, kuuda* or *kuda, kuudda*. When I repeated the stimuli, they understood that the difference was not in the vowels.

The seven participants who had described the vowel length correctly continued to use the terms 'long' and 'short' to describe geminate and non-geminate consonants. However, only one of the seven (2WS14) was consistent in the use of the terms: he labelled all non-geminate sounds long. Others either mixed the concepts or described the difference between the two stimuli incorrectly. For example, 27WS123 labelled both *kudda* and *keta* 'short', but noted that *tima* contained long *ma*, and *timma* long *ti*. Likewise, 17WS1 labelled both *timma* and *keta* 'long', but for *kuda - kudda* he noted that *kuda* was said with a loud voice, whereas *kudda* was 'weak', but then also added the terms 'long' for *kuda* and 'short' for *kudda*. 15WS1234, who had concluded that there was no difference between *reka* and *reeka*, also missed the difference between the two stimuli in *kuda - kudda* and in *tima - timma*, so she was probably thinking about the similarity of the written forms. Overall, the variety of responses of each participant made it impossible to determine which items they recognised correctly and which they did not.

The two participants (5WS1 and 18WS1234) who had described vowel length in terms of tenseness continued to use the same terms: 5WS1 called a geminate consonant 'tense', in line with the conventional use of the term, while 18WS1234 switched the terms round and called a geminate consonant 'lax' and a non-geminate consonant 'tense'. 28WS14, who had based his reasoning on the spelling when explaining vowel length, did the same thing in the consonant task, except for the last item (see Case study 2). I did not give the consonant task to the two participants (1WS1 and 9WS1) who were unable to respond to the vowel task.

Case study 1: Looking for an appropriate term to describe gemination

One participant (12WS123) responded correctly to all eight items and made a clear distinction between how to describe vowel length and gemination. However, in responding to the first item for consonant quantity (*kuda - kudda*), he struggled to find appropriate terminology. He clearly recognised that there was a difference between the two pseudowords and that the difference was not in vowel length, but it seemed as though he had never consiously thought about the quantity of consonant sounds in the Konso language, so it was difficult for him to find a way to describe it. What follows is the conversation between 12WS123 and me (i.e. AK) while 12WS123 was processing the difference between *kuda* and *kudda*.

Quote 27 (12WS123)

AK: kuda, kudda?	AK: *kuda, kudda*?
12WS123: hee?	12WS123: what?
AK: kuda, kudda	AK: *kuda, kudda*
12WS123: kuda	12WS123: *kuda*
AK: kuda, kudda	AK: *kuda, kudda*
12WS123: kuda, kudda	12WS123: *kuda, kudda*
AK: ihi	AK: yes
12WS123: kuda kudda kuda kudda oorii ku ku eeppa'e kumma'e kuda, kudda kuu kuuda, asse? kuuda	12WS123: *kuda kudda kuda kudda* well *ku ku* in there is short *kuda, kudda kuu kuuda*, like that? *kuuda*?
AK: ee'e, kuda	AK: no, *kuda*
12WS123: kuda	12WS123: *kuda*
AK: kuda, kudda	AK: *kuda, kudda*
12WS123: kuda, kudda isheeta [ishoota] oorii haysho takkew deeninin kideeta fitalayye karayye	12WS123: *kuda, kudda,* well, it is [they are] similar, that is they use the same fidel
AK: fitalayye karayye ma nessa… nessa karayye shakayteeta oli purammi [pursammi]	AK: the same fidel but the sound… sound is a little different
12WS123: shakkayta kara kuda kudda assennee? kuda kudda oori nama ee karayye deranno inco ma nessa pila pila'e daanni kuda… takka kuda kiininni? takka kudda kiini oorii ee kara ipursammi ma fitalaysho takkaw	12WS123: yes a little *kuda kudda* like that? *kuda kudda* there is nothing that gets long there, but there is a sound that is different, *kuda*… one of them says *kuda*, right? and the other says *kudda*, so there is a difference but the fidels are the same
AK: fitala takka ma nessaadi ai… atta atta pursammi atta oli [kapa] pursammi?	AK: the fidel is the same but the sounds… how, how are they different? how are they different from each other?
12WS123: oorii timseetaadi takka kuda kiininni takka kudda oorii ee karayye… kuda kudda, ee karayye da isho… kudda a kiinitto karayye dda asse de…['ininni] pokkininni? a taaka kuda asse oppa qaatininni? kudda asse kara porseppa…	12WS123: well the sound in one says *kuda*, right? and in the other *kudda* so here… *kuda kudda*, here *da* and… the one that says *kudda* the *dda* co…[mes] explodes, doesn't it? and *kuda* just stops like that? *kudda* in there…
AK: ipokkininni?	AK: explodes?
12WS123: kudda pokkini kideeta	12WS123: yes, I mean *kudda* explodes

Having come up with the term *ipokkini*, which is used for the sound from a gunshot but can also be used figuratively for a very loud voice, 12WS123 also used it for the remaining two items where the difference was between a geminate and a non-geminate consonant.

Case study 2: Processing an oral quantity awareness task through spelling rules

One participant (28WS14) approached the task entirely through writing, except for the last item (i.e. *ketta - keta*). Below I report his responses to all the items to demonstrate how complicated the quantity issue can get in the mind of an abugida reader who already knows something about the spelling conventions of both orthographies, but has neither learned the specific rules for marking quantity of phonemes in the alphabetic orthography, nor had any experience of analysing gemination orally. The case serves also as an example of how literacy skills may lead a respondent to process an oral PA task through orthographic representations instead of through sounds.

Since abugida spelling marks differently a long and a short /a/ and /i/, it was easy for 28WS14 to describe the difference between *taada* and *tada* (ታዶ - ተዶ), and between *riila* and *rila* (ሪለ - ርለ). Describing the difference when the length of the vowel could not be shown by abugida spelling (i.e. *luuma - luma* ሉመ, *reka - reeka* ሬከ and *soma - sooma* ሶመ) was, however, more difficult. After hesitating a while, 28WS14 solved the problem by explaining that when a vowel character (i.e. /u/, /e/, or /o/) is added to the preceding consonant, the sound becomes long. However, while he explained this, he mixed elements of abugida spelling and alphabetic spelling. When describing the difference between the first stimuli (i.e. *luuma - luma*), he said that when /u/ is added to the consonant /l/, it becomes *luu*, but when the /l/ is alone, it is *lu*. On the other hand, when describing the difference between the stimuli in the other two items, *reka - reeka* and *soma - sooma*, he referred to the initial consonants as CV sequences in terms of abugida writing (i.e. *re* and *so*) and explained that the vowel becomes long when a vowel /e/ is added to *re*, and /o/ is added to *so*.

Moving on to the items in which the difference was in a geminate as opposed to non-geminate sound, it became even more difficult for 28WS14 to respond. When given the first item (*kuda - kudda* ኩዶ), he assumed that one of the stimuli included a long /u/, (i.e. *kudda, kuuda*). When I repeated the stimuli, he started processing the questions by altering the length of the final /a/. It is likely that he had the abugida spelling in mind, and correctly realised that the difference was in the sequence *da*, which is written with the CV fidel <ዶ>. Therefore, as the idea of marking gemination by doubling the letter for the consonant sound in the alphabetic orthography was apparently new to him, he tried to solve the problem by thinking how the writing of the abugida CV fidel could mark the difference. For the second item with gemination, (*tima - timma* ትመ), he concluded that there was no difference between the two stimuli, which indicates that he was probably referring to their similarity in abugida spelling. Finally, processing the last item (*ketta - keta* ኬተ), he realised that he had to pay attention to the sounds instead of the written characters, and he responded correctly. Below I present all his responses.

Quote 28 (28WS14)

taada tada	**taada tada**
28WS14: taada fitala dera da… ta… fitala kumma'a tada	28WS14: *taada*, long fidel da… ta… short fidel *tada*
luuma luma	**luuma luma**
28WS14: luuma… elli kelopa uu kaltoyye, luu koddini. ma! isheetaw	28WS14: *luuma*…when *uu* is added to *elli* it becomes *luu*… oh, but it is the same!
(the stimuli repeated) **luuma, luma**	(the stimuli repeated) **luuma, luma**
28WS14: oo we kelan kinninni elli ka ikkan elli pattayye luma koddita	28WS14: if there is nothing in *elli* and only *elli* makes luma
riila rila	**riila rila**
28WS14: riila rii se deratinni puu-sammi ka riila koddini. oorii a kummatin puussitto rila koddini	28WS14: *riila* is written with long *rii* and it makes *riila*. if it is written short, it makes *rila*
soma sooma	**soma sooma**
28WS14: oto oo soo kelopa kalissoyye sooma koddini oton oo kela kinnini soma koddini	28WS14: if *oo* is added to *soo* it becomes *sooma* if there is no *oo*, it makes *soma*
reka reeka	**reka reeka**
28WS14: akkose mina oton ee ree kelayyen kinniniyyi reka koddini oon ee kela yeyye, reeka koddini	28WS14: in the same way, if *ee* is not in *ree* it is *reka*. if *ee* is there, it becomes *reeka*
kuda kudda	**kuda kudda**
28WS14: oton uu kelan kinniniyyi kudda koddini oon uu kela caayye kuuda koddini	28WS14: if there is no *uu*, it makes *kudda* if there is *uu* inside, it makes kuuda
(the stimuli repeated) **kuda kudda**	(the stimuli repeated) **kuda kudda**
28WS14: kuda kudda… oton aa kelan kinniniyyi kuda koddini, oon aa kela caayye kudda koddini no! oon aa kelan kinniniyyi kudda koddini oon aa kela caayye kuda koddini	28WS14: kuda kudda… if there is no *aa* it is *kuda*, if there is *a* it becomes *kudda*, oh no! if there is no *aa* it makes *kudda* if there is *aa* it makes *kuda*
tima timma, tima timma	**tima timma, tima timma**
28WS14: … oton…	28WS14: [hesitates] if…
(the stimuli repeated) **tima timma**	(the stimuli repeated) **tima timma**
28WS14: oli pappahata	28WS14: they are alike
ketta keta	**ketta keta**
28WS14: ketta keta oton nessa kokko-nanniyyi ketta koddini	28WS14: *ketta keta* if the sound is strong it is *ketta*
oon nessa asse, oon nessa shakkayteeta asse laalla*… nukkullanni, keta koddini	if the sound like this… if the sound is a little bit soft… weak, it makes *keta*

*The term *laalla* which 28WS14 used before coming up with the Konso term *nukkullanni* is the Amharic word for a non-geminate consonant.

This case study is just one example of many similar incidents that happened during the data collecting period, as the participants tended to process oral PA tasks through writing. Often that was helpful, but in the case of quantity, orthographic processing can also get very confusing because of the differences in the ways the two orthographies treat quantity marking.

Drawing together the results from Round 1

The participants' performance in Round 1 in the task of recognising and describing quantity differences in short pseudowords indicated that the consonant task was more difficult. The result was in line with my assumption regarding the influence of abugida writing: because the participants had learned about the vowel length of /a/ and /i/, whereas gemination had not been a relevant concept in learning abugida literacy skills, the length of vowels was easier for them to recognise and describe. Despite the inconsistency of the Konso abugida in marking the length of only two vowels, there were no significant differences in the participants' ability to describe the length for different vowels.

As for the use of terminology, the participants tended to use the same terms for vowel length and gemination. This revealed that they were not well acquainted with the terminology for the two features.

Sub-research question X: Do the participants' skills in recognising and describing quantity change during the transfer literacy learning process?

Towards the end of the two weeks of training, when the participants did the test for the second time (Round 2), there were considerable differences between them in their ability to recognise and describe the quantity differences. Most participants had improved during the training, but there were also respondents who had performed better in Round 1.

In Round 2, three participants (12WS123, 22WS1 and 28WS14) responded to all items correctly, using the correct terms for both vowel length and gemination. In addition, the responses of six others were more accurate than in Round 1. One of them was 9WS1, who had not been able to do the task at all in Round 1. She now described vowel length in two items and gemination in all three items correctly. The other participant who had been unable to respond in Round 1 (1WS1) tried to describe the difference in all items by noting whether a certain sound needed to be written with one or two alphabetic characters. However, judging his responses in terms of the alphabetic spelling rules, he recognised the quantity correctly only for *taada - tada* and *riila - rila*.

Three of the participants who in Round 1 had used the same terminology for describing the quantity of vowels and consonants (5WS1, 17WS1 and 27WS123) were now able to use different terminology for vowels and consonants correctly in six or seven items. One participant, 25WS1234, still described all items in terms of length, but was consistent in labelling all the quantity differences, and thus performed slightly better than in Round 1.

The performance of the remaining four participants (18WS1234, 2WS14, 20WS14 and 15WS1234) was poorer than in Round 1. 18WS1234, who in Round 1 had been consistent in labelling vowel length and gemination as 'lax', was now less consistent and labelled *kudda*, *keta*, and *tima* as 'tense'. Likewise, 2WS14 was more confused than in Round 1 when he tried to describe gemination: in Round 1 he had labelled the non-geminate sound consistently as 'long', but now he tried to process the task through spelling, and confused length and gemination. For example, for *kuda - kudda* he responded that in *kudda* there were two *da*, but in

kuda there was a long /a/. Two participants, 20WS1 and 15WS1234 failed to give clear responses to any of the items.

The participants' performance thus indicated that during the two weeks of training, nine of the thirteen participants had learned to recognise and describe the quantity of vowels and consonants more accurately than they had been able to in Round 1. Four participants, however, still had considerable problems in handling quantity differences, and their performance was poorer in Round 2 than in Round 1. This suggested that the two weeks of training had made them aware of the quantity issue, but they had not had enough time to internalise all that was required to accurately recognise the quantity of phonemes and to describe it in the conventional terminology – different for vowels and consonants. The result was in line with the participants' written reflections on the orthographies at the end of the two-week workshop (see Section 6.1), as answers of several participants indicated that during the training they had realised the importance of phoneme quantity in Konso, but that they struggled to mark it precisely.

Further comparison of the participants' performance in the two rounds of testing revealed a difference in how precisely they assigned the quantity difference to a particular phoneme. In Round 1, there were occasions in which the respondent was able to recognise the quantity difference but did not attribute it precisely to one phoneme. Instead, they explained the difference in the two stimuli in an item by referring to the whole stimulus or to the relevant CV unit. When I tried to get the respondent to specify which sound in the stimulus was long or tense, they either repeated the whole stimulus (Quote 29) or detached the CV fidel that contained the long or the tense sound (Quote 30).

Quote 29 (18WS1234)

AK: soma, sooma? 18WS1234: soma, sooma, a payyoota, nessa kokkoka, soma sooma, nessa nukkulla sede AK: nessa a xaami? 18WS1234: eee… sooma, nessa nukkulla, soma, nessa kokkoka maana malla, oonnessa kokkokiiyyi, afoppa orra dakaanni, nessoppa kasu dakaanni kideetoppayye	AK: *soma, sooma*? 18WS1234: *soma, sooma,* the first is a tense sound, *soma* *sooma*, this is a lax sound AK: which sound? 18WS1234: [hesitating] *sooma* is a lax sound, *soma* is a tense sound, because when a sound is tense one feels it in the mouth and hears it in one's voice

Quote 30 (12WS123)

AK: riila, rila? 12WS123: riila, riila akkamose mina'ew riila, ideranniw AK: ideranni, aa, nessa a xaami deranni? 12WS123: riila, oorii rii ee kara rii deraninninnaata?	AK: *riila, rila?* 12WS123: *riila, riila* in the same way [like the previous item] *riila*, is long AK: it is long, yes, which sound is long? 12WS123: *riila*, so it is the *rii* here, *rii* is long, isn't it?

The difficulty in assigning the quantity difference to a specific phoneme reflected abugida readers' tendency to perceive the consonant and the vowel denoted by one abugida fidel as a unit. This tendency was evident also in the participants' performance in the phoneme deletion and phoneme discrimination tests, reported in Sections 5.2 and 5.3. The results therefore point to a link between phonemic (quality) awareness and quantity awareness: in order to recognise, identify, and manipulate the quantity of a phoneme, one first needs to be able to extract the phoneme from the context.

In Round 2, the participants were better able to assign the quantity difference to the relevant phoneme. For example, 12WS123, whose response in Round 1 demonstrated that he explained the *rii* as long (Quote 30), responded in Round 2 by saying that in *riila* the *ii* was long. The difference in the accuracy of the responses indicated that the participants' understanding of phonemes as separate units had improved during the two weeks of training.

An additional point to note about the participants' behaviour in both rounds of testing is that while responding, they often spontaneously began to repeate the two stimuli (once or several times), and while repeating them they pronounced the quantity of all the sounds correctly. This also happened on occasions when the respondent was unable to describe the difference between the two stimuli. This can be attributed to the difference between the epilinguistic (implicit) and metalinguistic (explicit) levels of PA. The implicit level functions automatically in oral communication, but the explicit level requires the ability to consciously analyse the relevant phonological units, in this case the quantity of a certain phoneme. Since in the Konso language phoneme quantity frequently makes meaning differences, the participants had no difficulties in hearing and orally producing the quantity of the sounds correctly (i.e. on the epilinguistic level of quantity awareness), but when they had to consciously recognise, identify and describe the difference and assign it to a certain phoneme (i.e. on the metalinguistic level of quantity awareness), they found it more difficult.

6.3 Recognising phoneme quantity in long pseudowords

In the other PA test to examine transfer literacy learners' quantity awareness, the participants had to recognise phoneme quantity in pairs of long pseudowords (3-5 syllabi) and mark on a piece of paper which of the two stimuli in a pair included a long or a geminate sound, and which sound it was (see Section 4.4.2.2 and Appendix 8). The test was given to all of the participants in the initial workshops on Day 3 (Round 1) and again towards the end of the workshops, in Workshop 1 on Day 8 and in Workshop 2 on Day 9 (Round 2). Before Round 1, the workshop programme had not included any lessons about phoneme quantity, but the topic had come up in the early lessons when the participants were practising reading and writing words and spontaneously came up with minimal pairs that differed only by the quantity of one consonant or one vowel sound (see Section 6.1).

Below I report the results from Round 1 and answer sub-research question XI. I then move on to sub-research question XII, and compare the results from Rounds 1 and 2 of testing. Finally, I review how the quantity recognition skills of the participants in Workshop 1 who went on to be trainers in Workshop 2 developed over a longer period of time, as they did the task more often.

Sub-research question XI: Do the participants recognise phoneme quantity in long pseudowords at the beginning of their transfer literacy training?

Altogether 28 participants in Worskhop 1 and 30 participants in Workshop 2 were tested on their recognition of phoneme quantity in long pseudowords on Day 3. However, the responses of nine participants (two participants in Workshop 1 and seven in Workshop 2) were not clear, and therefore their performance could not be included in the analysis. The most common reason for needing to exlude a response was that the participants had not specified whether the long or the geminate sound was on the first or on the second pseudoword in the pair. The results of the remaining 49 participants are shown in Table 46.

TABLE 46 Results of the quantity recognition task, Round 1 (N=49)

Types of responses	No. of responses (%)	
Correct	121	(32.4%)
Incorrect	252	(67.6%)
Missing*	19	
Total	392	

*Ten of the 19 responses labelled as missing were unclear, 3 were empty, and 6 did not follow the instructions. These 19 responses were given by 12 different participants.

The participants' performance in this task was poorer than I had expected; excluding the missing responses only 32.4% of the responses were correct. However, the poor results could partly be due to the complexity of the task and therefore the difficulty of understanding how to do it. As reported in Section 6.2, the results of the task to recognise and describe phoneme quantity in short pseudowords indicated that at the beginning of the transfer literacy training the learners were

not familiar with the conventional terminology for describing vowel length and gemination. In this second quantity awareness task the terminology was given in the practice items, but that may not have been enough to make the task clear for everyone. Besides, the participants were not used to dealing with pseudowords. Moreover, the (pseudo)words in the task were long and may therefore have sounded strange and complicated.

Sub-research question XII: Does the participants' ability to recognise the phoneme quantity in long pseudowords change with transfer literacy training?

Of the 49 participants whose results from Round 1 were analysed, 45 did the task again at the end of the two-week training (25 participants in Workshop 1 and 20 in Workshop 2). However, the responses of two participants in Workshop 1 and one participant in Workshop 2 were not clear, and therefore had to be disregarded from the analysis. The performance of the remaining 42 participants was included in the comparison of the results of Rounds 1 and 2. Counting the percentage of correct responses in both rounds (excluding the missing responses), the percentage was 32.8% in Round 1, and 38.2% in Round 2. The results for each item are presented in Table 47.

TABLE 47 Results of the quantity recognition task, Rounds 1 and 2 (N=42)

	R1			R2		
Item*	Correct response (%)	Incorrect response	Missing**	Correct response (%)	Incorrect response	Missing***
xirafeeta	13 (31.0%)	29	-	17 (41.5%)	24	1
kerompiilota	14 (35.9%)	25	3	12 (28.6%)	30	-
shuurmata	14 (34.1%)	27	1	21 (52.5%)	19	2
norrolayta	18 (43.9%)	23	1	19 (46.3%)	22	1
pukkulampayta	13 (32.5%)	27	2	12 (30.8%)	27	3
lelissankayta	11 (28.9%)	27	4	16 (39.0%)	25	1
deypannaytima	9 (22.5%)	31	2	11 (26.2%)	31	-
kiraleppata	13 (33.3%)	26	3	17 (41.5%)	24	1
Total	105 (32.8%)	215	16	125 (38.2%)	202	9

*For each item (i.e. pair of pseudowords) only the stimulus which included the long vowel or the geminate consonant are shown here.

**Seven of the 16 responses labelled as missing were unreadable, 3 were empty, and 6 response did not follow the instructions. These responses were given by 11 participants.

***Three of the 9 responses labelled as missing were unreadable and 6 were empty. These responses were given by 7 participants.

During the two weeks of training the participants had a lot of exposure to quantity differences, and they practised distinguishing between long and short vowels as well as geminate and non-geminate consonants both orally and in writing. Nevertheless, the participants' performance was only slightly better in Round 2 than in Round 1. My expectation beforehand had been that because of the exposure there would be more improvement.

Another point to note regarding the results is that there were no clear differences between the difficulty of recognising vowel length and the difficulty of recognising gemination. The results of the task of recognising and describing phoneme quantity in short pseudowords (Section 6.2) might have led one to expect that recognising the phoneme quantity in long pseudowords would be more difficult between geminate and non-geminate sounds than between long and short vowels. More data would obviously be needed to examine this issue in more detail, but the difference in the results of the two quantity awareness tasks might at least partly be due to the fact that in the task with short pseudowords the participant him- or herself had to find the terminology to describe the quantity difference, while in the task with long pseudowords the terminology was given.

As the results of Round 2 were still low, I asked the participants of Workshop 1 who worked as trainers in Workshop 2 to do the task again at the beginning and at the end of Workshop 2, when the task was given to the participants in Workshop 2. Consequently, eight participants did the task four times in their first five weeks of contact with Konso alphabetic writing, first themselves practising and then training others. Later on, four of the eight participants did the task for a fifth time during the follow-up training (data collecting Phase 2, see Section 4.2), and three of the four still for a sixth time while they worked as trainers in the teacher training workshop in Xolme (data collecting Phase 3). All these participants' results are shown in Table 48. With more exposure to alphabetic orthography, some participants gradually improved, but for some the task continued to be difficult.

TABLE 48 The quantity recognition performance of participants who did the task more than twice

	Number of correct responses, max 8					
	R1 (1.7.15)	R2 (8.7.15)	R3 (29.7.15)	R4 (4.8.15)	R5 (2.2.16)	R6 (19.7.17)
4WS123	2	2	2	1	-	-
11WS123	2	1	5	5	-	-
23WS123	2	3	5	4	-	-
27WS123	4	4	6	8	-	-
12WS123	6	8	6	5	6	-
18WS1234	1	(misunderstood)	3	0	2	5
25WS1234	4	(misunderstood)	4	5	4	5
15WS1234	2	5	6	7	7	7

Overall, the task of recognising quantity in long pseudowords turned out to be complicated and difficult to understand. Because there were only a few items in the task, no firm conclusions can be reached on the basis of the results. However, despite the difficulty of the task and of understanding how to do it, it was well received by the participants: they found the pseudowords fun, and the trainers in Workshop 2 liked the idea of composing more such exercises. Consequently, the task type became a popular exercise type in the teacher training workshops. Two years after the initial workshops, when I was following up the transfer literacy training workshop for teachers in Xolme, I noted in my diary that to make the task easier, the trainers had divided it into two, so that they had two sorts of exercises: either all dealing with quantity difference in the length of vowels, or all dealing with the quantity difference between a geminate and non-geminate consonant. I also noted that this was a good way of making the task easier (diary note on 20.7.2017).

6.4 Quantity and spelling performance

Due to the transparency of Konso alphabetic orthography in marking the quantity of all sounds, I used the alphabetic spelling performance of Konso transfer literacy learners as an indication of the extent to which they had mastered phoneme quantity on the metalinguistic level. In this section, I will first examine the spelling errors related to phoneme quantity, made by participants in Dictation 1 (see Section 4.4.3 and Appendix 9 for the task). I will then report other incidents in which I observed participants' difficulties with spelling quantity. Finally, I will discuss possible reasons for transfer learners' difficulties in learning to spell phoneme quantity according to the rules of the Konso alphabetic orthography.

The procedure for carrying out Dictation 1 and an overview of the spelling errors made by the participants is explained in more detail in Section 5.4. The overall number of spelling erros in Round 1 was 819, and in Round 2 it was 674. According to the error analysis, quantity errors comprised around 63% of all errors in both rounds of testing (62.6% in Round 1 and 63.1% in Round 2, see Table 44 in Section 5.4). A closer analysis of the different types of quantity errors revealed that the quantity of both vowels and consonants was confused in both directions: short vowels were written as long and long vowels as short, non-geminate consonants as geminate and geminate as non-geminate. However, the least frequent of the four error types was spelling a short vowel as long. The number of each type of quantity errors in both rounds of testing is presented in Table 49. The number of analysed responses in Round 1 was 1027, of which 30 were non-words and therefore excluded from the error analysis. The equivalent numbers in Round 2 were 1032 responses, of which 12 were non-words.

TABLE 49 Number and types of quantity errors in the spelling task, Rounds 1 and 2 (N=53)

Types of quantity errors	R1, No. of errors (%)		R2, No. of errors (%)	
Erroneous long vowel (e.g. **arraapa* for *arrapa*)	48	(9.4%)	54	(12.7%)
Erroneous short vowel (e.g. **qaleta* for *qaaleta*)	218	(42.5%)	146	(34.6%)
Erroneous geminate consonant (e.g. *arrappa* for *arrapa*)	97	(18.9%)	111	(26.1%)
Erroneous non-geminate consonant (e.g. **arapa* for *arrapa*)	150	(29.2%)	114	(26.8%)
Total	513		425	

Comparing the numbers of different types of quantity errors in the two rounds of testing revealed that in Round 2 there were fewer errors in which a long vowel was replaced by a short vowel and errors in which a geminate consonant was replaced by a non-geminate consonant. Errors in which a short vowel was replaced by a long vowel or a non-geminate consonant by a geminate consonant persisted, however, although the least common error in both rounds was spelling a short vowel as long.

The amount of data is too small to draw any firm conclusions about the pattern, but when the participants did the spelling task for the first time they had only very recently learned about the alphabetic spelling rules for marking phoneme quantity, so they might have written one, or two of the same characters quite randomly. When they did the task for the second time, they had had more spelling practice and had learned to pay attention to quantity, but they probably overreacted and mistakenly wrote a long or a geminate sound also when it was unnecessary. Looking at the overall results from the two rounds, the number of quantity errors in Round 2 was 88 fewer than in Round 1 (i.e., falling from 513 to 425). This indicated that although it was still difficult for the learners to really grasp how to spell phoneme quantity correctly, there had been considerable improvement.

Considering the alphabetic quantity marking from the point of view of an abugida reader (and speller), it is understandable that the issue was difficult for the transfer learners. Having been used to marking short, long, geminate and non-geminate CV sequences always with one CV fidel, the transfer to alphabetic spelling demanded the ability to recognise the quantity differences of every CV sequence in a word and mark each sequence either with two, three, or four characters, depending on the quantity of the vowel and consonant phonemes in a given word. For example, spelling the word *lukkalitteeta* 'hen' in the abugida requires simply five CV fidels: **ሉ·ከል·ቴ·ተ·**. Transcribing the word into alphabetic writing requires realising that the first, third, and fifth CV sequences each include a non-geminate consonant and a short vowel, and are therefore written with two characters, while the second CV sequence includes a geminate consonant and is written with three characters, and the fourth CV sequence includes both a long

vowel and a geminate consonant, and needs to be written with four characters: that is, *lu.kka.li.ttee.ta*.

To follow up how the spelling performance of the transfer learners and their ability to spell the quantity of sounds developed with more exposure to the alphabetic orthography, I asked seven participants who worked as trainers in Workshop 2 to do the same dictation task for the third time at the end of Workshop 2. The numbers and the types of spelling errors which they made in each round are presented in Table 50. The number of analysed responses was 140 in each round, and the sample did not include any non-words.

TABLE 50 Number and types of spelling errors, Rounds 1-3 (N=7)

Error types	R1, No. of errors (%) (Date: 3.7.15)		R2, No. of errors (%) (Date: 9.7.15)		R3, No. of errors (%) (Date: 6.8.15)	
Quantity error	63	(69.2%)	55	(65.5%)	48	(72.7%)
Wrong symbol	13	(14.3%)	12	(14.3%)	3	(4.5%)
Vowel omission	9	(9.9%)	6	(7.1%)	6	(9.1%)
Consonant cluster error	5	(5.5%)	10	(11.9%)	8	(12.1%)
Unclassified	1	(1.1%)	1	(1.2%)	1	(1.5%)
Total no. of errors	91		84		66	

In line with the results of the 53 participants from Rounds 1 and 2, the seven participants' ability to spell the quantity of sounds correctly continued to improve, but they still had problems with it. For this group of participants, the number of errors which were not related to quantity was small throughout the data collection period.

In addition to the results from the dictation task, during the data collection period I observed situations when the participants got confused about the spelling rules for quantity and mixed up which of the written characters in a word needed to be doubled. One such occasion took place on Day 2 in the teacher training workshop in Faasha in 2017, while the trainees were doing an exercise in which they had to complete a transcription from abugida to alphabetic writing by filling in letters missing from the alphabetic prompt that was given next to the abugida. I wrote in my diary:

> One trainee transcribed ማከ as *m_k ka* instead of *m_a a ka* and another trainee transcribed: አነ as *a n n a* instead of *a a n a*.
> Could it be that recognising and writing length and gemination correctly is so difficult partly because both features are embedded in the same [abugida] fidel? (D250717)

When I noted the above incident, it seemed to me that the trainees had recognised the quantity correctly, but because they were used to marking consonants and adjacent vowels with one fidel, in their minds the two phonemes belonged closely together, and they mixed up which alphabetic character needed to be doubled to mark the long (vowel) sound. This suggested that there was a connection between the participants' difficulty in marking phoneme quantity with the correct alphabetic character and their difficulty in perceiving consonants and

vowels as separate units. A similar problem was reflected in the participants' responses when they had to recognise and describe the quantity of phonemes in short pseudowords at the beginning of the training: instead of labelling a certain phoneme as long or tense, they labelled a CV sequence or a whole word (see Section 6.2).

After the participants had been taught that in the alphabetic orthography all long vowels and geminate consonants needed to be marked, they started confusing how to mark (and not to mark) quantity in the abugida spelling. On one such occasion, on Day 3 of Workshop 2, I wrote in my diary:

> One of the participants (61WS2) wrote አተ [aa.ta] for *atta*, and said: *aa sene a kokkoka* [the tense /aa/]. (D290715)

On this occasion, the participant was trying to make use of the difference between the long and short /a/ to mark gemination in the word he was spelling in the abugida. The correct abugida spelling was አተ (which can be read as both /ata/ and /atta/).

The difficulty of spelling phoneme quantity correctly was also revealed by the large number of spelling errors made by participants when they wrote their answers to the open questions at the end of the initial workshops. I did not systematically analyse all the spelling errors, but in every answer written in the alphabetic orthography there were at least a few spelling errors related to phoneme quantity. As in the dictation tasks, quantity errors were by far the most common of all errors in the answers.[33] The following excerpts from two participants' responses illustrate the point (Quotes 31-32).

Quote 31 (14WS1)

Response	Targeted spelling	Gloss
fitala a afa ***xonsso*** *axatta* *fitala adera ka* *akumma'a****pata*** *qapa* *maxoor puussowwa* *a****latini*** *nessa a****kkokooka*** *isho* *a****nukkula*** *kaso qapan.*	*fitala a afa* ***xonso*** *a xatta* *fitala a dera ka* *a kumma'a* ***patta*** *qapa* *ma xoori puussowwa* *a* ***laatini*** *nessa a* ***kokkoka*** *isho* *a* ***nukkulla*** *kaso qapan.*	'The old Konso fidels have only long and short fidels, but the alphabetic letters have [denote] also tense and lax sounds.'

[33] Of the 55 participants who answered the open questions at the end of the two-week training, 13 wrote their answers entirely in the alphabetic orthography. Nine participants used both orthographies, writing some of their thoughts in the abugida and some using alphabetic orthography, while the rest (i.e. 33 participants) wrote only in the abugida. This shows that, at the end of the two weeks of training, most participants still felt more confident expressing their thoughts in the abugida than in the alphabetic orthography.

Quote 32 (48WS23)

Response	Targeted spelling	Gloss
*i**ppaqarri mana mala oni kininoye** oton **kolanoye fiita** Akokkoka ka **Annukula** olikela **rexeta** ini **etanina** yi **kaammo adeerra** ka **akkumaa'a** ale kela **rexeta** ini **etanina**.*	***ipaqaari maana malla oon kiininnoyye** oton **kollan-noyye fitala** a kokkoka ka a **nukkulla** olkela **reexeeta** in**ettaninna** ka **kamma** a **dera** ka a **kumma'a** olkela **reexeeta** in**ettaninna**.*	'It is good [to change the orthography] because when we learn [to use the alphabetic orthography] we can distinguish between tense and lax fidels, and also between long and short.'

Finally, the spelling rule of marking quantity by writing the same letter twice might be one reason for literacy learners' difficulty in learning to spell quantity correctly. In her report on Finnish children's difficulties in mastering the spelling of long vowels and gemination, A. Lehtonen (2005) notes that marking quantity by repeating a letter (i.e. by two characters) is inconsistent in a transparent (Finnish) orthography, and therefore can be expected to be difficult to learn. The same may apply with regard to Konso. It is beyond the scope of this study to evaluate the Konso alphabetic spelling rule for quantity, but transfer literacy learners definitely seemed to find it somewhat confusing. Answering the open questions about the two Konso orthographies, one participant wrote:

Quote 33 (47WS2)

እኮክ ወ መለ ኮክ ሴደ ፍተለ ተከ ኦፐ ኦኦሮ መለ ሸከይተ ኮክ

'It is difficult [to learn alphabetic literacy skills] because one fidel is repeated, that makes it a little bit difficult.'

A similar thought was expressed throughout the data collecting period by many of the learners, both in the workshops and during my visits to the literacy classes. When I asked the learners what they found difficult in the new orthography, a common answer was: two of the same fidels next to each other.

In conclusion, even if the results of the spelling test and the high number of spelling errors related to quantity marking can be taken as an indication of the transfer learners' low level of quantity awareness, the result needs to be interpreted with some caution. This is because spelling the quantity of phonemes correctly is not straight-forward, but requires several steps: first of all, to recognise the correct sound, secondly, to connect the sound with the correct symbol, and thirdly, to evaluate the quantity of the sound and then consider how many symbols need to be written. This means that misspelling the quantity of a sound may also happen for reasons other than a lack of ability to recognise, identify and manipulate phoneme quantity. It is also possible that sometimes a respondent may have interpreted the quantity of a sound differently from what was judged to be correct in analysing the results of the spelling tests. However, during class time,

when learners were practising spelling and an exercise was being corrected together, on no occasion did I hear participants disagreeing about the quantity of a sound in a given word.

6.5 Quantity and reading performance

A. Lehtonen and Bryant (2001) describe reading as recognising the visual shapes of words, and writing as memorising the written form of words. Similarly, Joshi, Høien, Feng, Chengappa and Boulware-Gooden (2005 p. 570) write that reading is a "recall task", and therefore a less demanding task than spelling. Along the same lines, when the Konso literacy coordinator compared the differences between reading and writing tasks from the point of view of a literacy learner, he described reading as eating and writing as preparing the food.

A crucial difference between reading and writing tasks is that when asked to decode meaningful words, readers are likely to focus on looking for meanings even if it is difficult for them to combine the symbols with the corresponding sound units. Therefore, even if the readers do not recognise all the symbols while trying to come up with correct sound-symbol correspondences, they will probably still try to compose a meaningful word, even if that involves having to simply guess some of the symbols. However, in spelling, the writer's attention is directed entirely towards trying to match sound units to the correct symbols, and meaning does not influence the process.

Because of that a reading task can be regarded as a less reliable measure of a subject's PA than a spelling task. However, because Konso vocabulary includes a lot of words that give different meanings only by altering the quantity of sounds, it was possible to include in the word-reading test a few items to measure participants' ability to decode phoneme quantity as marked in the alphabetic orthography.

Fifty-two participants in the two initial workshops (26 participants in each) did the word-reading test twice, for the first time half-way through the two-week training programme (in Workshop 1 on Day 6 and in Workshop 2 on Day 5), and then again towards the end of the training, on Day 9 (see Section 4.4.4 and Appendix 9 for the task). Below I report the participants' reading performance in terms of phoneme quantity by examining the errors they made in reading words in which there was a difference in meaning if the quantity of a phoneme was altered. The test included five such words, mixed with the other test items. Mixing items minimised the chance that participants would start paying special attention to the quantity of sounds. The five words were: *kalata* 'praise'; *kallaata* 'life'; *kuuta* 'peak of roof'; *kutta* 'dogs' and *damma* 'let us eat'. Other meaningful words that include the same phonemes as *kalata* and *kallaata* are: *kalaata* 'provision', *kallaatta* 'to live', and *kalatta* 'to return home bringing something'; words that include the same phonemes as *damma* are: *dama* 'food', (referring to a kind of food which is very common in Konso) and *daamma* 'flour'; and altering the quantity of

/t/ in *kuuta* and *kutta* denotes the difference between singular and plural, so: *kuutta* 'peaks of roofs' and *kuta* 'dog'.

On Day 6 of the first workshop, after the participants had done the word-reading test for the first time, I wrote in my diary:

> Reading test: the performance was poorer than I expected. Slow reading, and a lot of people made mistakes, especially in vowel length and gemination. (D060715)

In line with the diary note, the results of the tests revealed that quantity errors were common when reading words which gave a different meaning when the quantity of phoneme(s) was altered, but other types of errors were few: 87.2% of the errors in reading the five target words were quantity errors in Round 1, and 90.7% in Round 2. The other error types were mainly mixing up letters (e.g. *kuufa* or *koota* for *kuuta*). All the errors in each response were counted, so one response could include more than one error, for example: *kollatta* for *kalata* gave two quantity errors and one error of mixing up one character. The types and numbers of errors made by the participants in reading the five words in the two rounds of testing are presented in Table 51. The total number of analysed responses was 221 in Round 1, and 242 in Round 2. Of these responses 111 were decoded correctly in Round 1 (50.2%) and 130 in Round 2 (53.7%).

TABLE 51 Number and types of errors in reading *kalata, kallaata, kuuta, damma, kutta*, Rounds 1 and 2 (N=52)

Type of error	R1, No. of errors (%)	R2, No. of errors (%)
Long vowel (e.g. *daamma* for *damma*)	27 (17.3%)	20 (13.3%)
Short vowel (e.g. *kuta* for *kuuta*)	30 (19.2%)	24 (16.0%)
Geminate consonant (e.g. *kallaatta* for *kallaata*)	35 (22.4%)	39 (26.0%)
Non-geminate consonant (e.g. *kuta* for *kutta*)	44 (28.2%)	53 (35.3%)
Other type of error	20 (12.8%)	14 (9.3%)
Total	156	150

The results suggested that it was difficult for participants to pay attention to the quantity of sounds in reading words in both rounds of testing. Table 52 presents the number of correct responses and the types of erroneous responses in Round 2. The total number of responses is lower for the last three words (*kuuta, kutta*, and *damma*), because the test was timed, and some participants did not manage to read all the words in the time given for the task.

TABLE 52 Number of correct and incorrect responses and types of reading errors, Round 2 (N=52)

Target word	No. of correct responses (%)	Incorrect responses	No. of incorrect responses	Total no. of responses
kalata	36 (69.2%)	*kallaata*	12	52
		kollatta	2	
		**kallatta*	1	
		kalta	1	
kallaata	31 (59.6%)	*kallaatta*	7	52
		kollatta	3	
		kalaata	5	
		kalata	2	
		**kollaatta*	1	
		kalta	2	
		kalayta	1	
kuuta	28 (57.1%)	*kuta*	9	49
		kutta	10	
		koota	1	
		kuufa	1	
kutta	23 (52.3%)	*kuta*	20	44
		kuuta	1	
damma	12 (26.7%)	*dama*	24	45
		daamma	7	
		damdama	1	
		nama	1	

The task of reading single words in a language like Konso, where the quantity of phonemes so often makes meaning differences, is quite demanding, and calls for paying close attention to phoneme quantity and the spelling rules that mark it. It is therefore quite possible that words which differ from other meaningful words only by the quantity of phonemes would be easier to read in a sentence than as single words. A sentence would allow the reader to use the context to determine which word is meant, instead of needing to detect the meaning by looking at how many times a certain character is used. Also, it is possible that while reading a list of single words, ordinary nouns in the singular come to mind first, and decoding for example a verb form or the plural form of a noun out of context is more difficult. If this is the case, in this particular word-reading task, the errors of decoding *damma* 'let us eat' as *dama* 'food' or *daamma* 'flour', and possibly also *kutta* 'dogs' as *kuta* 'dog' could partly be due to the nature of the words. In any case, the results of the word-reading test pointed to participants' difficulty in decoding quantity. The results were also in line with the results from other quantity measures, confirming that mastering phoneme quantity was difficult for the transfer literacy learners.

6.6 Quantity marking as the major difficulty in transfer literacy learning

Throughout the data collecting period, the problem of recognising the quantity of each phoneme accurately in reading and marking it correctly in spelling was frequently remarked upon by the literacy teachers and their students. In February 2016 (i.e. data collecting Phase 2, see Section 4.2) when I visited transfer literacy classes and discussed with the teachers and students their experiences of transfer learning, the issue came up in every visit. After visiting a class in the village of Orshale I wrote in my diary:

> In our discussion [with the students] at the end of the class most people said that reading and writing in the abugida was easier. Why? Because *ka* is written and said in the same way… because there is no need to think about the length of sounds. A few people said that the alphabetic orthography was easier, and I understood they said this because it [alphabetic orthography] makes the meanings clear when there is a difference in quantity. (D080216)

Similarly, after a visit to a transfer class in the village of Ohombo I wrote:

> After the lesson I asked the students what was difficult for them to learn. They said that it was the need to recognise quantity differences. (D090216)

And after a visit to the village of Laawa I wrote:

> The teacher said gemination is difficult – both for the students but also for himself. But when I followed the class it seemed to me that the teacher had mastered gemination well… At the end of the class I asked the students to describe differences between the orthographies and to say what was difficult for them [in learning the alphabetic orthography]. As a difference, they said the big number of letters [per word] and as a difficulty, quantity differences. (D140216)

It seemed, therefore, that both teachers and students found quantity marking to be the biggest problem in learning alphabetic literacy skills. During my visits to the transfer literacy classes I also came across situations in which the teacher was not confident about teaching about alphabetic quantity marking; he felt too insecure in his own skills to explain and demonstrate it clearly to others. This makes the teaching of quantity a crucial point in the transfer literacy training workshops for teachers.

6.7 Drawing together the results on quantity awareness

Research question 1 What is the quantity awareness of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences?

At the beginning of the transfer literacy training, the participants' understanding of the quantity of phonemes as a semantic feature in the Konso language was very vague. My observations about the learners' abugida spelling patterns at the beginning of the transfer literacy training indicated that they were not used to consistently marking length for the vowels /a/and /i/, and therefore did not systematically pay attention to the quantity of any sounds when spelling. Moreover, by far the biggest challenge in learning alphabetic spelling rules was mastering the correct spelling of quantity. In the word-reading task, the quantity of a phoneme was commonly mispronounced when the erroneous decoding produced a meaningful word, while other types of decoding errors were few. As the Konso abugida marks quantity only for the vowels /a/ and /i/, abugida readers do not need to pay conscious attention to quantity marking for most phonemes. As a result, the link between transfer learners' vague quantity awareness and problems in dealing with quantity differences in alphabetic writing can be attributed to the nature of abugida writing.

Nevertheless, most of the participants who did the oral quantity awareness test at the beginning of the transfer literacy training were able to recognise differences in the length of a vowel in short pseudowords, but not everyone used the conventional terminology to describe it. Recognising and describing the difference between geminate and non-geminate consonants was more difficult. In their responses participants also had problems assigning a quantity difference to a specific phoneme, so they tended to assign it to the whole stimulus (e.g. *taada*), or alternatively to the relevant CV sequence (e.g. *taa*). This points to a close connection between phonemic (quality) awareness and quantity awareness: to be able to assign quantity differences within words (or pseudowords) to a specific phoneme, one needs to be able to perceive the phoneme as a separate unit from the rest of the word.

In the second quantity awareness test (i.e. recognising phoneme quantity in long pseudowords) no difference was found between the difficulty of recognising quantity differences in vowels and in consonants, but the participants had poor results in both tasks.

Overall, the findings about the transfer learners' quantity awareness in the early stages of the transfer literacy training were in line with the expectation that the lack of extensive quantity marking in the abugida would make abugida readers' quantity awareness vague.

Research question 2 How does the Konso abugida readers' quantity awareness change during the process of learning to read and write their language in an alphabetic orthography?

Exposure to the Konso alphabetic orthography opened the participants' eyes to the role of phoneme quantity in their language. This became clear at the end of the initial workshops, when the participants answered the open questions about the two orthographies for the second time. Over half of the respondents (36 out of 55 participants) mentioned the difference in how the two orthographies handle phoneme quantity. Their answers showed that they had understood the role of quantity in making meaning differences between words, and found the extensive marking of quantity in the alphabetic orthography helpful for working out the meanings of words that differed only by their quantity of sounds.

At the same time, however, the participants' difficulty in accurately recognising and identifying quantity differences well enough to actually follow the spelling rules for marking the quantity of each sound was reflected in the large number of quantity errors they made in the dictation test they did twice during the two-week training workshop (i.e. Dictation 1). Moreover, the seven participants in the first workshop who did the dictation test for a third time a month later, after they had worked as trainers in the second workshop, continued to have difficulties in spelling the quantity of sounds correctly. Similarly, participants who at the end of the two-week training workshops wrote their answers to the open questions in the alphabetic orthography made a lot of spelling errors related to quantity. However, even if the correct spelling of quantity remained difficult, the results of Dictation 1 on different rounds of testing showed that, the number of quantity errors in spelling the words was gradually decreasing. This suggests that while practising alphabetic literacy skills the learners began to pay attention to the quantity of sounds and mark it correctly in spelling. Nevertheless, errors in decoding words that made a meaningful word if the quantity of a sound was altered were common in the word-reading task in both rounds of testing.

The results of the PA tests that measured quantity awareness and were carried out twice during the initial workshops also indicated some improvement in the participants' quantity awareness at the end of the two weeks of training. However, it was still difficult for most participants to recognise the phoneme quantity in pseudowords accurately, particularly in long pseudowords. Some of the eight participants who did the test on long pseudowords more times during the data collecting period performed better in the later rounds, but the performance of others showed no improvement.

Overall, looking at the change in the transfer learners' quantity awareness during the transfer learning process, it can be concluded that exposure to the alphabetic orthography made learners more aware of the role of quantity in their language. During the training they also made a good start in learning to recognise, identify and manipulate phoneme quantity in the language. However, it also became clear that mastering phoneme quantity, that is, being able to accurately recognise it in reading and spell it correctly, is a challenging task for a Konso transfer literacy learner, and requires a lot of practice and a lot of time.

Research question 3 What is the role of quantity awareness in transfer literacy learning from abugida to alphabetic script in Konso, and what are the relevant points to pay attention to in Konso transfer literacy teaching?

The quantity of phonemes as a frequent feature in making meaning differences between Konso words and the transparency of the alphabetic orthography in marking quantity differences make quantity awareness a crucial aspect in learning alphabetic literacy skills. The Konso abugida marks quantity for only two vowels, and the results of this study suggested that Konso abugida readers are not used to paying attention to quantity of sounds in reading and writing. Enhancing transfer literacy learners' quantity awareness was therefore shown to be an important aspect of Konso transfer literacy teaching. This was also clearly stated by the transfer learners themselves in their answers to the questions about the two orthographies.

However, it also became clear that in order to be able to develop quantity awareness, transfer learners first need to be able to distinguish phonemes as separate units. This is because one needs to be able to extract a phoneme from its surrounding phonemes in order to assign it the correct quantity. In this sense, phonemic (quality) awareness was found to be a necessary precursor of quantity awareness. Enhancing transfer literacy learners' phonemic (quality) awareness was therefore a pre-requisite for developing transfer learners' phonemic quantity awareness.

At the beginning of the transfer literacy programme and the data collecting period for the study, it was decided that vowel length and gemination would be introduced as two separate features. This decision was made to conform with the Amharic convention of calling vowels 'long' or 'short' and consonants 'tense' or 'lax', and to be able to use the already existing, equivalent Konso terms. The alternative would have been to explain to transfer learners both vowel length and gemination using the same term, and relate the feature to the duration of any sound, consonant or vowel. Long vowels and geminate consonants could then all have been described as 'long'.

By finding out how transfer learners would refer to vowel length and gemination, I wanted to find out whether the decision to introduce the two as two different features was wise. The results of the quantity awareness tests, as well as the participants' overall perception of vowels and consonants in different terms, indicated that labelling vowel length and gemination differently was a good approach. While doing the quantity awareness test of recognising vowel length and gemination in short pseudowords at the beginning of the transfer literacy learning, the participants hesitated when asked to describe gemination. Describing vowel length was easier for them than describing gemination. This suggested that they perceived the two phenomena as different. Also, as reported in Chapter 5, in order to learn to distinguish the consonant and the vowel component in a CV fidel, the learners had to understand the different nature of each of them. Therefore, viewing the quantity aspect of the two as being different was more logical. During the training workshops the trainers also made use of the different terms for vowel length and gemination when describing the differences between vowels and consonants, and explained that vowels become long while consonants become tense (see Section 5.1.2).

7 SYLLABLE AWARENESS AND ITS ROLE IN THE TRANSFER

Syllable awareness is known to emerge along with oral language skills (Goswami, 2005; Ziegler & Goswami, 2005). However, syllable awareness has also been found to predict early literacy learning across languages and writing systems, including alphabetic writing (Perfetti & Verhoeven, 2017). Syllables are used as a sub-stage for learning to decode languages which have a complex morphology and a transparent alphabetic orthography, such as Turkish and Finnish (Durgunoğlu, 2006; Durgunoğlu et al., 2003; Lerkkanen, 2006), and mastering the phonological syllabification rules has been found to improve Finnish literacy learners' spelling ability (A. Lehtonen & Bryant, 2001).

Literacy development in languages using the Brahmi script has been found to rely on syllable awareness longer than in languages using an alphabetic script (Nag & Snowling, 2012; Nag, 2017). This suggests that syllables are the most salient phonological unit for abugida readers. Also, studies on Brahmi readers' intuitive syllabification indicate that a mismatch between orthographic and phonological syllables influences readers' intuitive syllabification, and their orthographic knowledge makes them opt for syllable breaks according to the aksharas rather than the phonological syllables (Nag, 2017).

The disparity between phonological and orthographic syllables of the Konso abugida resembles the disparity in languages using the Brahmi script, and therefore might influence Konso abugida readers' intuitive syllabification. Besides, phonological syllables have not been relevant units when learning literacy skills in the Konso abugida, and the concept of a syllable has not been used in abugida literacy teaching. Syllables are not used in Amharic or English literacy teaching, either.

The findings from different language contexts about the emergence of syllable awareness with oral language skills, as well as the influence of orthography on intuitive syllabification and the role of syllables in the learning of alphabetic literacy skills, made the nature and extent of Konso transfer literacy learners' syllable awareness a relevant topic for the present study. To design an effective transfer literacy teaching method, it seemed important to find out what transfer learners' syllable awareness was like, and what the role of phonological syllables should be in teaching transfer learners alphabetic literacy skills.

Given the earlier studies on the role of syllable awareness in the learning of alphabetic literacy skills in a transparent orthography (Durgunoğlu et al., 2003; A. Lehtonen & Bryant, 2001; Lerkkanen, 2006), in the Konso transfer literacy lessons drafted before the study, phonological syllables were introduced in connection with decoding practice (see Section 2.3.5). This involved teaching the phonological syllabification rules, including the rule of dividing a geminate consonant

between two syllables (i.e. *nap.pa* ነፐ $CVC_1.C_1V$ instead of *na.ppa* $CV.C_1C_1V$) and the rule of attaching the first consonant of a consonant cluster to the preceding CV sequence (i.e. *poy.ta* ፖይተ $CVC_1.C_2V$ instead of *po.y.ta* $CV.C_1.C_2V$). As aligning syllable breaks according to the boundaries of phonological syllables was new to the transfer learners and required two quite different types of adjustment to the abugida sound-symbol correspondences, an alternative would have been to teach decoding with the help of phonemes and the abugida CV units, without introducing the concept of a syllable or teaching the phonological syllable boundaries. Therefore, I assumed that finding out about transfer learners' preferences for syllable boundaries and following up how they responded to teaching about syllables would help to determine how big a role syllables and the phonological syllabification rules should play in Konso transfer literacy teaching.

As the concept of a syllable had not been relevant in Konso abugida literacy teaching, there was no Konso term for syllable. For the purposes of transfer literacy teaching, it was decided to use the term *qoottoota*, 'part of something' to refer to syllables, and the verb *qootatta,* 'to divide into parts' to refer to syllable segmentation.

In this chapter, I first report the participants' performance in the oral syllable segmentation task. I then move on to examining their performance in the spelling and reading tasks, looking for potential relationships between error types and the participants' syllable awareness. Finally, I draw together the results and answer the overarching research questions from the perspective of syllable awareness.

7.1 Syllable segmentation

To examine the participants' ability to segment words into syllables, and their preferences for syllable boundaries (intuitive syllabification), an oral syllable segmentation test was included in the data set. The test is explained in Section 4.4.2.3 and the test items are presented in Appendix 8. Twenty-three of the participants in the initial workshops were given the test when the workshops began and again towards the end of the workshops, in Workshop 1 on Day 9 (thirteen participants), and in Workshop 2 on day 8 (ten participants).

After the thirteen participants in Workshop 1 had done the test on Day 1, I noted in my diary:

> I failed to explain properly the concept of a syllable… For some trainees the meaning [of the stimuli] was so important that they were not able to get over with it. (D300615)

I had anticipated that it might be difficult for participants to understand how and why they were supposed to divide words into parts, and that turned out to be the case. The only way they were used to segmenting words was extracting the initial CV fidel from the rest of a keyword in the basic lessons of the Konso abugida primer (see Section 2.3.4). Besides, the syllable segmentation test was the

first PA test given to the participants, right at the beginning of their training, so they had no experience of tasks in which they had to deal with language forms without reference to meaning.

Consequently, despite the instructions not to pay any attention to the meanings of the stimuli when segmenting them, five participants in Workshop 1 (2WS14, 9WS1, 12WS123, 18WS1234, 28WS14) and two in Worskhop 2 (41WS2 and 44WS2) first tried to respond by counting how many different meanings they could get from the sounds of the stimulus if the quantity of one or more phonemes was altered, or by explaining what the stimulus would mean if there was a quantity change. After I repeated the instructions and the correct responses to the practice items, two of the seven participants (12WS123 and 28WS14) understood that the test was not about meaning, but five of them still had problems understanding what they were supposed to do, and after a few stimuli I discontinued the test with them. In addition, two more participants (58WS2 and 34WS23) did not do all the test items. I discontinued the test with 58WS2 because he did not comply with the advice to leave a clear gap between the segments, so it was impossible to know how he wanted to segment the stimuli. 34WS23 did not do the last three items for a reason which I have not documented.

In Round 2, all the participants understood that the meanings of the words were irrelevant for the task, and everyone was able to do the test according to the instructions. Below I report the participants' performance in both rounds of testing. Firstly, I examine whether the participants were able to divide words into syllable-sized units according to syllable peaks (sub-research questions XIII). Secondly, I examine to what extent their responses were in line with phonological syllables (sub-research questions XIV) by comparing how they segmented open and closed syllables in two-syllable words. Thirdly, I present the results of the error analysis of items that contained a consonant cluster or a geminate consonant, and identify the connections between abugida sound-symbol correspondences and the transfer learners' syllable awareness (sub-research questions XV and XVI). Finally, I report in more detail how the syllable segmentation skills of two participants (18WS1234 and 12WS123) developed over a longer period of time (Case study 3).

Sub-research question XIII: Are the participants able to segment words into syllables according to syllable peaks at different points in time during their transfer literacy learning process?

To find out whether the participants were able to segment words into the right number of syllables by following syllable peaks, I counted how many parts each item was segmented into by each participant, and whether the segments complied with the syllable peaks. The results of segmenting two-syllable words (seven items) and three-syllable words (five items) are presented separately in Table 53.

TABLE 53 Results of segmenting two-syllable and three-syllable words (N=23)

	Two-syllable words		Three-syllable words	
	R1 (%)	R2 (%)	R1 (%)	R2 (%)
Segmented according to syllable peaks	114 (79.2%)	143 (88.9%)	46 (50.5%)	70 (61.4%)
Too many segments	7 (4.9%)	17 (10.6%)	5 (5.5%)	17 (14.9%)
Too few segments	-	-	39 (42.9%)	22 (19.3%)
Another error	7 (4.9%)	-	-	5 (4.4%)
Not segmented	16 (11.1%)	1 (0.6%)	1 (1.1%)	-
Missing*	17	-	24	1
Total	161	161	115	115

*Responses in Round 1 were missing from participants who did not complete the test. In Round 2 one participant could not respond to one item. The missing responses are excluded from the percentages.

The results showed that participants were able to segment two-syllable words according to syllable peaks quite well, but segmenting three-syllable words was more difficult. Naturally, longer stimuli are more difficult to segment than shorter stimuli, but the result also suggested that the participants may not have been able to understand what they were expected to do. This could be partly because of their inexperience in dealing with language without referring to meaning, but it also suggests that they may not have had a clear conception of a syllable as a sub-lexical unit.

In errors where stimuli were divided into too many segments, the respondents typically mixed CV units and vowels within the units, and repeated a vowel as a lone phoneme, for example: *caa-aa-tta*, *tu-u-pa-rra*. Also, in words which contained a consonant cluster, a typical error that resulted in too many segments was extracting the coda consonant from the preceding CV unit, for example: *pa-li-da*. I will return to this error type in more detail below, under sub-research question XV.

In responses which contained too few segments in three-syllable stimuli, a typical error was extracting only the first CV unit from the rest of the stimulus, for example: *lii-lana*. This error resembles the practice in the abugida primer lessons of teaching new fidels by extracting the CV fidel to be learned from the keyword (see Section 2.3.4), so this abugida teaching practice may have influenced the participants' way of processing the task. Comparing the number of segmented first and second syllables with the number of segmented second and

third syllables according to the syllable peaks in three-syllable stimuli, in Round 1 the first two syllables were segmented 71 times, (78.0% of responses), whereas the second and third syllables were segmented only 53 times (58.2% of responses). In Round 2, the first two syllables were segmented 99 times (86.8%), whereas the second and third syllables were segmented 79 times (69.3%). In Workshop 1, the practice items included a three-syllable word, *kaakurta*, but in Workshop 2 all the practice items were made up of only two syllables. This difference could have made participants in Workshop 2 more likely to mistakenly assume that the idea of the task was to divide the stimuli only into two. Nevertheless, in Round 1 the participants in Workshop 2 segmented the second and third syllables more often than did the participants in Workshop 1: in Workshop 2, in 62.2% of the participants' responses second and third syllables were segmented, and in Workshop 1 in 55.5%. In Round 2 the result was reversed: the participants in Workshop 1 segmented the second and third syllables in 76.9% of their responses, and the participants in Workshop 2 in 59.2% of their responses.

I labelled as "another error" errors which could not be classified as correct or incorrect by counting the number of segments according to syllable peaks. In such erroneous responses the number of segments was correct, but the syllable peaks were not, for example: *po-yit*, *pii-ri-toota*, *da-mmincaa-nee*. Also, in some of these errors the first CV unit was extracted, but then the whole word was repeated, for example: *ku-kuta*. This error resembles the practice of extracting the initial fidel from the rest of the word, as is done in the abugida literacy lessons. Therefore, as with the responses in which only the first two syllables were segmented in a three-syllable stimulus (e.g. *lii-lana*), it is possible that the response was influenced by the abugida teaching method.

Counting all syllable breaks in the whole test and examining the performance of each participant, in Round 1 no one segmented all 15 stimuli into the correct number of syllables. However, there was one participant (1WS1) who missed only the last syllable peak in the longest word, thus segmenting the stimulus as *par-paa-cis-nin-kitto*.

In Round 2, one participant (17WS1) segmented all the stimuli according to the syllable peaks, and thus came up with the right number of syllables. In addition, four participants missed only one syllable break each (1WS1, 12WS123, 25WS1234 and 48WS23). The other participants either divided some of the stimuli into too many segments (five repondents) or failed to segment all the syllables in stimuli longer than two syllables (six respondents) – or made both kinds of mistakes (seven respondents).

Sub-research question XIV: Do the participants comply with the phonological syllable structure when segmenting words into syllables?

Comparing the segmentation patterns in two-syllable items provided an overview of the extent to which the participants complied with the phonological syllable structure. The seven two-syllable stimuli included two items with open syllables, three items with a consonant cluster, and two items with a geminate consonant. The results for segmenting each item are presented in Tables 54-55. Responses in which the phonological syllabification rule was followed are labelled as "segmented correctly" and the responses in which it was not as "segmented incorrectly".

TABLE 54 Results of segmenting two-syllable words, Round 1 (N=23)

	Open syllables		Consonant clusters			Gemination	
	ku-ta	e-la	an-ti	pal-da	poy-ta	caat-ta	nap-pa
Segmented correctly	18	18	7	11	12	-	-
Segmented incorrectly	3	2	9	7	6	18	17
Not segmented	2	1	6	2	2	1	2
Missing*	-	2	1	3	3	4	4
Total	23	23	23	23	23	23	23

*Responses were missing from participants who did not completed the test.

TABLE 55 Results of segmenting two-syllable words, Round 2 (N=23)

	Open syllables		Consonant clusters			Gemination	
	ku-ta	e-la	an-ti	pal-da	poy-ta	caat-ta	nap-pa
Segmented correctly	21	20	18	16	16	2	1
Segmented incorrectly	2	2	5	7	7	21	22
Not segmented	-	1	-	-	-	-	-
Total	23	23	23	23	23	23	23

In segmenting two-syllable words with open syllables, apart from five responses in Round 1 and four in Round 2, all the participants who segmented the stimuli complied with the phonological syllabification rule. However, in open syllables the abugida spelling coincides with the phonological syllables, so segmenting a (C)VCV stimulus correctly in these cases does not reveal whether the response is based on phonological or orthographic processing.

In segmenting words with a closed syllable involving a consonant cluster ((C)VC_1C_2V), in the first round of testing, 42.3% of the responses in which the stimuli were segmented did not follow the phonological syllabification rule (i.e. 22 out of the total of 52 responses). In Round 2 there was considerable improvement, as only 27.5% did not follow the rule (i.e. 19 out of 69 responses). This indicated that during the transfer literacy training the participants had learned to comply better with the phonological syllabification in segmenting consonant clusters.

In segmenting words with a closed syllable involving a geminate consonant (CV(V)C_1C_1V), in Round 1 nobody followed the phonological syllabification rule even once, and still in Round 2 only two participants followed the rule for *caat-ta* and one for *nap-pa*. The results therefore indicated considerable differences in the difficulty of complying with the phonological syllabification rules, depending on the type of syllable break.

Sub-research question XV: How do the participants segment consonant clusters at different points in time during their transfer literacy learning process?

To examine in more detail the potential role of orthography in the participants' intuitive syllabification, I looked at the error types and their relation to the sound-symbol correspondences of the Konso abugida. The error analysis of responses for items which included a consonant cluster suggested that the abugida orthography had influenced participants' intuitive syllabification. The number of correct responses (i.e. following the phonological syllable breaks) and the results of the error analysis for Round 1 are presented in Table 56, and for Round 2 in Table 57.

TABLE 56 Number of correct responses and different types of errors in segmenting consonant clusters, Round 1 (N=23)

Stimuli	Correct	(C)V.CiCV *(a-ni-ti)*	(C)V.CCV *(a-nti)*	(C)V.CV *(a-ti)*	Another response*	Not segmented	Missing**	Total
an-ti	7	1	6	2	-	6	1	23
pal-da	11	2	4	-	1	2	3	23
poy-ta	12	2	3	-	1	2	3	23
piir-too(ta)	10	6	2	-	-	1	4	23
xon-sit(teeta)	8	2	3	3	-	2	5	23
par-paa…	7	6	-	-	-	3	7	23
…cis-nin…	6	2	1	-	-	7	7	23
…nin-kit(to)	7	-	2	-	-	7	7	23
(dam)min-caan	9	2	5	-	-	-	7	23
Total	77	23	26	5	2	30	44	207

*Responses classified as "another": *pa-la-da* and *po-yit*

**Responses were missing from participants who did not complete the test.

TABLE 57 Number of correct responses and different types of errors in segmenting consonant clusters, Round 2 (N=23)

Stimuli	Correct	(C)V.CiCV *(a-ni-ti)*	(C)V.CCV *(a-nti)*	(C)V.CV *(a-ti)*	Another response*	Not segmented	Missing**	Total
an-ti	18	1	2	2	-	-	-	23
pal-da	16	5	1	-	1	-	-	23
poy-ta	16	6	1	-	-	-	-	23
piir-too(ta)	14	9	-	-	-	-	-	23
xon-sit(teeta)	12	4	2	3	1	1	-	23
par-paa…	16	5	-	-	-	1	1	23
…cis-nin…	12	2	-	-	3	5	1	23
…nin-kitto	8	1	-	5	3	5	1	23
(dam)min-caan	8	5	3	3	2	2	-	23
Total	120	38	9	13	10	14	3	207

*Responses classified as "another": *a-da, xo-nins-teeta, dam-caan, dammi-in-caan, par-paa-cis-kitto, par-paa-cis-tto* and *parpaa-cis-kitto*

**One participant could not respond to one stimulus (i.e. *parpaacisninkitto*).

According to the results, of the erroneous responses in which the stimulus was segmented, 96.4% in Round 1 (i.e. 54 of the 56 errors) and 85.7% in Round 2 (i.e. 60 of the 70 errors) fitted under the following three categories:

1. Vowel /i/ was attached to the coda consonant (e.g. *a-ni-ti*), resulting in an additional syllable word medially.
2. The coda of the first syllable was attached to the onset of the second syllable (e.g. *a-nti*).
3. The coda was left out (e.g. *a-ti*).

Because the coda consonant and the C+/i/-sequence are both spelled with a sixth-order fidel, in the first error type the syllable breaks coincided with the abugida fidels (e.g. **አንት** can be pronounced /a.n.ti/ or /a.ni.ti/). The error therefore indicated that respondents were processing the task according to abugida sound-symbol correspondences and segmented the words into fidels.

In the second error type, the segmentation does not comply with fidel breaks, and therefore the error cannot be directly attributed to abugida writing. However, it is likely that abugida sound-symbol correspondences played a part in causing the error, because in the abugida spelling the coda consonant is the "odd one out" because of lacking an attached vowel. Consequently, if one disregards the phonological syllabification rule, the coda can be attached either to the preceding or to the following phoneme. The number of errors of this type was considerably smaller in Round 2 than in Round 1.

Looking at the third error type in terms of abugida writing, the sixth-order fidel denoting a coda consonant was omitted (e.g. instead of **አንት** /a.n.ti / -> **አት** /a.ti/). A connection can be seen between this error type and the results of the phoneme deletion tasks reported in Section 5.2, because the error of leaving out the coda in the syllable segmentation task resembled the correct response to the

phoneme deletion task in which the coda consonant was to be deleted. The results of the phoneme deletion test indicated that deleting a coda consonant was easier than deleting a consonant acting as the onset of a word-initial or a word-medial syllable. Occurrences of the error in the syllable segmentation test therefore seem to confirm the idea that it is easy for abugida readers to leave out the coda consonant.

Examining the difference in participants' performance in the two rounds of testing revealed that although the number of correct responses had increased from 77 to 120, the number of erroneous responses in which the /i/ was added to the coda consonant had also increased, from to 23 to 38. This type of response in Round 2 was found particularly in the responses of three participants (18WS1234, 38WS2, 44WS2), as 19 of the 38 errors of this type were made by them. In addition, eleven other participants followed this pattern in at least one stimulus. The result suggests that even if during the transfer literacy training participants had made some progress in learning to follow the phonological syllabification rule for consonant clusters, there were still participants who tended to process the task through the abugida and converted sub-syllabic coda consonants into open C+/i/-syllables.

A point to note regarding the test items is that the fourth syllable break in *parpaacisnin-kitto* and the second in *dammin-caan* coincide with a morpheme break. In these items, *caan* and *kitto* indicate an auxiliary verb construction that expresses negation, and the participants might have segmented the constituents on the basis of the morpheme break rather than the syllable break. However, the percentages of different types of responses for the two items were quite similar to the responses to other stimuli (Tables 56-57). The higher number of responses in which participants did not segment the last three syllables of *parpaacisnin-kitto* (seven responses in Round 1 and five in Round 2 for both syllable breaks) were probably due to the length of the stimulus.

Sub-research question XVI: How do the participants segment geminates at different points in time during their transfer literacy learning process?

The error analysis of responses to items that included a geminate consonant revealed that in Round 1 there were only two responses that complied with the phonological syllabification. All the other responses in which the stimulus was segmented followed Konso abugida orthographic syllables, and the geminate consonant was attached to the following vowel (Table 58). In Round 2, the number of responses in which the segments complied with phonological syllable structure had risen to 23, but as in Round 1, in most responses the stimulus was segmented according to the fidel breaks and so followed the abugida orthographic syllabification (Table 59). This made the number of responses that followed orthographic syllabification higher in Round 2 (i.e. 122 responses) than in Round 1 (i.e. 93 responses), while the number of missing responses and responses in which the stimulus was not segmented had decreased.

TABLE 58 Number of correct responses and errors in segmenting geminate consonants, Round 1

	Correct	V.CCV	Another response	Not segmented	Missing*	Total
caat-ta	-	18	-	1	4	23
nap-pa	-	16	-	3	4	23
(uru)rit-ta		5	-	14	4	23
kam-may…	1	13	-	3	6	23
…may-ye	-	14	-	3	6	23
dam-min(caan)	1	12	-	3	7	23
(xon)sit-tee(ta)	-	12	-	6	5	23
(parpaacisnin)kit-to	-	3	-	13	7	23
Total	2	93	-	46	43	184

*Responses were missing from participants who did not complete the test.

TABLE 59 Number of correct responses and errors in segmenting geminate consonants, Round 2

	Correct	V.CCV	Another response*	Not segmented	Missing**	Total
caat-ta	2	21	-	-	-	23
nap-pa	1	22	-	-	-	23
(uru)rit-ta	-	13	-	10	-	23
kam-ma…	7	13	1	1	1	23
…may-ye	2	14	2	4	1	23
dam-min(caan)	5	16	1	1	-	23
(xon)sit-tee(ta)	3	19	1	-	-	23
(parpaacisnin)kit-to	3	4	1	14	1	23
Total	23	122	6	30	3	184

*Responses classified as "another" were: *kam-ye, kamma-ayye, xo-nins-tteeta, dam-caan, par-paa-cis-tto*

**One participant skipped the word *kammayye* as too difficult to segment, and another did not do the last item *parpaacisninkitto*

One of the stimuli, *kammayye*, consisted of two morphemes, *kamma* 'after', and *yye*, a background suffix, so the syllable break was in the middle of the morpheme *yye*. This may have influenced the participants' processing of the task and led them to segment the item according to morpheme breaks rather than syllable breaks. However, there was no difference between the proportion of different responses for *kammayye* and for other items.

The results of the syllable segmentation test suggest that it was difficult for participants to learn the phonological syllabification rule for geminate consonants and break them in the middle. However, despite the difficulty, I made observations which suggested that the participants felt comfortable with the rule. On Day 4 in Workshop 2, I documented the following incident in my diary:

> One of the trainers (23WS123) was teaching lesson 7 and forgot to explain about gemination [which is taught for the first time in lesson 7]. When we reminded him about it [while he was teaching], he explained [to the trainees] that in the word boxes [where words are divided into phonological syllables] the words are divided [in the middle of the geminate consonant] in order to make it easier to recognise that the sound is geminated. What an interesting thought! (D300715)

And on the next day I added:

> A note about yesterday: In the afternoon when I paid a brief visit to one of the groups [while the trainees were practising teaching transfer lessons to their peers], I happened to enter the room just when one of the most skilful trainees (55WS23) was teaching lesson 7 and explaining that the reason to divide a geminate consonant between two syllables is to emphasise the gemination and make the tense sound easier to recognise. So, he had picked up the idea from 23WS123's sample lesson in the morning! (D310715)

The idea that dividing a geminate sound down the middle in segmenting words into syllables might help in the recognition of a geminate sound had not been mentioned in the training programme. Rather, 23WS123 had concluded this on his own, and apparently the idea had made sense also in the mind of the trainee (55WS23).

In line with the above, when the two initial workshops were over and I was writing down my overall impressions of them, I wrote:

> In the case of geminates, syllable segmentation does not come automatically, but those with whom I discussed the matter did not find the idea odd. (D170815)

Further on, in the summer 2017, on the last day of the one-week training workshop for literacy teachers in Xolme, I wrote:

> The syllabification is going brilliantly. I only wonder why nobody is still asking why it is done as it is [re. the rules about coda consonant and breaking geminates down the middle]. Among the trainers, 25WS1234, who is otherwise still struggling quite a bit in spelling and reading, somehow really likes the syllabification tasks. Whenever there is time while they work in groups, 25WS1234 composes syllabification exercises for his group [and is able to follow the phonological syllabification rules]. But still he seems to have problems with both quantity and the sixth-order fidel. … Overall it looks as though the trainers have learned the syllabification rules well. (D210717)

In the above diary note, I wondered why none of the teacher trainees or trainers had questioned the phonological syllabification rules, because I had expected some resistance at some point due to the disparity between the rules and the fidel breaks.

During the transfer literacy training workshop in Faasha in 2017, the idea originally voiced by 23WS123 about the syllabification rule for geminates being helpful for learning to distinguish between geminate and non-geminate consonants was officially included in the transfer literacy training programme for teachers. During the workshop in Faasha I wrote in my diary:

> Yesterday the literacy coordinator taught how words are segmented into syllables, and how segmenting a geminate consonant in the middle helps in the recognition of gemination. Afterwards 15WS1234 [who was a trainer in the workshop] told me that in her group several trainees had said that learning to segment the geminate [in the middle] had helped them a lot. Because of that they were able to understand and recognise geminate consonants better than before. The literacy coordinator had been working with the same group as 15WS1234, and he said the same. (D270717)

When I was discussing the matter in more detail with the literacy coordinator and 15WS1234, they told me that when the trainees in the group had been doing a dictation exercise, they had made use of their newly acquired understanding of the phonological syllabication rule for geminates, repeating the dictation words quietly to themselves in order to "hear" whether there was a geminate sound in the word or not, and only after that did they write the word down. The method had been helpful in making their spelling more accurate.

Case study 3: The syllable segmenation skills of 12WS123 and 18WS1234

To illustrate in more detail the kinds of problems transfer learners encountered when trying to segment words into syllables at the beginning of the transfer literacy training, and how their skills developed over a more extended period, I report below how two participants (12WS123 and 18WS1234) segmented syllables at different points in time during the course of their transfer literacy learning.

Having done the syllable segmentation task twice during Workshop 1, both participants did the task for the third time a month later when they were working as trainers in Workshop 2 (Round 3), and for the fourth time six months after that, when they took part in the follow-up training (Round 4). In addition, 18WS1234 did the task for still a fifth time in July 2017 during the transfer literacy training workshop in Xolme, where he again was a trainer (Round 5).

When doing the task for the first time, both 18WS1234 and 12WS123 had problems understanding on what basis they were supposed to segment the words. However, they processed the task differently. 18WS1234 could not understand that the task was to be done without any reference to meaning: he was unwilling to segment a word without identifying two meanings embedded in the stimulus, either by altering the quantity of one phoneme or by dividing the word into two meaningful words. For example, he responded that *kuta (*'dog') was divided into two, because *kutta* ('dogs') had a different meaning, and that *piirtoota* was also divided into two, because there was *piirto* ('sunrise') and *toota* ('death'). Conversely, he said that *liilana, poyta,* and *palda* could not be divided, because he could not think of two different meanings embedded in the words (Table 60). Eventually, after several unsuccessful attempts to get 18WS1234 to respond without referring to meaning, I discontinued the test with him.

12WS123 approached the task differently. Having tried to respond with meaning differences for the first two stimuli, he accepted that meaning was not part of the correct response and started to consider on what other basis the sounds of the stimuli could be segmented, if not on the basis of their meaning. Unlike most participants, 12WS123 did not want to segment two-syllable words with open syllables (i.e. *kuta, ela*), claiming that they could not be divided. Instead, he segmented correctly two-syllable words with consonant clusters (i.e. *pal-da* and *poy-ta*). Looking at all his responses (see Table 61), the pattern was not entirely consistent, but he clearly tended to be more willing to segment consonant clusters than open syllables.

Since 12WS123 was the only participant for whom it seemed to be more natural to segment the clusters, I wanted to find out the rationale behind this. When I met him again in the summer 2017 (1.8.2017), I therefore got him to listen to his taped responses and I asked if he could still remember why segmenting closed syllables had been easier for him than segmenting open syllables. Having listened to the tape, 12WS123 recalled that while he was doing the task for the first time he had no idea how words could be segmented, but while trying to respond, he felt that when pronouncing a consonant without a vowel attached to it (i.e. a coda consonant), the sound somehow stopped, and there was a natural break. Obviously, because there had been two years in between his doing the task

and our conversation, it was impossible to know how well 12WS123 could remember his thought processes at the time. However, his explanation reflected his approach to the task, so it is possible that he had been able to pay attention to each sound and make sure that all the sounds in the stimuli were included in the response, and that nothing was added, and in doing so he had complied with the phonological syllabification rule for consonant clusters.

During the two weeks of transfer literacy training in the initial workshop, the syllable segmentation skills of both 12WS123 and 18WS1234 improved, and they both performed better in Round 2 than in Round 1 (Tables 60-61). Apart from segmenting most geminates according to abugida orthographic syllables and missing the last syllable break in the four-syllable stimulus *ururitta*, 12WS123 segmented all the syllables in line with the phonological syllabification rules. 18WS1234 had also reached the point of being able to handle the stimuli without referring to meaning, but he had not internalised the concept of a phonological syllable. In stimuli that contained consonant clusters he confused syllable breaks with fidel breaks, and therefore consistently added the vowel /i/ to the consonants in coda position. He also mixed up the concepts of syllable, fidel, and phoneme, by segmenting for example *caatta* as *caa-a-tta*.

A month later, in Round 3, 12WS123's performance was quite similar to his performance in Round 2, but he missed a few more syllable breaks and still segmented geminates incorrectly. 18WS1234 still confused syllable breaks with fidel breaks in consonant clusters, but not quite as consistently as in Round 2, and in the two-syllable stimuli with a cluster he consciously tried to avoid uttering the unnecessary /i/ after the coda (e.g. *a-n-ti*).

Six months later, during the follow-up workshop, when both participants had had experience in teaching transfer literary classes in their home villages, they had made progress (Round 4). 12WS123 was able to correctly segment geminates that consisted of non-plosive sounds, but still made mistakes with geminates that contained plosives. 18WS1234 had apparently also grasped the concept of a syllable and was able to segment words accordingly, instead of mixing up the coda of a closed syllable and an open C+/i/-syllable. Moreover, he had also learned to segment geminates with non-plosives correctly, but still segmented four of the five geminates with plosives in line with the fidel breaks.

When 18WS1234 did the task for the fifth time, he was able to segment all the stimuli into the right number of syllables, except for adding one syllable to *dammincaan(ne)*, and he still had some problems segmenting geminate plosives correctly. It may be that learning to segment a geminate, non-plosive consonant according to phonological syllable breaks is easier than learning to segment a plosive because of the constant airflow when pronouncing a non-plosive.

TABLE 60 Performance of 18WS1234, syllable segmentation task

Round 1 (29.6.15)	Round 2 (9.7.15)	Round 3 (4.8.15)	Round 4 (2.2.16)	Round 5 (17.7.17)
kuta, kutta	*ku-ta*	*ku-u-ta*	*ku-ta*	*ku-ta*
ela, ella	*e-la*	*e-la*	*e-la*	*el-la*
anti	*an-ti*	*a-n-ti*	*an-ti*	*an-ti*
palda	*pa-li-da*	*pa-l-da*	*pal-da*	*pal-da*
poyta	*po-yi-ta*	*po-y-ta*	*poy-ta*	*poy-ta*
liilana	*lii-la-na*	*lii-la-na*	*lii-lana*	*lii-lan-na*
caatta	*caa-a-tta*	*caa-tta*	*caa-tta*	*caa-tta*
piirto, toota	*pii-ri-too-ta*	*pii-ri-too-ta*	*piir-too-ta*	*piir-too-ta*
nappa, napa	*na-ppa*	*na-ppa*	*nap-pa*	*nap-pa*
tuparra	*tu-u-pa-rra*	*tu-pa-rra*	*tup-ar-ra*	*tu-par-ra*
uru, taw	*u-ru-ri-tta*	*u-ru-ri-tta*	*ur-ru-ri-tta*	*ur-ru-ri-tta*
–	*xo-ni-si-ttee-ta*	*xo-ni-si-ttee-ta*	*xon-si-tteeta*	*xon-si-ttee-ta*
–	*ka-mma-yye-ma*	*ka-mma-yye*	*kam-may-ye*	*kam-may-ye*
–	*da-mmi-ni-ca*	*da-mmi-ni-caa-n*	*dam-min-caan*	*dam-min-caan-ne*
–	*pa-ri-paa-ci-si-ni-ki-tto*	*par-paa-cis-ni-ki-tto*	*par-paa-cis-nin-ki-tto*	*par-paa-cis-nin-kit-to*

TABLE 61 Performance of 12WS123, syllable segmentation task

Round 1 (29.6.15)	Round 2 (9.7.15)	Round 3 (4.8.15)	Round 4 (2.2.16)
kuta	*ku-ta*	*ku-ta*	*ku-ta*
ela	*e-la*	*e-la*	*e-la*
anti	*an-ti*	*an-ti*	*an-ti*
pal-da	*pal-da*	*pal-da*	*pal-da*
poy-ta	*poy-ta*	*poy-ta*	*poy-ta*
lii-la-na	*lii-la-na*	*lii-lana*	*lii-la-na*
caa-tta	*caa-tta*	*caa-tta*	*caa-tta*
piir-toota	*piir-too-ta*	*piir-too-ta*	*piir-too-ta*
nappa	*na-ppa*	*na-ppa*	*na-ppa*
tu-parra	*tu-par-ra*	*tu-pa-rra*	*tu-par-ra*
uri-ritta	*u-ri-ritta*	*urir-ri-tta*	*u-ri-ri-tta*
xonsittee-ta	*xon-si-ttee-ta*	*xon-si-ttee-ta*	*xon-si-ttee-ta*
kamma-yye	*ka-mmay-ye*	*ka-mma-yye*	*kam-may-ye*
dammin-caan	*da-mmin-caan*	*dammin-caan*	*dam-min-caa-ne*
parpaacisnin-kitto	*par-paa-cis-nin-kit-to*	*par-paa-cis-nin-ki-tto*	*par-paa-cis-nin-ki-tto*

Summing up the results of the syllable segmentation task

At the beginning of the transfer literacy training, participants had difficulty in segmenting words longer than two syllables into syllable-sized chunks. The difficulty can partly be attributed to their inexperience in dealing with language forms without referring to meaning, but it also suggested that they did not have a clear idea of syllables as sub-lexical units. In addition, the mismatch between phonological syllables and the way fidels break the sound flow (i.e. orthographic syllables) had interfered with the participants' processing of the task. This result was in line with my assumption that at the beginning of the transfer literacy training the task could be difficult. During the two weeks of training the participants skills in analysing the language apart from the meaning had improved and they had learned about syllabification. Consequently, in Round 2 everybody was able to do the task without referring to meaning, and the overall performance was better than in Round 1.

As for internalising the phonological syllabification rules for closed syllables, learning to segment consonant clusters in line with the phonological syllables was easier than learning to segment geminates. The difference can partly be attributed to the differences between the abugida spelling of the two kinds of closed syllables: in a word with a consonant cluster, the closed syllable is represented by two fidels, and thus spelling the word involves two CV characters plus a character for a sub-syllabic unit to denote the coda consonant ($CV.C_1.C_2V$), whereas in a word with a geminate, the coda of the preceding syllable is attached to the following syllable and the spelling involves only two fidels ($CV.C_1C_1V$). Therefore, following abugida orthographic syllables, segmenting a word with a geminate is straight-forward, whereas segmenting a word with a consonant cluster requires deciding how to deal with the sub-syllabic coda. Moreover, segmenting a geminate consonant in the middle may be more difficult, because one sound needs to be broken into two. Overall, the tendency for participants to align with abugida orthographic syllables is in line with earlier results from Brahmi about the influence of orthography on readers' intuitive syllabification (see Section 3.3.1).

While analysing the data, I showed the Konso literacy coordinator the errors made by participants when they segmented words that included a consonant cluster. I asked the coordinator's views on why it was difficult for participants to follow the phonological syllabification rule and attach the coda consonant to the preceding CV unit. The coordinator said that it was difficult for an abugida reader to decide where to attach the coda consonant because of the absence of a subsequent vowel: a consonant without a vowel attached to it does not have a link to anything; the problem is neatly described by the common saying that a coda consonant *does not have a friend*. As a result, if abugida readers are asked to divide words into parts, a natural way is simply to list the fidels (e.g. *pa-li-da*). As for the other typical errors in segmenting a cluster (i.e. omitting the coda consonant or attaching it to the following syllable), the coordinator thought that both errors could well have been due to the fact that abugida readers have not been taught that a consonant can exist without an adjacent vowel. Therefore, one way

for abugida readers to solve the problem is to leave the consonant out, and another is to attach it to the following consonant instead of the preceeding one.

However, the most challenging of the three types of syllabification tasks was segmenting the geminate consonant in the middle, according to the phonological syllables; most participants segmented a geminate according to abugida orthographic syllables throughout the training. Yet somewhat paradoxically, during the training workshops the transfer learners responded well to the idea of segmenting geminates in the middle. Overall, the phonological syllabification rule for geminates was accepted willingly, but learning to put it into practice was difficult and took time.

I asked the literacy coordinator his thoughts about how it was possible that 23WS123 and 55WS23 had realised for themselves that segmenting a geminate in the middle would help them to recognise it. The coordinator replied that it was a logical conclusion for an abugida reader to reach: because abugida fidels do not mark a geminate sound but the alphabetic orthography does, when the two consonant characters denoting the geminate are divided between two syllables, it is easy to notice the difference from a non-geminate consonant. This practice, then, helps one to remember to spell two similar characters when a geminate is involved. This line of thought resembles Lerkkanen's (2006) notion about the helpfulness of using phonological syllables as a sub-lexical unit to achieve fluent word-reading and accurate spelling skills in Finnish.

The literacy coordinator said that he himself had found mastering the phonological syllabification rules an important component of learning alphabetic literacy skills, and that according to his observations, those transfer literacy learners who were able to segment words into phonological syllables were better at reading and spelling. This observation is in line with the notion by Perfetti and Verhoeven (2017), that syllable awareness is predictive of literacy learning in alphabetic languages.

The syllable segmentation task presented above included only 15 items, some of which were not ideal because they consisted of more than one morpheme. Therefore the results gained from the test need to be taken as initial indications of tendencies, and more research is needed to find out more precisely abugida readers' ability to segment words into syllables according to syllable peaks, and their preferences for intuitive syllabification.

7.2 Syllables and spelling performance

The analysis of the spelling errors in Dictation 1 revealed that the most common errors were misspellings of the quantity of consonant and vowel phonemes (see Section 6.4). This indicated that the transfer literacy learners found it difficult to recognise and mark phoneme quantity. However, when the participants were taught the phonological syllabification rule of dividing the geminate between two syllables, they discovered that the rule helped them to distinguish between a geminate and a non-geminate sound and spell them correctly (Section 7.1). This points to a close link between quantity awareness, syllable awareness and the learning of alphabetic spelling. The discovery did not result in any major improvements in the participants' ability to spell geminate consonants correctly when they repeated Dictation 1 (see Table 44 in Section 5.4 and Tables 49-50 in Section 6.4), but according to the trainers' observations from the training sessions, the syllabification rule helped learners spell especially geminate consonants more accurately.

As for the transfer learners' ability to spell closed syllables in consonant clusters ($CVC_1.C_2V$), the difficulty of correctly spelling the segments of a cluster was reflected in the spelling errors. Most of the errors related to spelling consonant clusters in Dictation 1 (see Section 4.4.3 and Appendix 9 for the task) were identical to the errors of segmenting syllables according to the abugida orthographic syllables in the syllable segmentation task (see Section 7.1). Thus, typical spelling errors were omitting the coda consonant in the cluster (e.g. *pinanta* spelled as **pinata*) or adding an unnecessary /i/ to the coda (e.g. **pinanita*). Both errors alter the syllable structure of the word and omit the closed syllable. Moreover, in terms of abugida writing, adding a short /i/ to the coda does not alter the spelling, and for example *pinanta* and **pinanita* are spelled in the same way: **ፕነንተ**.

Dictation 1 included three items that contained consonant clusters (i.e. one cluster in *pinanta* and in *nyelqa*, and two clusters in *xampirteeta*). In these items, 27.0% of spelling errors in Round 1 of the dictation and 29.6% in Round 2 were one or other of these two types of consonant cluster errors. Considering all error types, the most common errors in spelling these items were quantity errors, which accounted for 40.4% of the errors in Round 1 and 45.3% in Round 2.

The numbers of consonant cluster errors in each of the three items are shown in Tables 62-63. In Round 1, the number of analysed responses was 156, eleven of which were classified as non-words (*xampirteeta* 6, *pinanta* 1, and *nyelqa* 4). In Round 2, the number of analysed responses was 158, of which 5 were non-words (*xampirteeta* 2, *nyelqa* 2, and *pinanta* 1).

TABLE 62 Number of typical spelling errors related to consonant clusters, Dictation 1, Round 1 (N=53)

	Adding /i/ to coda*	Coda omission	Cluster errors/ all errors	Total no. of responses
pinanta	6	6	12/41	52
nyelqa	14	-	14/45	52
xampirteeta	13	9	22/92	52
Total	33	15	48/178	156

*In two responses for *nyelqa* and two for *xampirteeta* the /i/ added to the coda was spelled long (i.e. < ii >)

TABLE 63 Number of typical spelling errors related to consonant clusters, Dictation 1, Round 2 (N=53)

	Adding /i/ to coda	Coda omission	Cluster errors/ all errors	Total no. of responses
pinanta	13	4	17/49	53
nyelqa	15	2	17/45	52
xampirteeta	9	10	19/85	53
Total	37	16	53/179	158

Apart from the two types of consonant cluster errors presented in Tables 62-63, there were only eight other spelling errors which were classified as cluster errors in Round 1, and three in Round 2. In these errors a vowel other than /i/ was added to the coda (e.g. **nyelaqa*), or instead of omitting the coda consonant, the onset of the second syllable in the cluster was omitted (e.g. **jela*[34]). In addition, in three responses in Round 1, the consonant cluster was replaced by a different consonant (e.g. **nyera*).

To get more data on how frequent the different types of errors in spelling consonant clusters would be, I composed an additional dictation task (Dictation 2) with more items which included a cluster: Dictation 2 included eight items with a total of ten consonant clusters (see Section 4.4.3 and Appendix 9 for the task). The dictation was done by 31 participants on Day 4 in the follow-up workshop. According to the results, 30.1% of the spelling errors were similar to the typical consonant cluster errors in Dictation 1. The highest number of all errors were again quantity errors, which accounted for 47.5% of all errors.

The numbers of cluster errors in each word in Dictation 2 are presented in Table 64. All participants spelled all items, thus making the number of responses for each item 31, and the total number of responses 248. One response for *ikkirteeta* was classified as a non-word.

[34] In **jela* there was also another spelling error, classified as 'wrong symbol' (i.e. < ny > spelled as < j >). The word *nyelqa* was a difficult word to spell because of the word-initial digraph, denoting a rarely occuring phoneme /ɲ/.

TABLE 64 Types and numbers of consonant cluster errors, Dictation 2 (N=31)

	Adding /i/ to coda	Coda omission	Cluster errors/ all errors
kaanketa	1	11	12/21
keltayta	6	3	9/31
xorma	2	1	3/13
hinkaajjeta	1	7	8/31
qolpayta	8	-	8/22
ipsa	19	-	19/37
dakinta	2	2	4/22
ikkirteeta	2	1	3/42
Total	41	25	66/219

In addition to the cluster errors shown in Table 64, in one response *keltayta* was spelled as **kelletayta*, thus adding /e/ to the coda instead of /i/. Similarly, in one response *xorma* was spelled **xoroma*. There were no errors in which the onset of the second syllable in the cluster was omitted.

Counting the consonant cluster errors in Dictation 2 separately for each item revealed considerable differences between the number of errors in different items. Almost half of the errors of adding an /i/to the coda occurred in spelling *ipsa*. Also, over half of the coda omissions occurred in spelling *kaanketa* and *hinkaajjeta*. It therefore seems likely that in addition to the syllable structure, there were other factors affecting the difficulty of spelling a given cluster correctly. Additional reasons could be the quality of the consonant phonemes involved in the cluster, and the position of the cluster within the word. The items in the dictation tasks were obviously too few for it to be possible to draw any conclusions about the potential influence of consonant quality or the position of the cluster on the difficulty of the task, but in the two words in which most coda omissions occurred in Dictation 2 (i.e. *kaanketa* and *hinkaajjeta*), the combination of phonemes was the same (i.e. /nk/), and both clusters were between the first and the second syllable. A point to note is that in the syllable segmentation test, all the errors of omitting the coda consonant in segmenting the stimuli were in words where the coda was the phoneme /n/ (see Section 7.1, Tables 56-57). In the case of *ipsa*, it would have been good to check whether the respondents who added an /i / to the coda perceived the word as including a consonant cluster or whether they perceived the word as **ipisa* instead.

Above all, the types of errors related to spelling consonant clusters resembled the errors in the syllable segmentation task, which suggests that the participants processed the alphabetic spelling tasks in terms of abugida fidels and orthographic syllables. This in turn suggests that learning to segment words according to phonological syllables and to process spelling tasks through syllables would help transfer learners to spell consonant clusters correctly. This assumption is backed by the Konso literacy coordinator's experience of the role of mastering the phonological syllabification rules in learning alphabetic spelling skills (see Section 7.1). The findings reported by Lerkkanen (2006) about Finnish literacy learners benefiting from accurate syllable segmentation skills when learning

alphabetic spelling points in the same direction. However, the results of Dictation 1 in the present study showed no improvement in the participants' ability to spell consonant clusters from one round to another, despite the improvement in their ability to segment the clusters in the syllable segmentation test, and so it did not bear out the assumption. On the other hand, the time span between the first and second rounds of testing was very short, and measuring the development of subjects' spelling skills over a longer period of time would be necessary in order to reach any firm conclusion about this.

In any case, more research will be needed to clarify the links between Konso transfer literacy learners' syllable awareness and their alphabetic spelling skills. In the two spelling tasks, the number of items focusing on spelling patterns in consonant clusters was small, and more data will be needed to explore this further. In addition to examining errors in spelling consonant clusters, it will also be necessary to include items with word-final closed syllables in spelling tests.

7.3 Syllables and reading performance

As noted in Section 6.5, reading is different from spelling in the sense that a reader would not easily sacrifice meaning for the sake of pronouncing sounds that do not make up a meaningful word, even if he/she might erroneously perceive such sound strings in a reading task. Rather than saying them aloud, though, a reader would most likely choose to try an alternative pronunciation that would give a meaningful word.

The word-reading test in the data set (see Section 4.4.4 and Appendix 9 for the test) included three items to explore whether learners would confuse word-medial open with word-medial closed syllables in decoding, and while making the error, come up with a meaningful word. The words were: *kalata* 'praise'; *kallaata,* 'life'; and *kalta* 'departure'. All three words were composed of the consonants /k/, /l/ and /t/, and the only vowel included in the words was /a/. As one of the words included a word-medial consonant cluster and the other two a word-medial, open syllable, even if the reader confused the syllable structure of the item, the erroneous response would yield a meaningful word.

Analysing the reading errors which the participants made when reading these three words revealed that a common error was to miss the correct decoding of the consonant cluster in *kalta* and insert a vowel in the coda (e.g. *kalata*). Such errors were committed by 27 participants in Round 1 and 16 participants in Round 2. The reverse type of an error was to omit the /a/ from the word-medial syllable of *kalata* or *kallaata* and erroneously produce a two-syllable word including a consonant cluster (CVC_1C_2V i.e. *kalta*), but this error type was rare. Thus, the results suggested that the participants struggled to decode the syllable structure correctly in words which contain a consonant cluster. Most of the errors in reading *kalata* and *kallaata* were quantity errors in both rounds of testing. (For all the errors made in reading *kalata* and *kallaata* in Round 2, see Table 52 in Section 6.5). The number of correct and incorrect responses in reading each of the three

words in the two rounds of testing are presented in Tables 65-66. The tables also list the types of errors made in reading the word *kalta*.

TABLE 65 Number of correct and incorrect responses in reading *kalta, kalata* and *kallaata*, and types of errors in reading *kalta*, Round 1 (N=52)

Target word	No. of correct responses	Incorrect response	No. of incorrect responses	Total no. of responses
kalta	24	*kalata*	16	52
		kallaata	6	
		kalatta	1	
		kallaatta	3	
		kaleeta	1	
		xalta	1	
		Total	28	
kalata	31	*kalta*	3 (+18 other errors)	52
kallaata	31	*kalta*	1 (+20 other errors)	52

TABLE 66 Number of correct and incorrect responses in reading *kalta, kalata* and *kallaata*, and types of errors in reading *kalta*, Round 2 (N=52)

The reading word	No. of correct responses	Incorrect response	No. of incorrect responses	Total no. of responses
kalta	35	*kalata*	9	52
		kallaata	4	
		kalatta	2	
		kalaata	1	
		karitta	1	
		Total	17	
kalata	36	*kalta*	1 (+15 other errors)	52
kallaata	31	*kalta*	2 (+19 other errors)	52

Naturally, no generalisation about abugida readers' difficulty in decoding consonant clusters can be made by drawing on evidence from the reading of three words. However, the types of errors committed by the participants in this particular reading task suggested a potential link between poor syllable awareness and a difficulty in decoding words that included a consonant cluster. The finding calls for further examination. Earlier findings reported by Lerkkanen (2006) about the benefits of mastering syllable segmentation skills for gaining fluent reading skills in Finnish are in line with this view.

7.4 Drawing together the results on syllable awareness

Research question 1 What is the syllable awareness of Konso abugida readers like, and how is it related to the abugida sound-symbol correspondences?

The results of the syllable segmentation task indicated that at the beginning of the transfer literacy training, participants found it difficult to segment words longer than two syllables into syllable-sized units. The difficulty can partly be attributed to the problem of understanding how to do the task, but the result also suggests that the learners' conception of a syllable was vague. In abugida literacy teaching, they had not learned about syllables, and therefore did not have any prior knowledge to draw on when asked to segment words.

As for the participants' preferences for syllable boundaries, according to the results of the syllable segmentation task, their intuitive syllabification was influenced by abugida sound-symbol mappings. This was revealed by their tendency to segment geminate consonants according to abugida orthographic syllables ($CV.C_1C_1V$, see Tables 58-59) and to extract the coda consonant of a closed syllable from the preceding CV unit in segmenting consonant clusters (i.e. $CV.C_1.C_2V$, $CV.C_1C_2V$, $CV.C_2V$, see Tables 56-57). The tendency to segment geminates orthographically was stronger than the tendency to extract the coda from the phonological syllable in a consonant cluster. The difference can be attributed to the straight-forward link between abugida fidels and orthographic syllables in the case of geminates, due to the lack of gemination marking in abugida writing. In the case of consonant clusters, the coda consonant represents a sub-syllabic unit, and segmentation tasks entail a decision about where to attach it.

Likewise, the types of spelling errors related to consonant clusters pointed to a link between the patterns of these errors and the participants' tendency to align with Konso abugida orthographic syllables in the syllable segmentation test: typical spelling errors and the participants' responses to the syllabification task of segmenting a stimulus with a consonant cluster were similar. Also, the data from the participants' performance in the word-reading test pointed to difficulty in decoding consonant clusters, as a common error was to add a vowel to the coda consonant, thus adding a word-medial syllable to the stimulus.

Research questions 2: How does the Konso abugida readers' syllable awareness change during the process of learning to read and write their language in an alphabetic orthography?

According to the results of the syllable segmentation task in Round 2, the participants' understanding of syllables as sub-lexical units had improved during the two weeks of transfer literacy learning, and they were better able to divide words into syllables by following the syllable peaks. Also, in segmenting consonant clusters they conformed more often to the phonological syllabification rules than they had done at the beginning of the training.

However, segmenting geminate consonants into phonological syllables remained difficult throughout the transfer literacy training. Although it was difficult for learners to follow the rule to segment a geminate from the middle, they accepted the rule well, and during the training they discovered that the rule was helpful for distinguishing between a geminate and a non-geminate consonant. This pointed to the learners' growing understanding of syllables as building blocks of a word. The discovery also revealed a link between syllable awareness and quantity awareness.

Research question 3: What is the role of syllable awareness in transfer literacy learning from abugida to alphabetic script in Konso, and what are the relevant points to pay attention to in Konso transfer literacy teaching?

The results of the study suggest that understanding syllables as a sub-lexical unit and mastering the phonological syllabification rules helped in the acquisition of alphabetic literacy skills. Using phonological syllabification in segmenting geminate consonants helped transfer learners recognise the difference between a geminate and a non-geminate consonant. The types of errors in spelling and decoding words that included a consonant cluster also suggested that learning to follow the phonological syllabification rule for the cluster and to attach the coda consonant to the preceding CV would help them recognise and mark consonant clusters correctly.

When the initial transfer literacy lessons were drafted, before the data collecting period for the study, it was decided that the concept of syllables and the phonological syllabification rules would be introduced to transfer learners in connection to teaching alphabetic decoding. This choice of approach was in line with results from literacy studies on the benefits of syllabification skills in mastering alphabetic literacy skills in Turkish and Finnish (Durgunoğlu, Öney & Kuşcul, 2003; A. Lehtonen & Bryant, 2001; Lerkkanen, 2006). An alternative approach would have been not to introduce a new concept, but to make use of the sound-symbol correspondences familiar to the learners from the Konso abugida fidels.

I assumed that finding out about the transfer learners' intuitive syllabification patterns would help to determine whether or not it was useful to teach the phonological syllabification rules. However, due to the learners' discovery that the phonological syllabification rules could be used to help distinguish between a geminate and a non-geminate consonant, the rules proved to be helpful for learning alphabetic literacy skills despite the learners' tendency to stick to Konso abugida orthographic syllables. The Konso literacy coordinator's experience of the link between transfer learners' ability to segment words into phonological syllables and their alphabetic literacy skills pointed in the same direction.

8 CONCLUSIONS

The primary goal of this study was to gain deeper understanding of the challenges faced by Konso transfer literacy learners, and thus to establish the basis for developing an efficient teaching method for the transfer from abugida to alphabetic orthography. To that end, I have examined the influence of Konso abugida sound-symbol correspondences on abugida readers' PA and on their transfer literacy learning by approaching the topic from three perspectives: phonemic awareness, quantity awareness and syllable awareness. Based on the results, I have answered the overarching research questions (Section 3.7) from each perspective (Chapters 5-7). Below, I briefly summarise the main findings of the study and the implications for transfer literacy teaching in Konso. I also make a few suggestions about how the findings from Konso could be applied to develop transfer literacy teaching methods in other language contexts where people who read the Ge'ez script are learning alphabetic literacy skills. I then discuss how the findings relate to previous research on the relationship between orthography and PA in other language contexts. Finally, I take a critical look at the research process in Konso and sketch directions for further studies on the interplay between PA and orthography in Konso and beyond.

8.1 Main findings and implications for Konso transfer literacy teaching

The findings of this study point to the strong influence of the sound-symbol correspondences of an orthography on its readers' conceptions of the phonological components of the language in which they are reading. In the case of Konso, the influence of the abugida sound-symbol correspondences was evident in a variety of ways on different levels of its readers' phonological awareness. From the point of view of transfer literacy learning, a key problem caused by the differences between the two Konso orthographies was abugida readers' difficulty in separating a consonant and a vowel from each other. Because abugida fidels primarily denote CV sequences, the abugida readers perceived consonants and vowels as components that complemented each other and existed in relation to each other. As the Konso alphabetic orthography is transparent and consistently denotes each consonant and vowel with a separate character, the inclusion in the transfer literacy teaching programme of a strong component on the different characteristics of consonant and vowel sounds was found to be very important.

Due to the lack of quantity marking for phonemes (apart from the vowels /a/ and /i/) in the Konso abugida, at the beginning of the transfer literacy training the abugida readers were not used to thinking about the quantity of sounds while reading and writing. Throughout the data collection it was very difficult for learners to recognise and mark correctly the quantity differences of phonemes, and this became an obstacle to their learning accurate alphabetic spelling and reading skills. On countless occasions, the learners themselves commented that the most difficult thing in learning alphabetic literacy was recognising the quantity of each sound correctly and following the alphabetic spelling rules to mark it. As a result, improving the learners' quantity awareness was found to be of paramount importance in the Konso transfer literacy teaching programme.

The study also revealed connections between the emergence of different PA skills. Because information about both the quality and the quantity of a consonant and a vowel phoneme is packed within one fidel character, to be able to assign the correct quantity for each phoneme, a transfer literacy learner first needs to be able to separate the vowel and the consonant denoted by the one and the same fidel. Phonemic (quality) awareness was therefore found to be a necessary precursor of phonemic quantity awareness. Also, to keep consonants and vowels separate, it was found helpful to teach vowel length and gemination as two different phenomena, referred to by different terms.

A connection was also found between quantity awareness and the ability to segment syllables according to the phonological syllabification rules. The disparity between phonological and orthographic syllables in the Konso abugida led abugida readers to align with fidel breaks rather than phonological syllables when segmenting words that included word-medial closed syllables. According to the transfer literacy learners, learning to place a syllable boundary in the middle of a geminate consonant therefore helped them to recognise the difference between a geminate and a non-geminate consonant.

Regarding the role of syllables in transfer literacy teaching, the results of the study also suggest that learning to segment consonant clusters according to phonological syllables enhance learners' ability to recognise and spell the clusters correctly. It was therefore also found helpful for the development of alphabetic decoding and spelling skills to adopt syllables as a sub-lexical unit in teaching, and to advise transfer learners to segment words according to the phonological syllabification rules.

The core findings of this study and their implication for transfer literacy teaching can be reduced to three main points. Firstly, because of transfer learners' problems in viewing consonants and vowels as separate units, transfer literacy teaching needs to enhance learners' understanding of the nature of consonants and vowels and their role as independent units in alphabetic writing. Secondly, because of the difficulty of mastering the level of quantity awareness needed for accurate decoding and spelling in the alphabetic orthography, transfer literacy teaching needs to support the development of learners' quantity awareness and teach vowel length and gemination as two different phenomena. And thirdly,

because of the disparity between phonological syllables and the orthographic syllables of the Konso abugida, the transfer literacy teaching programme needs to include instruction about closed syllables, and teach the phonological syllabification rules as a tool to be used in spelling and decoding.

On the whole, all these points were in line with prior expectations regarding the problem areas for Konso transfer literacy learning. Also, to some extent, all the points were considered in the drafting of the lessons for the initial training workshops, before the study began (see Section 2.3.5). In the lessons, abugida fidels and the corresponding alphabetic (consonant and vowel) letters were compared by displaying them side by side. Separate lessons were allocated to introducing vowel length and gemination and the alphabetic spelling rules to double the character that denotes them. In words including a geminate consonant or a consonant cluster, the phonological syllabification rule to place a syllable boundary in the middle of the two consonant letters was taught as part of decoding practice.

However, the need to emphasise the difference between vowels and consonants was not properly taken into account in the drafting of the lessons. Nor was sufficient consideration given to the difficulty of reaching the metalinguistic level required for the correct decoding and spelling of quantity or the need for extensive oral practice of the feature. Likewise, during the study it became clear that introducing the phonological syllabification rules only as a component of decoding exercises did not give enough weight to the importance of learning to use syllables when practising reading and spelling.

Overall, the study revealed how closely abugida readers' conceptions of sound units were connected to the abugida fidels, and how difficult it was for them to learn the new sound-symbol correspondences needed to master alphabetic literacy skills. From a pedagogical point of view, this pointed to the need to provide learners with extensive practice of PA skills in order to improve their understanding of the different phonological components. The study also made clear the value of oral practice of PA. The transfer literacy lessons drafted before the study relied on written materials, and the differences in sound-symbol correspondences between the two orthographies were demonstrated through writing. However, an oral component came into the picture in the workshops from which I collected data, because of the PA tests. The tests were designed "only" to measure the abugida readers' PA for research purposes, but they incidentally made a valuable contribution to the teaching by serving as a model of how PA skills could be practised.

Inspired by the PA tests, during the initial workshops the Konso literacy coordinator started to sketch additional PA exercises, following the format of the PA tests in the study. After the initial workshops, he told me that he had decided to include oral PA exercises in all future training workshops for teachers, because he thought the exercises were helpful for transfer literacy learning. Consequently, oral PA exercises following the design of the tests in the study became a regular component of the transfer literacy training for Konso literacy teachers. The teacher trainees appreciate the exercises and say that they help them understand the nature of alphabetic writing.

8.2 The wider relevance of the findings for transfer literacy teaching from the Ge'ez script to alphabetic script

When considering the relevance of the findings from Konso to other language contexts where people who are familiar with the Ge'ez script learn alphabetic literacy skills, it is important to bear in mind that the specific spelling rules of both the source orthography (using Ge'ez script) and the target orthography (using alphabetic script), as well as the phonological structure of the language (or languages if the transfer takes place across two languages) are decisive factors in determining the key points to be included in a transfer literacy teaching programme. This means that findings from one language context cannot be applied to another context without careful consideration of the similarities between the languages and the orthographies involved in the transfer process.

Nevertheless, as the fidel characters of the Ge'ez script primarily denote a CV sequence, it is likely that when readers of the Ge'ez script practise alphabetic literacy skills, they encounter difficulties similar to those encountered by Konso transfer literacy learners in separating consonants and vowels and denoting each phoneme with a different character. Therefore the need to develop transfer literacy learners' understanding of consonants and vowels as independent units can be assumed to apply to transfer literacy teaching situations from Ge'ez script to alphabetic script more widely than just in Konso.

Similarly, the dual function of the sixth-order fidel to denote both a CV and a single consonant in the traditional Ge'ez script can be assumed to influence its readers' intuitive syllabification in the same way it influenced Konso abugida readers; so if the syllable structure of the target language includes closed syllables or syllable-initial consonant clusters, the disparity between the abugida orthographic syllables and the phonological syllables is likely to become a stumbling block to the transfer to alphabetic literacy. In that case, teaching phonological syllabification rules will be a necessary component of a transfer literacy teaching programme.

The role of quantity awareness in transfer literacy learning from Ge'ez script to alphabetic writing naturally depends on the role of phoneme quantity in the language and on the extent to which both orthographies denote it. However, phoneme quantity is an important characteristic of many Ethiopian languages. The vowel system of Cushitic languages typically includes five short vowels /i, e, o, u, a/ and their long counterparts, and contrastive gemination is also a common feature (Mous, 2012). A similar vowel system and contrastive gemination are common also in Omotic languages (Amha, 2017). Many of the Ethiopian languages that have switched over to using the Roman script are either Cushitic or Omotic,[35] and the alphabetic orthographies developed for them denote quantity of phonemes by doubling the relevant character. The finding from

[35] Cushitic languages which today use an alphabetic orthography include at least Afaan Oromo, Sidaama, Hadiyya, Kambaata, Afar, Gedeo, Somali and Dirayta. Omotic languages include Wolaitta, Kafinono, Bench, Gamo, Gofa, Dawro, Koorete and Diizi.

Konso with regard to the importance of enhancing transfer literacy learners' quantity awareness can therefore be expected to be very relevant in transfer literacy teaching in these languages.

Finally, besides the relevance of the Konso findings for developing a transfer literacy teaching method from Ge'ez script to alphabetic script in other language contexts, the findings are also relevant more widely to current efforts in Europe to develop efficient literacy teaching methods for adult learners. A large number of the adult migrants and refugees coming to Europe have learned literacy skills in a consonant based orthography, classified as an abugida (e.g. Tigrinya) or an abjad (e.g. Arabic and Persian). In Europe, these people face the need to learn alphabetic literacy skills. The results of the Konso study as regards the close link between the sound-symbol correspondences of an orthography and its readers' conceptions about sound units therefore suggest that learners face similar challenges to those of the Konso transfer literacy learners in perceiving the phonological units needed to learn alphabetic literacy skills.

8.3 The theoretical impact of the study

The influence of orthography on its readers' PA has been studied most widely in the context of alphabetic writing. However, recently research on the topic in the context of other types of writing systems has grown, including studies on Brahmi, which shares similar typological characteristics to those of Ge'ez script. So far, however, there have been very few studies on the interplay between script and PA in languages using Ge'ez script. In this respect, the study in Konso has brought new knowledge about the subject in an understudied context and from a different angle. Besides, the opportunity to study the influence of an orthography on its readers' PA and a literacy transfer within the context of one language made it possible to eliminate many of the variables brought to the transfer situation in the context of a new orthography being learned for a new, structurally different language.

In answering the open questions about the potential difficulties of learning alphabetic literacy skills and about the benefits or disadvantages of the transfer to the alphabetic orthography, one Konso transfer literacy learner wrote a comment that links the results of this study with earlier knowledge about the interplay between PA and orthography. She wrote:

Quote 34 (8WS1)

ላትን ኢኮኮክ። ው መለ ኮኮክተ፥ ፍተለ ተከ፥ ለኬ ቀፐን ሰመለ።
ፍተለ አሰፐ ኤፐ ኦረተድ እበቀረ። ው መለ በቀረ ፊተለ ተከ ላኬ ኮድ ከ ኮለመፐደው።
'Alphabetic orthography is difficult. It is difficult because one fidel has two [alphabetic symbols]. It is good to change from abugida [to alphabet], because one fidel becomes two, and there is more to learn.'

This learner's comment characterises the transfer from an abugida to alphabetic writing as, on one hand, difficult because of the need to break familiar sound-symbol units into more symbols, but, on the other hand, as an opportunity, because it offers a chance to learn more. This learner had intuitively come to the same conclusion as a large body of research about a close link between learning alphabetic literacy skills and the development of learners' phonemic awareness. In terms of the psycholinguistic grain size theory (Ziegler & Goswami, 2005), the thought conforms to the PGST's notion of the difficulty of solving the availability problem in learning literacy skills in an orthography in which the symbols mark small phonological units (i.e. phonemes).

Overall, the importance of phonemic awareness in learning alphabetic literacy skills in Konso became very clear in this study. This outcome resonates with Perfetti and Verhoeven's (2017) notion of phonemic awareness as an "enabler" to alphabetic literacy. Another important point brought up by the Konso study concerns how phonemic awareness should be considered in a context of a transfer from an abugida to alphabetic writing; that is, the need to deal with phonemes in terms of two types, consonants and vowels. This need has recently been identified elsewhere, too, and according to Share (2017), there is growing interest amongst researchers in studying awareness of consonants and vowels separately.

Regarding syllable awareness and orthography, the finding about Konso abugida readers' vague conception of syllables, and their difficulty in segmenting words into syllable-sized units, deviates from results showing a close link between Brahmi readers' syllable awareness and literacy skills. The reasons for this may be found in the differences between Ge'ez script and Brahmi with regard to coda marking. In the traditional Ge'ez script, including the Konso abugida, the sixth-order fidel denotes both a CV sequence and a single consonant in the coda position of a syllable, but in Brahmi there are ways to nullify the inherent vowel in a consonant character (Nag 2017). This difference between Brahmi and Ge'ez script may play a role in explaining the different results.

As noted in Section 3.1, referring to the universal phonological principle, which postulates that reading and writing activate phonology at the lowest linguistic level encoded by a given orthography, Verhoeven and Perfetti (2017) write that abugidas have the potential to activate phonology at both syllable and phoneme levels. The findings from Konso suggest that learning literacy skills in the Konso abugida had activated abugida readers' PA mainly at the level of CV sequences; activation at the level of phonemes had been minimal. However, the

potential role of the abugida teaching method in moulding Konso abugida readers' PA needs to be considered as a possible contributing factor to the lack of activation at phoneme level.

Nevertheless, the findings of the present study with regard to the nature of Konso abugida readers' PA align with Getatchew's (1996) characterisation of Ge'ez fidels as individual characters, each representing a consonant and a vowel, rather than as base characters with systematic modifications for denoting vowels. Transfer learners' difficulty in separating out the C and the V represented by one fidel is also in line with Olson's (1994/1998) conception that writing is a model of speech for its reader, making it difficult for the reader to perceive sound units which are not represented in the orthography. In line with this, in the Konso case, the abugida sound-symbol correspondences had become such a firm model of speech for abugida readers that it was very difficult for them to unlearn the model and become aware of those phonological units which are not extensively represented in Konso abugida writing.

Regarding quantity awareness, Konso represents a language in which phoneme quantity frequently denotes meaning differences. As the Konso abugida marks the quantity of only two phonemes and the alphabetic orthography marks it for all phonemes, the change of orthography in Konso offered the opportunity to study aspects of quantity awareness and its relation to literacy skills. The results of the study point to Konso abugida readers' difficulty in consciously recognising and identifying the quantity of phonemes and assigning it correctly to each phoneme, despite their ability to use phoneme quantity in oral communication quite effortlessly. The finding reveals a clear distinction between abugida readers' epilinguistic and metalinguistic levels of quantity awareness. This finding conforms with earlier results from Finnish about literacy learners' difficulty in reaching the metalinguistic level of quantity awareness required for accurate spelling skills in a transparent orthography (Ahvenainen & Holopainen, 2005; Kulju & Mäkinen, 2017; A. Lehtonen, 2005; Lerkkanen, 2006). An additional point to note is the similarity in the way the Finnish and Konso alphabetic orthographies both denote long vowels and gemination by doubling the relevant character. A. Lehtonen (2005) pointed out that such a spelling rule deviates from the principle of marking each sound with one letter, and suggested that this exception to an otherwise transparent orthography may cause literacy learners difficulty in learning to spell quantity correctly. The findings from Konso give further support to the potential relevance of A. Lehtonen's suggestion.

8.4 Critical survey of the study and suggestions for further research

This study began at the same time as the transfer literacy teaching programme in Konso. This arrangement had an impact on the way the study was set up and on its results, bringing both benefits and drawbacks. One major benefit was being able to gather impressions about the Konso alphabetic orthography and the trouble spots in the transfer process from the first group of transfer learners. They had not had an opportunity to get any preconceived ideas about the process from people who had already experienced it.

Another advantage was the possibility of collecting data from the teacher training workshops while the participants and I stayed together in the same place for several days; this allowed me to collect data both in the formal setting and in informal conversations. The informal interaction helped me to understand the results of the formal tests and allowed me to check my interpretations with the transfer learners themselves. This made the diary notes an important data collecting instrument, and in reporting the results, I have tried to follow Bryman's (2007) advice to let the results of quantitative and qualitative analyses interact. Overall, I believe that the decision to follow Dörnyei's (2007) recommendation to adopt a pragmatic approach and carry out a mixed methods study was beneficial in the Konso setting. An additional advantage was the participation of some literacy teachers in several training workshops during the data collecting period; this made it possible to follow up aspects of their learning process over a longer period of time and to get their insights into the transfer learning process first as learners and then as trainers.

As for the drawbacks of the study design, the close connection between the study and the training workshops prevented the collection of a large body of quantitative data. I was aware of this right from the beginning of the study, but it is still a definite drawback that needs to be mentioned. Getting more reliable results about the transfer literacy learners' PA at different points in time during their transfer literacy learning would have required testing the PA skills of more transfer learners and using longer tests with more items of different types. Also, to get a more comprehensive picture of the relationships between changes in the transfer learners' PA and their growing understanding of alphabetic writing it would have have been necessary to assess the learners' alphabetic reading and writing skills more extensively at different times during the data collecting period. However, the results of the tests and the results drawn from the qualitative data point quite consistently to the same conclusions, thus adding to the reliability and validity of the data.

Another drawback was the lack of earlier tests to measure the PA skills of Konso mother-tongue speakers or speakers of other Cushitic languages with parallel phonological structures. Consequently, in developing the data collecting instruments I had to rely on models from languages and contexts which were very different from Konso. Because of that and because of my own inexperience, there

was plenty of room for improvement in the instruments I developed for the study. For example, there were mistakes in the selection of items in the syllable segmentation test, as some of the stimuli included inflectional constructions. Also, for the sake of clarity it would have been better to select as far as possible only nouns with clear meanings as items of all tests, instead of including words from other word categories. Again, in some of the tests the line between meaningful words and pseudowords was blurred, and the mixture of words with meanings and words without meanings may have made the task more complicated and difficult to understand. Had I taken more time to prepare the instruments together with more mother-tongue speakers, it might have been possible to make sure that the meanings of the items were clear to everyone, and that nobody would discover a meaning for an item that was meant to be a pseudoword.

The principle of Koda's (2005) *transfer facilitation model* for analysing the properties of the writing systems (or orthographies) involved in the transfer literacy learning process and for identifying the metalinguistic capabilities related to the learning of literacy skills in each orthography was useful for detecting specific problem areas for the Konso transfer learners, and for composing appropriate PA tests to measure specific points. Nevertheless, there were shortcomings in the selection of the data collecting instruments. In hindsight, it would have been good to include more PA tests to measure transfer learners' syllable awareness, for example by means of syllable deletion tasks. Also, in composing the spelling and word-reading tasks, it would have been beneficial to include more items with consonant clusters and also with closed syllables in word-final position. That would have increased the amount of data available to study the relationship between learners' syllable awareness and their ability to spell and decode closed syllables in the alphabetic orthography.

An additional problem at the beginning of the data collecting period was participants' difficulty in understanding how to do the PA tests. Because of their lack of experience of dealing with language without reference to meaning, it would hardly have been possible to completely avoid this problem. However, it might have been possible to develop better instructions for the tasks. My limited language skills, especially at the beginning of the study, also contributed to the problem in the oral testing sessions. I was alone with the participant, but it would have been better to have an assistant with me, or to have a Konso mother-tongue speaker to lead the testing sessions. However, I was unable to find anyone to replace me at that time. During the testing sessions that took place in the classroom the trainers were involved in explaining the tasks with me.

Overall, as the study was the first of its kind, it served as a learning experience and has given insights into what needs to be considered when preparing for future studies on this topic in Konso or elsewhere. Because of the small amount of quantitative data collected during this study, further studies are needed in Konso to check all the results. More focused research is also needed on the links between transfer learners' syllable awareness and the learning of alphabetic literacy skills. The results of the spelling tasks indicated that there is also a need to look in more detail at the potential influence of the quality of a consonant (e.g.

plosive vs. non-plosive) on the difficulty of perceiving it in a consonant cluster. Also, to test the role of context in recognising phoneme quantity in decoding, word-reading tests that include both single words and short sentences need to be performed. Finally on this point, the popularity of the oral PA tasks among the teacher trainees calls for systematic testing of the contributions of different types of oral PA exercises to learning outcomes.

In addition to the need for further studies in Konso for their practical value in developing transfer literacy teaching methodology, more studies are also needed for their theoretical value. For example, the present findings point to the strong influence of the Konso abugida on all aspects of its readers' PA; comparative studies of the PA skills of Konso abugida readers and of Konso mother-tongue speakers without any literacy skills would therefore be of great interest. Such comparisons would give us valuable information about all aspects of PA, but in light of the results of the present study, the influence of the Konso abugida on its readers' quantity awareness and syllable awareness would be of particular interest.

Thinking beyond Konso, the paucity of previous studies on the interplay between PA and orthography in languages using the Ge'ez script means it would be very valuable to design studies on this topic in other Ethiopian languages. In Section 8.2, I sketched a few ways in which the findings from Konso could apply to other language contexts where readers of Ge'ez script are learning alphabetic literacy skills. However, to develop language-specific transfer literacy teaching methodologies, these assumptions need to be checked with studies in each language context.

In addition, the unique nature of the Ge'ez script makes further studies on the interplay between PA and Ge'ez script strongly to be recommended, because of the theoretical contribution they could make to the research area worldwide. Among specific topics that would be well worth exploring would be a comparison of the syllable awareness of people reading Brahmi and Ge'ez scripts. Studies on the links between epilinguistic and metalinguistic levels of quantity awareness in Ethiopian languages in which phoneme quantity plays a major role would also be interesting. The list could go on.

YHTEENVETO

Tämä tutkimus syntyi tarpeesta luoda pohja konsonkieliselle siirtymälukutaito-opetukselle Lounais-Etiopiassa, Konson maakunnassa. Tutkimusajankohtana konson kielessä oli juuri aloitettu siirtyminen konsonanttipohjaisen kirjoitusjärjestelmän käytöstä alfabeettisen kirjoitusjärjestelmän käyttöön. Tutkimuskonteksti antoi näin ainutlaatuisen mahdollisuuden tarkastella ortografian vaikutusta lukijan fonologiseen tietoisuuteen yhden kielen sisällä. Tämän tutkimuksen keskiössä on fonologisen tietoisuuden rooli luku- ja kirjoitustaidon oppimisessa ja ortografian rooli fonologisen tietoisuuden muokkaamisessa.

Konso on kuusilainen kieli (Mous, 2012), ja sitä puhuu äidinkielenään noin 299 600 ihmistä Konson maakunnassa.[36] Konson kielelle on 1970-luvulla Etiopian Evankelisen Mekane Yesus -kirkon ja Etiopian Pipliaseuran aloitteesta tehty ortografia käyttäen etiopialaista, konsonanttipohjaista kirjoitusjärjestelmää, josta käytetään myös nimitystä *ge'ezin kirjoitusjärjestelmä*. Kirjoitusjärjestelmä on alun perin kehitetty ge'ezin kielelle neljännellä vuosisadalla (Getatchew, 1996). Daniels (1990; 1996) luokittelee ge'ezin kirjoitusjärjestelmän *abugidaksi* ja määrittelee abugidan kirjoitusjärjestelmäksi, jossa peruskirjainmerkit vastaavat konsonantin ja tietyn vokaalin yhdistelmää. Kielen muut vokaalit merkitään pienillä muunnoksilla peruskirjainmerkkiin (ks. esimerkit Taulukossa 1 sivulla 20).

Konsossa tuhannet ihmiset ovat oppineet lukemaan ja kirjoittamaan äidinkieltään konsoa kirkon lukutaitoluokissa, ja konson kirjakieli on ollut ahkerassa käytössä kirkon piirissä 1990-luvulta saakka. Vuonna 2012 Konson maakuntahallinto päätti vaihtaa konson kirjoitusjärjestelmän abugidasta alfabeettiseen ja laajentaa konson kirjakielen käytön kirkon ulkopuolelle. Konson kielen uusi, alfabeettinen ortografia valmistui vuonna 2014, ja paikallinen opetusvirasto ryhtyi valmistelemaan äidinkielisen perusopetuksen aloittamista kielialueen lapsille. Kirkon tehtäväksi jäi huolehtia siirtymälukutaito-opetuksesta aikuisille, jotka osasivat lukea ja kirjoittaa konson abugidaa.

Tämä tutkimus on toteutettu osana kirkon siirtymälukutaito-opetuksen kehittämistyötä. Tutkimuksen ensisijaisena tavoitteena on ollut luoda pohja siirtymälukutaidon opetusmenetelmän kehittämiseksi konson kielelle, mutta tulokset antavat myös laajemmin tietoa siitä, mitä siirtymälukutaidon opetuksessa tulee huomioida tilanteessa, jossa oppilaat osaavat konsonanttipohjaisen kirjoitusjärjestelmän ja opettelevat alfabeettista luku- ja kirjoitustaitoa. Siksi toivon, että tutkimuksen tuloksia voidaan soveltaa myös muissa etiopialaisissa kielissä, joissa on konson tavoin otettu käyttöön alfabeettinen ortografia. Vuonna 1994 Etiopiassa voimaan tullut kielilainsäädäntö takaa kaikille maan yli 80 kieliryhmälle oikeuden valita, kirjoittavatko he kieltään ge'ezin kirjoitusjärjestelmää vai alfabeettista kirjoitusjärjestelmää käyttäen. Uusi kielilainsäädäntö on antanut kaikille kieliryhmille myös oikeuden ottaa kieli käyttöön paikallishallinnossa ja perusopetuksessa. Aiemmin ainoa sallittu kirjoitusjärjestelmä etiopialaisille kielille oli

[36] Konso Zone, Department of Finance and Economic Development, 2018.

ge'ezin kirjotusjärjestelmä, ja hallinnon ja perusopetuksen kieli koko maassa oli amhara.

Etiopian opetusministeriön tilastojen mukaan vuoteen 2016 mennessä 41 kieltä oli otettu käyttöön perusopetuksen kielinä, ja lisäksi seitsemää kieltä opetettiin yhtenä oppiaineena eri puolilla maata. Näistä 48 kielestä 40 käyttää alfabeettista kirjoitusjärjestelmää ja 8 ge'ezin kirjoitusjärjestelmää (Ethiopian Ministry of Education, 2009 E.C.[37]). Vaikka monilla nyt alfabeettiseen ortografiaan siirtyneillä kielillä on aiemmin ollut ge'ezin kirjoitusjärjestelmään pohjaava ortografia, kielikohtaista siirtymälukutaito-opetusta alfabeettiseen ortografiaan on tietojeni mukaan kehitetty konson lisäksi ainoastaan surin kielessä. Myöskään tutkimusta ge'ezin kirjotusjärjestelmästä alfabeettiseen kirjoitusjärjestelmään siirtymisen haasteista ei ole tehty.

Tarve kehittää tehokkaita menetelmiä siirtymälukutaidon opetukseen on ajankohtainen myös Euroopassa. Viime vuosina Eurooppaan tulleista maahanmuuttajista monet hallitsevat konsonanttipohjaisen kirjoitusjärjestelmän, joka on typologiselta luokitukseltaan abugida (mm. tigrinjan kieli) tai abjad (mm. arabia ja persia). Abjad eroaa abugidasta siten, että vokaalit jätetään usein merkitsemättä. Oppiakseen lukemaan ja kirjoittamaan uuden asuinpaikkansa kieltä maahanmuuttajat joutuvat Euroopassa opettelemaan alfabeettisen kirjoitusjärjestelmän.

Lukemaan oppiminen edellyttää ortografiassa käytettävien kirjainmerkkien ja kielen äänteiden tai äännejonojen välisen yhteyden ymmärtämistä, ja siksi fonologisen tietoisuuden ja lukutaidon oppimisen välillä tiedetään olevan kiinteä yhteys (ks. esim. Durgunoğlu & Öney, 2002; Koda, 2017; Nag, 2007; Page, 2017; Richardson & Nieminen, 2017; Share, 2017; Yin & Sun, 2017). Fonologisella tietoisuudella tarkoitetaan kykyä hahmottaa, tunnistaa tai manipuloida kielen äännerakenteita (Ziegler & Goswami, 2005). Kun yhden kirjoitusjärjestelmän hallitseva lukija opettelee lukemaan ja kirjoittamaan uutta, erilaista kirjoitusjärjestelmää, hänen täytyy oppia ne yhteydet kirjainmerkkien ja äännejonojen välillä, jotka ovat erilaiset kuin kirjoitusjärjestelmässä, jonka hän jo hallitsee. Koska konson abugidassa kirjainmerkit vastaavat ensisijaisesti konsonantti-vokaaliäännejonoa, jossa konsonantti on visuaalisesti hallitseva elementti, ja alfabeettisessa ortografiassa jokaiselle äänteelle on oma kirjainmerkki, konson siirtymälukutaito-opetuksen kehittämiseksi oli tärkeä selvittää, miten erot konson kahden ortografian välillä vaikuttivat lukijoiden fonologiseen tietoisuuteen ja abugidan lukijoiden alfabeettisen lukutaidon oppimiseen. Tarkastelen tässä tutkimuksessa konson alfabeettista luku- ja kirjoitustaitoa opettelevien abugidan lukijoiden fonologista tietoisuutta ja sen yhteyksiä abugidan kirjain–äänne-yhteyksiin kolmella tasolla: äänteet, äänteiden kvantiteetti ja tavut.

Ortografian ja fonologisen tietoisuuden välistä yhteyttä on tutkittu eniten kielissä, jotka käyttävät alfabeettista kirjoitusjärjestelmää. Viimeisten parinkymmenen vuoden aikana aiheesta on kuitenkin ilmestynyt enemmän tutkimuksia

[37] Vuosi 2009 E.C. on Etiopian ajanlaskun mukainen vuosiluku. Ko. vuosi alkaa syyskuussa 2016 jaa.

myös muita kirjoitusjärjestelmiä käyttävissä kielissä. Tämän tutkimuksen kannalta mielenkiintoisimpia ovat brahmikirjoitusta käyttävien kielten tutkimukset. Brahmia käytetään monissa kielissä Etelä- Kaakkois- ja Sisä-Aasiassa (Salomon, 1996). Ge'ezin kirjoituksen tavoin brahmi on typologiselta luokitukseltaan abugida (Daniels, 1996), ja muistuttaa siksi kirjainmerkki–äännejono-vastaavuuksiltaan ge'ezin kirjoitusjärjestelmää. Koska ortografian ja fonologisen tietoisuuden yhteyksistä ei ole julkaistu tutkimuksia ge'ezin kirjoitusjärjestelmää käyttävistä kielistä, brahmin tutkimuksista saadut tulokset toimivat lähimpänä vertailukohteena konson tutkimustuloksille.

Tutkimuskysymykset:

1. Minkälainen on konson abugidan lukijoiden fonologinen tietoisuus ja miten se on yhteydessä abugidan kirjainmerkkien ja äännejonojen vastaavuuksiin?
2. Miten konson abugidan lukijoiden fonologinen tietoisuus muuttuu heidän oppiessaan lukemaan ja kirjoittamaan kieltään alfabeettista kirjoitusjärjestelmää käyttäen?
3. Mikä on fonologisen tietoisuuden rooli siirryttäessä abugidasta alfabeettiseen kirjoitusjärjestelmään Konsossa, ja miten tämä tulee huomioida konson siirtymälukutaito-opetuksessa?

Suurin osa tutkimuksen aineistosta on kerätty kirkon vapaehtoisten lukutaito-opettajien kursseilta neljällä kenttämatkalla vuosina 2015–18. Nämä lukutaito-opettajat ovat tavallisia seurakuntalaisia, joiden koulutustaso vaihtelee ainoastaan kirkon lukutaitoluokan käyneistä lukion käyneisiin. Ensimmäisen kenttämatkan aikana (24.6.-8.8.2015) järjestettiin ensimmäiset kaksi kahden viikon mittaista siirtymälukutaidon intensiivikurssia, joille osallistui yhteensä 65 vapaaehtoista lukutaito-opettajaa. Kursseilla he opettelivat itse alfabeettista luku- ja kirjoitustaitoa ja valmistautuivat opettamaan siirtymälukutaitoluokkaa omassa kyläkirkossaan. Kurssien aikana keräämäni aineisto koostuu opettajien tekemistä fonologisen tietoisuuden testeistä ja alfabeettisista sanelu- sekä ääneenlukutehtävistä, kirjallisista vastauksista kysymyksiin, joissa opettajia pyydettiin kertomaan kokemuksiaan ja näkemyksiään konson uudesta ja vanhasta ortografiasta ja alfabeettisen lukutaidon opettelemisesta, sekä päiväkirjamerkinnöistä.

Myöhemmillä kenttäjaksoilla (30.1.-22.2.2016, 14.-31.7.2017, 16.-24.9.2018) järjestettiin lisää kursseja opettajille, ja tapasin uudelleen osan ensimmäisen kenttäjakson aikana koulutetuista opettajista. Seurasin heidän alfabeettisen luku- ja kirjoitustaitonsa kehittymistä ja keräsin heidän kokemuksiaan siirtymälukutaidon opettamisesta omilla kotikylillään. Toisella kenttäjaksolla testasin opettajien lisäksi 15 lukutaito-oppilaan fonologista tietoisuutta ja heidän alfabeettista kirjoitustaitoaan. Opettajakurssien lisäksi vierailin lukutaitoluokissa neljällä kylällä.

Minulla oli työtäni varten tutkimuslupa Addis Abeban yliopiston Etiopian tutkimuksen instituutista. Lisäksi solmin kirjallisen sopimuksen kirkon Konson rovastikunnan kanssa aineiston keräämisestä siirtymälukutaitokurssien aikana.

Niille lukutaito-opettajille ja oppilaille, joilta sain joko kirjallista tutkimusaineistoa tai nauhoitettua äänimateriaalia, järjestettiin ennen aineistonkeruujakson alkua orientaatio tutkimuksesta ja aineiston keruun vaiheista, ja he allekirjoittivat kirjallisen sopimuksen antaen luvan aineiston käytöstä tutkimustarkoituksiin. Koska olen ollut mukana konsonkielisen lukutaitotyön kehittämisessä 1990-luvulta alkaen, monet koehenkilöistä olivat kuulleet minusta jo ennen tutkimusta, ja muutamat tunsivat minut henkilökohtaisesti. Tämä teki aineiston keräämisen opettajien kursseilla luontevaksi. Olin koko kurssien ajan läsnä, ja ensimmäisillä kursseilla minulla oli myös opettajan rooli.

Tutkimuksen metodia voidaan luonnehtia monimenetelmäiseksi (Dörnyei, 2007). Raportoidessani tuloksia olen yhdistänyt ja vertaillut eri aineistoista saatuja tuloksia ja muodostanut kokonaiskuvan kaikkien tulosten pohjalta siten, että eri tulokset täydentävät ja selittävät toisiaan (ks. Bryman, 2007). Fonologisen tietoisuuden testitulokset osoittivat, minkälaisia yhteyksiä siirtymälukutaitokurssilaisten fonologisella tietoisuudella oli konson abugidan kirjainmerkki–äännejono-vastaavuuksiin. Luku- ja kirjoitustehtävien tulokset osoittivat, miten abugidan vaikutus fonologiseen tietoisuuteen heijastui kurssilaisten alfabeettisen luku- ja kirjoitustaidon oppimiseen ja minkälaisia haasteita se oppimiselle aiheutti. Kurssilaisten kirjoittamat kokemukset konson kahdesta ortografiasta ja alfabeettisen lukutaidon oppimisen haasteista käsittelivät paljolti samoja ongelmakohtia ja antoivat tietoa siitä, miten he ongelmat kokivat. Havainnoidessani siirtymälukutaito-opetusta ja keskustellessani opettajien ja oppilaiden kanssa pyrin kiinnittämään huomiota seikkoihin, jotka osoittautuivat testitulosten ja kurssilaisten kirjoittamien kokemusten pohjalta kaikkein ongelmallisimmiksi alfabeettisen luku- ja kirjoitustaidon oppimiselle. Pyrin näin ymmärtämään ongelmakohtia ja niiden syitä ja etsimään parhaita pedagogisia vaihtoehtoja opetusmenetelmän kehittämiseen.

Tutkimuksen tulokset osoittivat kiinteän yhteyden konson abugidan lukijoiden fonologisen tietoisuuden ja abugidan kirjainmerkki–äännejono-vastaavuuksien välillä. Abugidan lukijat olivat tottuneet hahmottamaan kielen äännejonot abugidan kirjainmerkkien mukaisesti konsonantti-vokaalijonoina, ja konsonantin ja sitä seuraavan vokaalin mieltäminen erillisinä yksiköinä sekä niiden irrottaminen toisistaan tuotti heille vaikeuksia. Sen sijaan he mielsivät konsonantin ja vokaalin kahtena erilaisena komponenttina, jotka kuuluvat yhteen ja täydentävät toisiaan – kuten ne abugidan kirjainmerkkejä noudattaen tekevätkin. Tulos on samansuuntainen brahmikirjoitusta käyttävistä kielistä saatujen tutkimustulosten kanssa. Niiden mukaan brahmin lukijoiden äännetietoisuus kehittyy hitaasti verrattuna sellaisiin lukijoihin, joiden kielessä käytetään alfabeettista kirjoitusjärjestelmää (esim. Karanth, 2005; Nag, 2007; Nag, 2017; Nag & Snowling, 2012). Osaltaan konson abugidan lukijoiden heikkoon äännetietoisuuten on voinut vaikuttaa myös abugidan opetuksessa käytetty menetelmä, jossa on korostettu kirjainmerkkien ja konsonantti-vokaaliäännejonojen kiinteää yhteyttä. Myös brahmikirjoitusta käyttävissä kielissä on raportoitu opetusmenetelmän vaikuttavan lukutaito-oppilaiden äännetietoisuuden kehittymiseen (Wijaythilake ym., 2018).

Konson alfabeettisen luku- ja kirjoitustaidon oppimisessa puutteellinen äännetietoisuus näkyi selvimmin sanelukirjoitustehtävissä. Tyypillinen virhe heikoimmin menestyneiden siirtymälukutaitokurssilaisten kirjoituksissa oli jättää vokaalit pois (esim. *qaaleta* ja *waaqa* virheellisesti kirjoitettuna: **qlta* ja **wq*). Koska konson alfabeettisessa ortografiassa jokaista konsonanttia ja vokaalia vastaa aina oma kirjainmerkki, siirtymälukutaito-opetuksessa konsonantin ja vokaalin käsitteiden selvittäminen oppilaille osoittautui tärkeäksi. Alfabeettisen kirjoituksen ja kielen fonologisen rakenteen suhteen sisäistämistä helpotti se, kun oppilaat ymmärsivät kielen koostuvan kahdenlaisista äänteistä: vokaaleista, joissa ilmavirta kulkee vapaasti ja jotka on siksi helppo ääntää yksin, ja konsonanteista, joissa ilmavirran kulkua estetään ja ääni purkautuu vapaasti ulos vasta, kun niiden perään lisätään vokaali. Yksittäisen äänteen tunnistamisen harjoittelussa hyödyllisiksi osoittautuivat samat tehtävätyypit, joita käytin tässä tutkimuksessa äännetietoisuuden testaamiseen. Tällaisia tehtäviä olivat foneemin poistotehtävät (esim. sano *jaqa* ilman j:tä; sano *karma* ilman m:ää) ja sanan alku- tai loppuäänteen tunnistustehtävät (esim. alkavatko *teyka* ja *ferta* samalla vai eri äänteellä).

Konson kielessä sekä vokaalin että konsonantin kvantiteetti (ts. äänteen kesto) aiheuttaa usein merkityseron sanojen tai kieliopillisten rakenteiden välillä (esim. /fura/ 'avain'; /fuura/ 'pelko'; /tika/ 'talo'; /tikka/ 'talot'). Konson abugidassa äänteen kvantiteetti merkitään kuitenkin ainoastaan kahdelle eniten käytetylle vokaalille: /a/ ja /i/. (Esim. **ha**/ka/; **haa**/kaa/; **hi**/ki/; **hii**/kii/). Konson alfabeettisessa ortografiassa kvantiteetti merkitään kaikille äänteille kirjoittamalla sama kirjainmerkki kaksi kertaa, jos sanassa on pitkä vokaali tai geminaatta.

Tutkimustulokset osoittivat, että äänteen kvantiteetin tietoinen tunnistaminen ja merkitseminen täsmällisesti oikein kullekin äänteelle oli konson abugidan lukijoille vaikeaa. Abugidaa kirjoittaessaan he eivät aina merkinneet systemaattisesti vokaalien /a/ ja /i/ pituutta, vaikka abugidan oikeinkirjoitussäännöt niin vaativat. Vasta tarve merkitä kvntiteettierot alfabeettisessa kirjoituksessa kaikille äänteille opetti heidät ymmärtämään, miten paljon konson kielessä käytetään äänteen kestoa ilmaisemaan sanojen merkityseroja. Tulos on osoitus lukutaidon ja ortografian vahvasta vaikutuksesta lukijan metalingvistiseen kykyyn tiedostaa ja hahmottaa kielen fonologisia yksiköitä. Yhdelläkään siirtymälukutaitokurssilaisella ei ollut suullisessa kommunikaatiossa vaikeuksia kuulla tai puheessaan käyttää oikein äänteiden kestoa tai tulkita sen tuomia eroja merkityksessä – olihan konso heidän äidinkielensä. Tästä huolimatta kvantiteetin tarkka tunnistaminen ja merkitseminen kirjoituksessa ei tahtonut onnistua. Gombert (1990/1992) kuvaa ilmiötä määrittäessään kielitietoisuuden koostuvan kahdesta eri tasosta: epilingvistisestä tasosta, joka on osa suullista kielitaitoa ja toimii suullisessa kommunikaatiossa tiedostamatta, sekä metalingvistisestä tasosta, joka edellyttää kykyä hahmottaa, erottaa ja yhdistellä kielen äännejaksoja tietoisesti. Luku- ja kirjoitustaito vaatii metalingvististä tietoisuutta sen mukaan, mitä fonologisia yksiköitä kirjoituksessa merkitään.

Konson alfabeettisen luku- ja kirjoitustaidon oppimisessa vaikeus merkitä äänteen kvantiteetti näkyi siirtymälukutaitokurssilaisten tekemissä kirjoitusvirheissä. Sanelutehtävissä kvantiteettivirheitä, joissa kestoltaan pitkä äänne kirjoitettiin lyhyenä tai lyhyt pitkänä, oli paljon, ja ne muodostivat yli puolet kaikista sanelutehtävien kirjoitusvirheistä. Myös ääneenlukutehtävissä oppijat tekivät runsaasti kvantiteettivirheitä silloin, kun luettavan sanan merkitys vaihtui, mikäli yhden tai useamman äänteen kvantiteetti muuttui (esim. *kuuta* 'katon harja' luettiin virheellisesti *kuta* 'koira' tai *kutta* 'koirat').

Vaikeus hahmottaa ja ilmaista yksittäisen äänteen kesto johtui osittain abugidan lukijoiden vaikeudesta hahmottaa konsonantit ja vokaalit erillisinä yksikköinä. Äänteistä puhuessaan he tyypillisesti viittasivat niihin konsonantti-vokaaliyhtyminä: esimerkiksi kuvatessaan pseudosanan *riila* pitkää /ii/-äännettä siirtymälukutaitokurssilainen totesi siinä olevan pitkä *rii*. Tämä osoitti, miten kunkin äänteen kvantiteetin oikea tunnistaminen vaatii kykyä ensin erottaa konsonantti- ja vokaaliäänne toisistaan. Siirtymälukutaito-opetuksessa tämä tulee huomioida opettamalla ensin konsonanttien ja vokaalien käsitteet ja harjoittelemalla kunkin äänteen tunnistamista irrallaan kontekstista – vasta tämän jälkeen voidaan opetella tunnistamaan kunkin äänteen kesto.

Kvantiteetin hahmottaminen ja merkitseminen oikein alfabeettisessa kirjoituksessa säilyi kaikkein vaikeimpana asiana oppia niille lukutaito-opettajille, joiden alfabeettisten luku- ja kirjoitustaitojen kehittymistä seurasin useamman aineistonkeruujakson aikana. Edistystä tapahtui, mutta se oli hidasta ja vaati paljon aikaa kvantiteetin tunnistamisen harjoitteluun. Yhdeksi suosituksi harjoitustyypiksi nousi kvantiteetin testaamiseen käytetty tehtävätyyppi, jossa piti erottaa kestoltaan pitkä ja lyhyt äänne muutoin samanlaisissa pseudosanoissa (esim. *limanakkampayta* vs. *limanakampayta*).

Konson fonologinen tavu sisältää maksimissaan yhden tavunalkuisen ja yhden tavunloppuisen konsonantin. Koska konson abugida ei merkitse geminaattaa, ja tavunloppuinen konsonantti (ts. sanansisäisen konsonanttiyhtymän ensimmäinen konsonantti tai sananloppuinen konsonantti) kirjoitetaan samalla abugidan kirjainmerkillä kuin konsonantti ja lyhyt vokaali /i/, konson abugida rikkoo kielen fonologisen tavun kahdella eri tavalla: jos sanassa on geminaatta, ortografinen tavuraja siirtyy geminaatan eteen, ja näin yksi kirjainmerkki sisältää osia kahdesta fonologisesta tavusta (esim. **ነፐ** /na.ppa/); jos sanassa on konsonanttiyhtymä tai sana päättyy konsonanttiin, umpitavun loppukonsonantti kirjoitetaan omalla kirjainmerkillä, ja se irtoaa abugidan ortografisesta tavusta erilliseksi yksiköksi (esim. **ፐልዶ** /pa.l.ɗa/; **ኩዶን** /ku.ɗa.n/).

Kun konson abugidan lukijat aloittivat alfabeettisen luku- ja kirjoitustaidon opettelemisen, tavun käsite oli heille vieras, ja heillä oli vaikeuksia jakaa sanoja tavun kokoisiin yksiköihin. Lisäksi ero konson fonologisten tavujen ja abugidan mukaisten ortografisten tavujen tavurajoissa vaikutti siihen, miten abugidan lukijat hahmottivat umpitavujen tavurajat. Suullisessa tavutustehtävässä he lähes poikkeuksetta tavuttivat sanat abugidan kirjainmerkkien mukaisiin yksiköihin (esim. **ነፐ** tavutettiin *na-ppa*). Konsonanttiyhtymien tavutuksessa abugidan kir-

jainmerkki–äännejono-vastaavuuksien vaikutus näkyi taipumuksena lisätä umpitavun loppukonsonantin perään vokaali /i/ (esim. ፐልደ *pal-da* tavutettiin virheellisesti *pa-li-da*). Samansuuntaisia tuloksia kirjainmerkkien ja äännejonojen välisen yhteyden vaikutuksesta lukijoiden käsityksiin tavurajoista ja tapoihin tavuttaa sanat ortografisiin yksiköihin fonologisten sijaan on saatu brahmista tehdyissä tutkimuksissa (Murty, Otake & Cutler, 2007; Nag, 2017; Ohala, 1999; Sailaja, 2007).

Vaikeus hahmottaa konsonanttiyhtymissä tavunloppuinen konsonantti erillisenä yksikkönä heijastui myös kirjoitusvirheissä. Tyypillisiä virheitä oli jättää umpitavun loppukonsonantti pois tai lisätä sen perään vokaali /i/ (esim. *pinanta* kirjoitettiin virheellisesti **pinanita* tai **pinata*). Myös konsonantin kvantiteetin tunnistamisen ja tavutietoisuuden välille löytyi yhteys. Kun siirtymälukutaitokursseilla opetettiin tavun käsite ja fonologisen tavuttamisen sääntö jakaa geminaatta keskeltä osaksi kahta eri tavua, kurssilaiset huomasivat tavuttamisen auttavan erottamaan, onko sanassa geminaatta vai ei. Tutkimuksen tulokset antoivat näin osviittaa siitä, että tavun käsitteen ymmärtäminen ja taito jakaa sanoja fonologisiin tavuihin ovat avuksi konson alfabeettisen luku- ja kirjoitustaidon oppimisessa. Tulos vastaa aiemmin alfabeettista ortografiaa käyttävissä kielissä tehtyjen tutkimusten tuloksia, joiden mukaan tavutietoisuuden ja luku- ja kirjoitustaidon oppimisen välillä on todettu selvä yhteys (ks. Perfetti & Verhoeven 2017). Samoin tutkimuksessaan suomenkielisten lasten oikeinkirjoitustaitojen kehittymisestä A. Lehtonen ja Bryant (2001) ovat havainneet, että lasten oikeinkirjoitus parani, kun he oppivat hahmottamaan oikein tavut ja tavujen rajat.

Pohdittaessa, mitä annettavaa konson abugidasta ja konsonkielisestä siirtymälukutaito-opetuksesta saaduilla tuloksilla on siirtymälukutaidon opetusmenetelmän kehittämiseen muissa etiopialaisissa kielissä, joissa on siirrytty ge'ezin kirjoitusjärjestelmästä alfabeettiseen kirjoitusjärjestelmään, tärkeäksi nousee äännetietoisuuden merkitys alfabeettisen luku- ja kirjoitustaidon oppimiselle. Koska ge'ezin kirjoitusjärjestelmässä konsonantti ja sitä seuraava vokaali kirjoitetaan samalla kirjainmerkillä, voidaan olettaa, että konson tavoin myös muiden kielten siirtymälukutaito-opetuksessa ge'ezin kirjoitusjärjestelmästä alfabeettiseen kirjoitusjärjestelmään on tärkeä harjoittaa oppijoita hahmottamaan äänteet erillisinä yksikköinä ja opettaa konsonantin ja vokaalin käsitteet. Lisäksi konson tavoin monissa muissa etiopialaisissa kielissä äänteen kvantiteetti tekee usein merkityseron (kuusilaiset kielet ks. Mous, 2012; omoottiset kielet, ks. Amha, 2017) ja alfabeettinen ortografia merkitsee äänteen kvantiteetin. Näin ollen kvantiteetin tunnistamisen ja merkitsemisen harjoittelemisen voidaan olettaa nousevan keskeiseksi myös näiden kielten siirtymälukutaito-opetuksessa. Edelleen koska ge'ezin kirjoitusjärjestelmässä ei ole erillistä kirjainmerkkiä konsonanttiyhtymän ensimmäisen konsonantin merkitsemiseen, fonologisten tavutussääntöjen oppiminen nousee todennäköisesti tärkeäksi siirtymälukutaito-opetuksessa myös muissa umpitavuja sisältävissä kielissä.

Sen lisäksi, että konson tutkimustuloksista voidaan katsoa olevan hyötyä siirtymälukutaidon opetuksen kehittämiseen ge'ezin kirjoitusjärjestelmästä alfa-

beettiseen kirjoitusjärjestelmään, tuloksilla on annettavaa myös yleiseimmin siirtymälukutaito-opetuksen kehittämiseen tilanteissa, joissa konsonanttipohjaisen kirjoitusjärjestelmän hallitseva lukija opettelee alfabeettista luku- ja kirjoitustaitoa. Tämä tutkimus osoitti selkeästi, miten vahvasti lukijan hallitseman ortografian kirjainmerkki–äännejono-vastaavuudet ovat vaikuttaneet hänen fonologiseen tietoisuuteensa. Tällöin erityisesti siirtyminen suurempia fonologisia yksiköitä merkitsevästä ortografiasta pienempiä yksiköitä merkitsevään on haastavaa ja vaatii uusia metalingvistisiä taitoja. Siirryttäessä konsonanttipohjaisesta ortografiasta alfabeettiseen tämä tarkoittaa erityisesti tarvetta kehittää siirtymälukutaito-oppilaiden äännetietoisuutta.

Kokonaisuudessaan tämä tutkimus osoitti selkeästi äännetietoisuuden tärkeän roolin alfabeettisen luku- ja kirjoitustaidon oppimisessa. Tulos vastaa Perfettin ja Verhoevenin (2017) näkemystä äännetietoisuudesta alfabeettisen luku- ja kirjoitustaidon mahdollistajana (enabler). Tässä tutkimuksessa kävi myös ilmi, että vaikka abugidan kirjainmerkit sisältävät sekä konsonantin että vokaalin, luku- ja kirjoitustaito konson abugida-ortografiaa käyttäen ei ollut antanut lukijoille riittävästi eväitä hahmottaa konsonantit ja vokaalit selkeästi erillisinä yksikköinä. Tämä tulos resonoi Olsonin (1994/1998) esittämän näkemyksen kanssa kirjoitusjärjestelmän ja fonologisen tietoisuuden kiinteästä yhteydestä. Olsonin mukaan kirjoitusjärjestelmän käyttämät kirjainmerkki–äännejono-vastaavuudet muodostuvat lukijalle kielen fonologisen rakenteen malliksi. Opittuaan tämän mallin lukijan on hyvin vaikea hahmottaa niitä fonologisia rakenteita, joita kirjoitusjärjestelmä ei merkitse.

Aloitin aineiston keräämisen tähän tutkimukseen samaan aikaan kun siirtymälukutaito-opettajien kouluttaminen Konsossa käynnistyi. Asetelma mahdollisti aineiston keräämisen kontekstissa, jossa konson alfabeettinen ortografia oli uusi koko kieliyhteisössä ja sain seurata koehenkilöiden ensivaikutelmia konson alfabeettisesta ortografiasta ja sen opettelemisesta ilman, että heillä olisi ollut muiden kokemuksiin pohjautuneita ennakkokäsityksiä. Koska keräsin suurimman osan aineistosta siirtymälukutaito-opettajien intensiivikursseilta, olimme paljon yhdessä myös vapaa-aikoina, ja minulla oli mahdollisuus kerätä aineistoa muodollisten testi- ja opetustilanteiden lisäksi myös käymistämme vapaamuotoisista keskusteluista. Keskustelut auttoivat minua ymmärtämään saamiani testituloksia ja niiden avulla pystyin tarkistamaan omia tulkintojani tuloksista oppijoilta itseltään. Päiväkirjamerkinnöistäni tuli siten tärkeä osa aineistoa, ja monimenetelmäinen tutkimusmetodi osoittautui hyödylliseksi.

Mutta aineiston keräämisessä siirtymälukutaitokurssien aikana oli myös varjopuolensa. Koska aineiston keruu täytyi yhdistää kurssien opetusohjelmaan, en voinut sisällyttää aineistokokonaisuuteen laajaa fonologisen tietoisuuden suullista testikokonaisuutta, jossa testit olisivat olleet pitempiä ja niihin olisi osallistunut suurempi määrä koehenkilöitä. Tämä olisi lisännyt tulosten luotettavuutta, joskin testitulokset ja kvalitatiivisin menetelmin kerätty aineisto antoivat tutkimuksessani samansuuntaisia tuloksia.

Testien laatimista hankaloitti tutkimuskontekstin erilaisuus verrattuna aiempiin aiheesta tehtyihin tutkimuksiin. Vastaavia fonologisen tietoisuuden

testejä ei ollut laadittu aiemmin kuusilaisille kielille, ja jouduin etsimään malleja kielistä ja kielikonteksteista, jotka poikkesivat monin tavoin tämän tutkimuksen kontekstista. Kun lisäksi fonologisen tietoisuuden testien laatiminen oli minulle uutta, en osannut ottaa kattavasti huomioon kaikkia ärsykesanojen luotettavuuteen vaikuttavia näkökohtia. Tämän seurauksena tavujen segmentointitestiin pääsi mukaan sanoja, jotka koostuivat useammasta morfeemista. Lisäksi pseudosanoista koostuvissa testeissä osa testattavista osasi kertoa joillekin sanoille merkityksen. Pyrin kuitenkin ottamaan nämä puutteet huomioon analyysia tehdessäni ja tuloksia tulkitessani.

Aineiston keruun alkuvaiheessa osanottajilla oli vaikeuksia ymmärtää, mitä heidän odotettiin fonologisen tietoisuuden testeissä tekevän. Osittan ongelma johtui siitä, ettei heillä ollut aiempaa kokemusta käsitellä kieltä irrallaan merkityskontekstista, eikä ongelmaa siksi olisi täysin voitu välttää. Mutta osasyynä ongelmaan oli oma kokemattomuuteni testaajana ja eteenkin ensimmäisellä testikierroksella puutteellinen kielitaitoni selittää tehtävät selkeästi konson kielellä. Kun kommunikaatiovaikeuksia syntyi, käytin amharan kieltä, jota koehenkilöt ymmärsivät, mutta tilannetta olisi helpottanut, jos mukana olisi ollut konsoa äidinkielenään puhuva avustaja tai testaaja.

Koska tutkimus on kuitenkin ensimmäinen laatuaan kuusilaisissa kielissä, kaikkine puutteineenkin se antaa uutta tietoa ja luo pohjaa jatkotutkimuksille. Konson siirtymälukutaito-opetuksen edelleen kehittämiseksi nyt saadut tutkimustulokset osoittivat lisätutkimuksen tarpeen erityisesti konson abugidan lukijoiden tavutietoisuuden roolista alfabeettisen luku- ja kirjoitustaidon oppimisessa ja tavunloppuisten konsonanttien artikulaatiotavan mahdollisesta vaikutuksesta niiden tunnistamiseen konsonanttiyhtymissä. Tärkeinä tutkimusaiheina nousivat esiin myös lausekontekstin rooli kvantiteetin tunnistamisessa ja suullisten harjoitusten rooli siirtymälukutaito-oppilaiden fonologisen tietoisuuden kehittämisessä. Siirtymälukutaito-opetuksen kehittämistarpeen lisäksi jatkotutkimukset konson abugidan vaikutuksista lukijoiden fonologiseen tietoisuuteen ovat tarpeellisia myös niiden tuoman uuden teoreettisen tietämyksen takia. Arvokas tutkimusaihe olisi esimerkikisi vertailla konson abugidan lukijoiden ja luku- ja kirjoitustaidottomien konson puhujien fonologista tietoisuutta.

Konson kielessä tarvittavan tutkimuksen lisäksi uutta tutkimusta tarvitaan myös muissa etiopialaisissa kielissä. Kielikohtainen tutkimus on tärkeää siirtymälukutaidon opetusmenetelmän kehittämiseksi kaikissa niissä kielissä, joissa on siirrytty ge'ezin kirjoitusjärjestelmästä alfabeettiseen kirjoitusjärjestelmään. Lisäksi ge'ezin kirjoitusjärjestelmän ainutlaatuisuus tekee siitä arvokkaan tutkimuskohteen maailmanlaajuisessa tutkimuskentässä kerättäessä lisää tutkimustietoa erilaisten kirjoitusjärjestelmien ja fonologisen tietoisuuden välisistä yhteyksistä. Monen mielenkiintoisen aihepiirin joukossa kiinnostavia lähestymistapoja olisivat esimerkiksi vertaileva tutkimus brahmin ja ge'ezin kirjoitusjärjestelmien lukijoiden tavutietoisuudesta tai ge'ezin lukutaidon yhteyksistä epilingivistiseen ja metalingvistiseen kvantiteettitietoisuuteen. Listaa voisi jatkaa pitkään, sillä merkittäviä aiheita ja näkökulmia löytyy paljon.

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APPENDICES

APPENDIX 1: KONSO ABUGIDA

		a	u	ii	aa	e	i/-	o
h	/h/	ሀ	ሁ	ሂ	ሃ	ሄ	ህ	ሆ
l	/l/	ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ
m	/m/	መ	ሙ	ሚ	ማ	ሜ	ም	ሞ
r	/r/	ረ	ሩ	ሪ	ራ	ሬ	ር	ሮ
s	/s/	ሰ	ሱ	ሲ	ሳ	ሴ	ስ	ሶ
sh	/ʃ/	ሸ	ሹ	ሺ	ሻ	ሼ	ሽ	ሾ
t	/t/	ተ	ቱ	ቲ	ታ	ቴ	ት	ቶ
c	/tʃ/	ቸ	ቹ	ቺ	ቻ	ቼ	ች	ቾ
n	/n/	ነ	ኑ	ኒ	ና	ኔ	ን	ኖ
ny	/ɲ/	ኘ	ኙ	ኚ	ኛ	ኜ	ኝ	ኞ
’	/ʔ/	አ	ኡ	ኢ	ኣ	ኤ	እ	ኦ
k	/k/	ከ	ኩ	ኪ	ካ	ኬ	ክ	ኮ
w	/ʋ/	ወ	ዉ	ዊ	ዋ	ዌ	ው	ዎ
y	/j/	የ	ዩ	ዪ	ያ	ዬ	ይ	ዮ
f	/f/	ፈ	ፉ	ፊ	ፋ	ፌ	ፍ	ፎ
d	/ɗ/	ደ	ዱ	ዲ	ዳ	ዴ	ድ	ዶ
b	/ɓ/	ጸ	ጹ	ጺ	ጻ	ጼ	ጽ	ጾ
q	/ɠ/	ቀ	ቁ	ቂ	ቃ	ቄ	ቅ	ቆ
j	/ʃ/	ጨ	ጩ	ጪ	ጫ	ጬ	ጭ	ጮ
x	/χ/	ኸ	ኹ	ኺ	ኻ	ኼ	ኽ	ኾ
p	/p/	ፐ	ፑ	ፒ	ፓ	ፔ	ፕ	ፖ

APPENDIX 2 **LESSON 19 FROM THE KONSO ABUGIDA PRIMER**

ኮልሰ 19

ለፍተ

ቀምሌተ

ደከ

ለፍተ	ቀምሌተ	ደከ
ለ	ቀ	ደ
ለ	ቀ	ደ
ለፍተ	ቀምሌተ	ደከ

ኩተ ኩሴ ለፍተ ሰኤ አኬ ከ ቶይን።

ኩተኖከ ኩተ ደኬ። ኩተሴከ ፒተ ፕኤ።

ኩሴከ ሚሮን።

ኩሴ ቀምሌተ አኬ ከ ካሰን ፖኬ።

ቀምሌተከ ቶቴ።

ኩተኖ ደከ ኩተኤ አኬ ከ ቀረ ኩቴኤ። ኩሴከ ኣኔ ከ ከፐ ኩቴኤ።

ሴዴ ለፍተ።

ሴዴ ቀምሌተ።

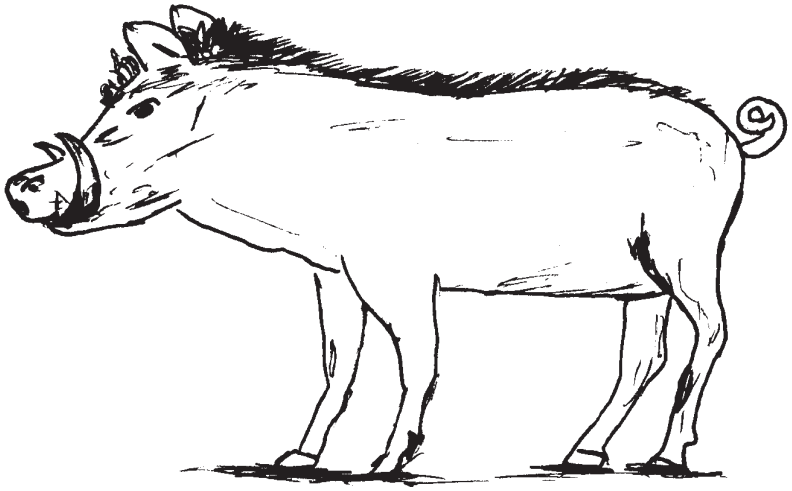
ሴዴ ደከ።

ለ ቀ ደ

APPENDIX 3 **REVISION LESSON 24 FROM THE KONSO ABUGIDA PRIMER**

ኮልሰ 24

ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ
ቀ	ቁ	ቂ	ቃ	ቄ	ቅ	ቆ
ደ	ዱ	ዲ	ዳ	ዴ	ድ	ዶ



ቱየተ

አፐ ተከ ቁደደ ኪነኔ ኮመይቶፐ ዱለ ቆተዴ ከ አፐ ፖቆለ አይሌ። ሴከመዬ ፖቆለሴ እኩኩተዴ ከ መንቀ ከዬ። ኩያተ ተከዬ÷ ኤ አኔዬ÷ ፖቆለሴ ቱየተ ቱረ ደሜ። እከ ዱሎፐ ሙከ ፐዬ። ኤቴ ሙኬዬ ሳቴተ ሴቴኤ ከይቴ። ቱየተሴከ ፖቆለሴ ደመ ዴቴ። እከ እንፐሴ ከ ካሰ ቄዴ ከ መተ ቱፐ ፖኬ። እከ አር ቶቴ።

APPENDIX 4 KONSO TRANSFER LITERACY LESSON 7

ኮልሰ አ ተፐተ

Kollissa a tappatta

ሩ	ru	Ru	ሩከተ
ኡ	u	U	rukkatta

rukkatta
rukkat
ruk
u

u
ruk
rukkat
rukkatta

ፑሶዎሴን ቆርመ ከረ ቸ እስኬለን ኸተ አነፐፔ።

Puussowwosen qorrima kara ca iskelan xata anappape.

ረ	ሩ	ሪ	ራ	ሬ	ር	ሮ
ra	ru	rii	raa	re	ri	ro

ኡ
u/uu

ክደዶሴን ቆርመ ከረ ቸ እስኬለን ኸተ አነፐፔ። ከ ኔሰ አሀላሞ ከ ኮኮናኖ ፈየ መቴ ቀፐናዶ።

Kidaddosen qorrima kara ca iskelan xata anappape. Ka nessa a halaammo ka kokkonnaanno fayya matte qapnaado.

ruk kat ta	moo ra	kir ra	rak ku ma	mur raa ta	rook ka
rukkatta	moora	kirra	rakkuma	murraata	rookka

ክደዶሴን አሬፐ ኸተ ቸ አነፐፔ።

Kidaddosen arepa xata ca anappape.

1. riita
2. rika
3. kara, kaara, karra, kaarra
4. raka, rakka raaka, raakka
5. kirra
6. tora, torra, toora, toorra
7. kurra
8. tara, taara, tarra, taarra
9. rakkuma
10. rukkatta
11. toma, tooma, toomma
12. puutota
13. ururitta
14. murraata
15. rapoota

ka ra

Aturraata tika kara kitta.

kar ra

Karra mura kara kala.

አተ አከ መስማረ ከረን ዴሰ ፑስናን።

Atta akka masmaarra karan desa puusnan.

Ru ru

U Uu

u uu

ኮልሰምፐይተ ክደደ አ ኾለ ተርፔ ቀረ ቻ አፐዬ ለክ እሸነ አነፐፐይ፥ ደከይሰደ ከ ምነ ፑሰደ።

Kollissanpayta kidadda a xoola tarpe qara ca oppayye lakki ishina anappapay dakkaysada ka mina puusada.

ፑሶወ አ ቀጩ ከረ እመኬ።

Puussowwa a kara qaje immake.

1. **ሮፐ** r o o p a
2. **ሞረ** m r
3. **ሙረ** m r
4. **ራረ** r r
5. **ሩከተ** r u k k a t t a
6. **ኡሩርተ** u u i a
7. **ክረ** i a
8. **ኩረ** u a

APPENDIX 5 DATA

Instrument	Timing	Date	No. of respondents
Transfer learners' written reflections on the two orthographies (Open questions)	Round 1: Beginning of transfer literacy training, Workshop 1 (WS1) and Workshop 2 (WS2)	29.6.2015 (WS1) 27.7.2015 (WS2)	N=22 N=29
	Round 2: End of two-week training Workshop 1 and Workshop 2	8.7.2015 (WS1) 6.8.2015 (WS2)	N=25 N=30
Consonant deletion, Test 1*	Round 1	29.6.2015 (WS1) 27.7.2015 (WS2)	N=12 N=10
	Round 2	9.7. 2015 (WS1) 5.8.2015 (WS2)	N=12 N=10
Syllable segmentation test*	Round 1	29.6.2015 (WS1) 27.7.2015 (WS2)	N=13 N=10
	Round 2	9.7.2015 (WS1) 5.8.2015 (WS2)	N=13 N=10
Quantity awareness, short pseudowords	Round 1	29.6.2015 (WS1)	N=13
	Round 2	9.7.2015 (WS1)	N=13
Phoneme discrimination test, initial and final phonemes*	Round 1	29.6.2015 (WS 1) 27.7.2015 (WS2)	N=23 N=25
	Round 2	8.7.2015 (WS1) 6.8.2015 (WS2)	N=23 N=25
Quantity awareness, long pseudowords*	Round 1	1.7.2015 (WS1) 29.7.2015 (WS2)	N=26 N=23
	Round 2	8.7.2015 (WS1) 4.8.2015 (WS2)	N=23 N=19
Dictation 1*	Round 1	3.7.2015 (WS1) 31.7.2015 (WS2)	N=28 N=25
	Round 2	9.7.2015 (WS1) 6.8.2015 (WS2)	N=28 N=25
Word-reading test	Round 1	6.7.2015 (WS1) 31.7.2015 (WS2)	N=26 N=26
	Round 2	9.7.2015 (WS1) 6.8.2015 (WS2)	N=26 N=26
Consonant deletion, Tests 2 and 3	Follow-up workshop	2.2.2016	N=23
Dictation 2	Follow-up workshop	5.2.2016	N=31
Diary notes	Throughout the data collecting period		

*In addition to Rounds 1 and 2, carried out in the initial teacher training workshops, a small number of trainees were tested more often. The following additional results are reported in the study:

Open questions: Nine trainers in WS2 answered the open questions for the third time (6.8.2015).

Consonant deletion, Test 1: While working as trainers in WS2, five participants of WS1 did the task for the 3rd time (5.8.2015) and for the 4th time six months later, during the follow-up workshop.

Syllable segmentation: Two participants of WS1 did the task for the 3rd time (4.8.2015) while working as trainers in WS2, and for the 4th time during the follow-up workshop (2.2.2016). One of them did it for the 5th time a year and a half later (17.7.2017), while working as a trainer in the teacher training workshop in Xolme.

Phoneme discrimination, initial phoneme: Five participants of WS1 did the task for the 3rd time while working as trainers in WS2 (6.8.2015). Six participants of WS2 and seven participants of WS1, including the five who did the test on 6.8.2015, did the test again during the follow-up workshop (2.2.2016).

Quantity awareness, long pseudowords: Eight participants of WS1 who worked as trainers in WS2 did the test again along with the participants in WS2, twice during the workshop (29.7.2015 and 4.8.2015). Four of the same participants did it for the 5th time during the follow-up workshop (2.2.2016) and three of them for the 6th time while working as trainers in the workshop in Xolme (19.7.2017).

Dictation 1: Seven trainers in WS2 did the task for the 3rd time during the workshop (6.8.2015).

APPENDIX 6 PRE-TESTS

Konso abugida spelling task. The participants were told that they could also spell the words in the alphabetic orthography if they wanted to try.

1. **ዳሰተ** daassata
2. **ኽረረ** xirara
3. **ሂፐምፐይተ** hiippampayta
4. **ቀንቀኑመ** qanqannuma
5. **ኬርተ** keerritta
6. **ኮሉመ አአፈ ኾንሶ ፈየ ኮለተኤ፣ እንጨፓነ!** Kolluma a afa Xonso fayya kollatta'e, injapaanna!

Optional spelling task in English

1. Good morning.
2. It is a beautiful weather today.

APPENDIX 7 OPEN QUESTIONS ABOUT THE PARTICIPANTS' PERCEPTIONS OF THE TWO ORTHOGRAPHIES

1. ፑሴተ አአፈ ኾንሶ አኽተ ከ አሃረያ አተ ከ ማነኔ ኦልከፐ ፑርሰም?
2. አተ ኬ ፐሀተ፥ ፑሴተ አሃረያ ኮለተ እኮክም እኑል? ዋ ኦፐ አኮኮከ ማነ?
3. ፍተለ ቅንደ ላትን ኦፐ ፑርሰማድ እፐቃርም እንፐቃረን? ማነኤ?

English translation:

1. What are the differences between the old and the new orthography for Konso?
2. What do you think; is the new orthography difficult or easy to learn? What will the difficult points be?
3. Is it good or bad to switch over to alphabetic script? Why?

APPENDIX 8 PHONEMIC AWARENESS TESTS

Deleting a consonant phoneme

Test 1

Instruction: You will hear a word and after that you must say the word without one of the sounds in it.

Practice items: How do you say: *'laata'*, without **'l'**? Response: *'aata'*
How do you say: *'xolma'*, without **'m'**? " *'xola'*

Stimuli	**Phonemic transcription**	**Phoneme to be deleted**	**Abugida spelling**	**Abugida spelling of response**
mana	mana	m	**መነ**	**አነ**
poyta	pojta	p	**ፖይተ**	**ኦይተ**
kela	kela	k	**ኬለ**	**ኤለ**
unta	unta	n	**ኡንተ**	**ኡተ**
kalta	kalta	t	**ከልተ**	**ከለ**
damta	ɗamta	t	**ደምተ**	**ደመ**
parka	parka	k	**ፐርከ**	**ፐረ**
parka	parka	r	**ፐርከ**	**ፐከ**
karma	karma	m	**ከርመ**	**ከረ**

Test 2, word-medial deletion

Instruction: You will hear a word and after that you must say the word without one of the sounds in it. The correct response may not mean anything.
Practice items: How do you say: ***dapna***, without ***p***? Response: ***dana***
How do you say: ***darta***, without ***t***? " ***dara***

Stimuli	**Phonemic transcription**	**Phoneme to be deleted**	**Abugida spelling**	**Abugida spelling of response**
harka	harka	k	**ሀርከ**	**ሀረ**
kondo	kondɔ	n	**ኮንዶ**	**ኮዶ**
rufta	rufta	f	**ሩፍተ**	**ሩተ**
tishma	tiʃma	m	**ትሽመ**	**ትሸ**
loqta	loɠta	ɠ	**ሎቅተ**	**ሎተ**
sipla	sipla	l	**ስፕለ**	**ስፐ**
kirpa	kirpa	r	**ክርፐ**	**ክፐ**
falka	falka	k	**ፈልከ**	**ፈለ**

Test 3, word-initial deletion

Instruction: You will hear a word and after that you must say the word without the first sound in it. The correct responses may not mean anything.
Practice item: How do you say: ***tuutta***, without the first ***t***? Response: ***uutta***

Stimuli	**Phonemic transcription**	**Phoneme to be deleted**	**Abugida spelling**	**Abugida spelling of response**
buubba	ɓuːɓːa	ɓ	**ጱጳ**	**ኡጳ**
maxxa	maχːa	m	**መኻ**	**አኻ**
jaqa	ʄaɗa	ʄ	**ጨቀ**	**አቀ**
xarsha	χarʃa	χ	**ኻርሸ**	**አርሸ**
loqta	loɗta	l	**ሎቅተ**	**አቅተ**

Phoneme discrimination test

Word-initial phoneme

Instruction: You will hear some pairs of words. Listen carefully for the first sound in each word in the pair. Write the number of the pair and mark whether the words begin with the same sound or with a different sound.
(The marks decided with the group: X for DIFFERENT, and V for SAME)

Practice items:	***nama, para***	Response: X
	teekolayta, takma	Response: V
	mataafa, nakayta	Response: X
	piifa, poyta	Response: V

Stimuli	**Phonemic transcription**	**Abugida spelling**
kuta, mana	kuta, mana	**ኩተ መነ**
sipla, ilka	sipla, ilka	**ስፕለ እልከ**
karma, kalta	karma, kalta	**ከርመ ከልተ**
nata, nama	nata, nama	**ነተ ነመ**
ela, kera	ela, kera	**ኤለ ኬረ**
yeela, tukkanta	je:la, tuk:anta	**ዬለ ቱክንተ**
fera, fila	fera, fila	**ፈረ ፍለ**
ekta, eeppuma	ekta, e:p:uma	**ኤክተ ኤፑመ**
kirra, irroota	kir:a, ir:o:ta	**ክረ እሮተ**
damayata, mootta	ɗamajta, mo:t:a	**ደመይተ ሞተ**
takma, teyla	takma, tejla	**ተክመ ቴይለ**
paaqolayta, haantoota	pa:ɠolajta, ha:nto:ta	**ፓቆለይተ ሃንቶተ**
teyanta, telteeta	tejanta, telte:ta	**ቴየንተ ቴልቴተ**
teyka, ferta	tejka, ferta	**ቴይከ ፈርተ**
harka, nyirfa	harka, ɲirfa	**ሀርከ ኝርፈ**
xata, xola	χata, χola	**ኽተ ኾለ**
sipiloota, saara	sipilo:ta, sa:ra	**ስፕሎተ ሳረ**
tika, pila	tika, pila	**ትከ ፕለ**
miisa, liilana	mi:sa, li:lana	**ሚሰ ሊለነ**
eetoota, ereroota	e:to:ta, erero:ta	**ኤቶተ ኤሬሮተ**
okta, poyta	okta, pojta	**ኦክተ ፖይተ**
pisha, palduma	piʃa, palɗuma	**ፕሸ ፐልዱመ**

Word-final phoneme

Instructions: Now listen carefully for the last sound in each word in the pair. Just as before, write the number of the pair, and mark whether the words end with the same sound (V) or with a different sound (X).

Practice items:	***parri, para***	Response: X
	tapayta, maxxa	Response: V
	aane, lele	Response: V
	deete, paleeta	Response: X

Stimulus	**Phonemic transcription**	**Abugida spelling**
karma, xorma	karma, χorma	**ከርመ ኾርመ**
anti, unta	anti, unta	**አንት ኡንተ**
qupitta, ana	ɢupit:a, ana	**ቁፕተ አነ**
tika, hale	tika, hale	**ትከ ሀሌ**
para, seera	para, se:ra	**ፐረ ሴረ**
Ayanna, Kappinno	ajan:a, kap:in:o	**አየነ ከፕኖ**
sene, ini	sene, ini	**ሴኔ እን**
xolma, poyta	χolma, pojta	**ኾልመ ፖይተ**
unkula, karmo	unkula, karmo	**ኡንኩለ ከርሞ**
kide, dame	kiɗe, ɗame	**ክዴ ደሜ**
Kanto, derta	kanto, ɗerta	**ከንቶ ዴርተ**
kolluma, eeppuma	kol:uma, e:p:uma	**ኮሉመ ኤፑመ**

Recognising and describing phoneme quantity in short pseudowords

Instructions: You will hear pairs of words which don't mean anything. There is one difference between them, and your task is to tell what the difference is.

Stimulus	**Phonemic transcription**	**Abugida spelling**
taada, tada	ta:ɗa, taɗa	ታደ ተደ
luuma, luma	lu:ma, luma	ሉመ ሉመ
riila, rila	ri:la, rila	ሪለ ርለ
soma, sooma	soma, so:ma	ሶመ ሶመ
reka, reeka*	reka, re:ka	ሬከ ሬከ
kuda, kudda	kuɗa, kuɗ:a	ኩደ ኩደ
tima, timma	tima, tim:a	ትመ ትመ
ketta, keta	ket:a, keta	ኬተ ኬተ

*After the testing it was found that one stimulus, *reeka,* could be interpreted as a meaningful word. However, during the testing nobody took up the meaning for *reeka*, and no difference between the participants' reactions to *reka - reeka* and to other test items was found.

Recognising phoneme quantity in long pseudowords

Instructions: You will hear pairs of words which do not mean anything. In each pair there is one difference between the words: in one of the two words there is a long vowel sound or one tense consonant sound. Your task is to write down whether the long or the tense sound is in the first or the second word of the pair, and which sound it is.

Practice items: ***xererisota, xereriisota*** 2nd word, long ***i***.
limanakkampayta, limanakampayta 1st word, tense ***k***.

Stimulus	**Phonemic transcription**	**Abugida spelling**
xirafeta, xirafeeta	χirafeta, χirafe:ta	ኽረፈተ ኽረፌተ
norolayta, norrolayta	norolajta, nor:olajta	ኖሮለይተ ኖሮለይተ
pukulampaya, pukkulampaya	pukulampaja, puk:ulampaja	ፑኩለምፐየ ፑኩለምተየ
kerompiilota, kerompilota	kerompi:lota, kerompilota	ኬሮምፒሎተ ኬሮምፐሎተ
lelisankayta, lelissankayta	lelisankajta, lelis:ankajta	ሌልሰንከይተ ሌልሰንከይተ
kiraleppata, kiralepata	kiralep:ata, kiralepata	ክረሌፐተ ክረሌፐተ
deypannaytima, deypanaytima	ɗejpan:ajtima, ɗejpanajtima	ዴይፐነይትመ ዴይፐነይትመ
shuurmata, shurmata	ʃu:rmata, ʃurmata	ሹርመተ ሹርመተ

Syllable segmentation test

Instruction: Divide the words you hear into appropriate parts.

Practice items: ana, halke, kaakurta* karma**
Responses: a-na, hal-ke, kaa-kur-ta, kar-ma

Stimuli	**Phonemic transcription*** **	**Abugida spelling**
kuta	ku. ta	**ኩተ**
ela	e. la	**ኤለ**
anti	a. n. ti	**አንት**
palda	pa. l. ɗa	**ፐልደ**
poyta	po. j. ta	**ፖይተ**
liilana	li:. la. na	**ሊለነ**
caatta	tʃa:. tta	**ቻተ**
piirtoota	pi:. r. too. ta	**ፒርቶተ**
nappa	na. p:a	**ነፐ**
tuparra****	tu. pa. r:a	**ቱፐረ**
ururitta	u. ru. ri. t:a	**ኡሩርተ**
xonsitteeta	χo. n. si. t:e:. ta	**ኾንስቴተ**
kammayye	ka. m:a. y:e	**ከመዬ**
dammincaan	ɗa. m:i. n. tʃa:. n	**ደምንቻን**
parpaacisninkitto	pa. r. pa:. tʃi. s. ni. n. ki. t:o	**ፐርፓችስንንክቶ**

*kaakurta was used as a practice item in Workshop 1
**karma was used as a practice item in Workshop 2
***The dots mark fidel breaks (i.e. abugida orthographic syllables)
****The second syllable break in *tuparra* was excluded from the analysis because some participants perceived the /r/ as a geminate and others as a non-geminate sound.

APPENDIX 9 DICTATION AND WORD-READING TESTS

Dictation 1

1. arrapa
2. nyelqa*
3. pinanta
4. xampirteeta*
5. fuura, fura, fuurra
6. maana, mana, manna
7. Qaaleta* Waaqa caatta daanni.
8. Bar kiishe ka kaa'e!**
9. Kusse xayya qapa, Koyye xoori* ikerite.***

*For some words there were alternative pronunciations, so more than one spelling was accepted as follows: *nyelqa* or: *nyalqa*; *xampirteeta* or: *xanpirteeta*; *qaaleta* or: *qaaleeta*; *xoori* or: *xoorii*.

**From item 8, only the word *kiishe* was included in the error analysis. The word *bar* is often pronounced for emphasis with a word-final geminate (e.g. /ɓar:/), which is an exception in Konso phonology, and the spelling rule for *bar* /ɓar/ had not been established. Also, *kaa'e* /kaaʔe/, turned out to be very difficult to spell, due to a long vowel followed by a glottal stop. This meant that if the spelling errors of *bar* and *kaa'e* had been included in the error analyses, it would have distorted the picture of typical errors. The word *ka* 'and' was spelled correctly except by one participant in Round 1.

***For item 9, the word *xayya* /χaj:a/ was not included in the error analysis, because the length of the /a/ followed by the /j/ was somewhat fluctuating, and the spelling rule for the word had not been established.

Dictation 2

1. kaanketa*
2. keltayta
3. xorma
4. hinkaajjeta**
5. qolpayta
6. ipsa
7. dakinta
8. ikkirteeta

**kaanketa* was alternatively pronounced and spelled *kankeeta*

**For *hinkaajjeta* no quantity errors were counted for the word-medial vowels /i/, /a/, /e/ and the consonant /j/, because of varying pronunciations.

Word-reading test

1. kalata
2. sikmampayta
3. kallaata
4. hekeri
5. kalta
6. Namose maana kooni?
7. Naman upan.
8. shipinshipirraata
9. kollattampaya
10. kuuta
11. xaaja
12. nyaanynya
13. damma
14. kutta
15. jaalala

APPENDIX 10 ENGLISH GLOSS

The abbreviations used for the grammatical terms:

causative	(caus.)
feminine	(fem.)
future	(fut.)
imperative	(imp.)
infinitive	(inf.)
masculine	(masc.)
negative	(neg.)
noun	(n.)
past	(past)
plural	(pl.)
person	(p.)
present	(pres.)
singular	(sg.)
verb	(v.)

aakka old man
aane go! (v. imp. 2nd p. sg.) (see also *anna*, *i'aana, i'aane*)
aata tradition
alawa brother
alawta sister
ana me
anna let us go (v. imp. 1st p. pl.) (see also *aane, i'aana, i'aane*)
anti I
arpa elephant
arrapa tongue **arrappa** (pl.), also: kind of rash
ati white (e.g. *waraqqata ati* white paper)
atta how?
Ayanna proper name (fem.)
buubba egg
caatta life
daamma flour
daassata gift
dakinta body
dama kind of food which is very common in Konso, also: eat! (v. imp. 2nd p. pl.) (see also *dame, damma, dammincaan, damta*)
damayta coldness
damdama left over pieces of cooked grain from preparing traditional beer
dame eat! (v. imp. 2nd p. sg.) **damma** let us eat (v. imp. 1st p. pl.) (see also *dama, dammincaan, damta*)
dammincaan (they) do not eat (v. neg. pres. 3rd p. pl.) (see also *dama, dame, damma, damta*)
damta food (see also *dama, dame, damma, dammincaan*)
dapna side (e.g. side of face)
darta, derta lie
deete (she) came (v. past 3rd p. sg. fem.) (e.g. *Isheeta amma deete.* She came now.)
dera long (see also *ideri*)
dikla elbow
dipa footprint
dippa hundred
eeppuma foolishness
eetoota supper
ekta, **eekta** tail
ela, **ella** spring

ereroota traditional drink
fera harvest
ferta kind of needle
fila comb
fura key
fuura fear (n.) (also v. imp. 2nd p. pl.)
fuurra let us fear (v. imp. 1st p. pl.)
haantoota wife
halamtoota consonant
hale call! (v. imp. 2nd p. sg.)
halisoota vowel
Halke proper name (fem.)
harka hand
hekeri in the future
hiippampayta one who makes riddles
hinkaajjeta ant
hupna strength
ideri is long (see also *dera*)
ikala (he) will return (v. fut. 3rd p. sg. masc.) **ikale** (he) returned (past 3rd p. sg. masc.) **ikalte** (she) returned (past 3rd p. sg. fem.)
ikeere, (he) ran (v. past 3rd p. sg. masc.) **ikeershe** (he) caused to run (caus. 3rd p. sg. masc.)
ikkirteeta louse
ikokkoki is strong, is tense (see also *kokkoka*)
ikumma'i is short (see also *kumma'a*)
ilda eyes (pl.)
ilka teeth (pl.)
ini this
inukkulli is soft, is weak (see also *nukkulla*)
ipokkini explodes (v. pres. 3rd p. sg & pl.)
ipsa lamp, light
irroota mountain
i'aana (he) will go (v. fut. 3rd p. sg. masc.) **i'aane** (he) went (v. past 3rd p. sg. masc.) (see also *aane, anna*)
jaalala love
jaqa traditional beer
ka and
kaakurta beehive
kaanketa mule
kala go home! (v. imp. 2nd p. pl.)
kalaata provision, packed lunch
kalata praise
kalatta to return home bringing something (commonly used in a phrase: *Ishin kalatta*)
also: friends staying over night together (v. inf.)
kalayta person from a different village or area, foreigner
kaleeta to return (v. inf.)
kalisoota offering
kallaata life
kallaatta to live (v. inf.)
kalsatta to wear (v. inf.)
kalta departure
kammayye afterwards
Kanto proper name (masc.)
Kappinno proper name (masc.)
kara inside
karitta stomach

karma lion
karmo word used to call someone for encouragement (my hero)
katana rainy season
Katanna proper name (fem.)
keeritta run (n.)
kela inside
keltayta baboon
kera thief
kide say! (v. imp. 2nd p. sg.)
kiisa grasshopper
kirpa song
kirra river
kokkoka strong, tense (see also *ikokkoki*)
kollatta to learn (v. inf.)
kollattampaya students (pl.)
kollissa to teach (v. inf.)
kollissampayta male teacher
kollissampayteeta female teacher
kollissampayteetaysho their female teacher
kolluma lesson
Kondo proper name of a village
koota big baboon
kudan ten
kumma'a short (see also *ikumma'i*)
kuta dog **kutta** (pl.)
kuufa fertiliser (also dried dung)
kuuta peak of roof, top (e.g. of tree), headline **kuutta (**pl.)
laata food
lele tell! (v. imp. 2nd p. sg.)
liilana skein of yarn
lishsha whip
lonka kind of cabbage
loqta leg
lukkalitta rooster
lukkalitteeta hen
maaka snake
maana what?
mana house **manna (**pl.)
mataafa book
maxxa name
miisa weed! (v. imp. 2nd p. pl.)
miissa weeds (n. pl.)
mootta close friend (male)
nakayta peace
nama human being
napa carbon black, soot
nappa ears (pl.)
nata big woodstack
nessa voice, sound
niike choke! (v. imp. 2nd p. sg.)
nukkulla lax, soft, weak (see also *inukkulli*)
nyaanynya tomato
nyelqa young animals, cubs (pl.)
nyirfa hair
okta clay pot (for fetching water)

oyta front yard
paaqolayta sick person, patient
paka half
palda wide
palduma width
paleeta village, built-up area
para year
parka working team
parpaacisninkitto (it) is not needed (v. neg. pres. 3rd p.)
parri tomorrow
piifa lunch
piirtoota sun, **piirto** sunrise, normally used in a sentence: *Letta piirto.* The sun rises.
pila another
pinanta wild animal
pisa flower
pisha water
poyta crying, cry (n.)
qaaleta word
qanqannuma carefulness, caution
qapa (he) has (v. pres. 3rd p. sg. masc.)
qolpayta male goat
qootatta to divide (v. inf.)
qoottoota part of something, syllable
qupitta finger, toe
reeka dispute
rufta yarn, thread
saara poem
seera law
sene these
siina nose
siita tail
sikmampayta, sikmayta shepherd **sikmaya (**pl.)
sipiloota metal blade of a stick for digging
sipla metal
shipinshipirraata bat
taka kind of bird
takka one
takma honey
tapayta rat
teekolayta poor person
telteeta female goat
teyka platform (in sorghum field) from which to scare birds
teyla kind of cabbage
teyanta property
tika house
toma wooden plate
toola family **toolla** families (pl.)
tooma copse
toomma let us clear the copse (v. imp. 1st p. pl.)
toota death
tukkanta darkness
tuparra, tupara girl
tuutta traditional cermony, also: small children
unkula small grain storage
unta grain

uru oh no!
ururitta wind
uta excrement of humans and of animals
Waaqa God
xaaja flies (pl.)
xalta girth
xampirteeta bird
xarsha kind of food
xata downwards
xirara sound of thunder
xola traditional drink, made of coffee leaves
xolma neck
xonsitteeta Konso woman
xoori but, even if
xorma ox
yeela valley

Translations for the sentences in the dictation and reading tasks:

Kolluma a afa Xonso fayya kollatta'e, injapaanna!
Let us work hard to learn the Konso lessons well!

Qaaleta Waaqa caatta daanni.
God's word gives life.

Bar kiishe ka kaa'e!
Tear it.

Kusse xayya qapa, Koyye xoori ikerite.
Kusse is young, but Koyye has grown old.

Namose maana kooni? What does that person do?

Naman upan. They don't want to mix with others.