The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities

by

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"And as You speak
A hundred billion galaxies are born."

ABSTRACT

Augmentative and alternative communication (AAC) can enable individuals with little or no functional speech to communicate functionally in a variety of communicative contexts. Aided AAC systems for individuals who are not (yet) literate require that the vocabulary for the system be preselected. This requires choosing a limited number of words from a pool of all possibilities for inclusion in the system. Core vocabulary lists have been proposed and used as one source for selecting words for an aided AAC system. By including the most commonly and most frequently used words in an AAC system, access to novel utterance generation can be facilitated. This in turn can enable communication across contexts and partners.

South Africa has approximately 6.85 million Afrikaans first language speakers. Since no core vocabulary list has to date been determined for Afrikaans preschoolers, the goal of this study was to identify the words used most frequently and commonly by South African Afrikaans-speaking preschoolers without disabilities.

Spontaneous speech samples were collected from 12 Afrikaans-speaking preschool children without disabilities. The samples were recorded during regular preschool activities by means of small body-worn audio-recording devices. The recordings samples were transcribed and analysed to determine the number of different words used, the frequency with which each word was used, as well as the commonality of word use among the 12 participants. For a word to form part of the core vocabulary list, two criteria had to be met, namely a frequency score of equal to or more than 0.5‰, and a commonality score of six (implying that at least 50% of the participants used this word). This led to the establishment of an Afrikaans core vocabulary list of 239 words accounting for 79.4% of words used in the entire speech sample that was collected. This core vocabulary was further described according to parts of speech. The characteristics of the Afrikaans core vocabulary appear to be similar to those found in previous core vocabulary studies, as a relatively small set of words was found to represent a large proportion of speech. The results of the study can be used to guide the vocabulary selection process for children from an Afrikaans language background who require AAC.

Keywords: Afrikaans, augmentative and alternative communication (AAC), core vocabulary, preschoolers, vocabulary selection.

OPSOMMING

Aanvullende en alternatiewe kommunikasie (AAK) stel individue met min of geen funksionele spraak in staat om in ’n verskeidenheid kontekste funksioneel te kan kommunikeer. Gesteunde kommunikasiesisteme vir individue wat (nog) nie geletterd is nie, verg dat die woordeskat vir die sisteem vooraf geselekteer moet word. Dit vereis dat ’n beperkte aantal woorde uit ’n poel van alle moontlikhede gekies word. Kernwoordeskatlyste is voorgestel en sodoende gebruik as een bron om woorde vir ’n gesteunde AAK-sisteem te kies. Deur die mees algemeen en mees dikwels gebruikte woorde in ’n AAK-sisteem in te sluit, kan toegang tot die generasie van nuwe uitinge gefasilieer word. Dit kan dan weer kommunikasie dwarsoor kontekste en gespreksgenote bewerkstellig.

In Suid-Afrika is daar ongeveer 6.85 miljoen Afrikaans eerste-taal sprekers. Siende dat daar tot op hede nog nie ’n Afrikaanse kernwoordeskatlys vir kleuters bepaal is nie, was die doel van die studie om die woorde wat mees dikwels en mees algemees deur Suid-Afrikaanse Afrikaanssprekende kleuters sonder gestremdheid gebruik word, te bepaal.

Spontane spraakmonsters is van 12 Afrikaanssprekende kleuters sonder gestremdhede ingesamel. Die monsters is tydens normale kleuterskoolaktiwiteite deur middel van bandopnemers wat aan die kleuters se liggaam gedra is, opgeneem. Die opnames is getranskribeer en geanaliseer om die hoeveelheid verskillende woorde wat gebruik is, die frekwensie waarmee elke woord gebruik is, asook die algemeenheid van woordgebruik onder die 12 deelnemers te bepaal. Om deel te vorm van die kernwoordeskat moes `n woord aan twee vereistes voldoen, naamlik ’n frekwensietelling van 0.5‰ of meer, asook ’n algemeenheidstelling van ses (wat impliseer dat ten minste 50% van deelnemers die woord gebruik het). Dit het gelei na die vasstelling van ’n Afrikaanse kernwoordeskatlys van 239 woorde, wat 79.4% van die spraakmonsters verteenwoordig het. Die kernwoordeskat is verder volgens woordsoorte beskryf. Die kenmerke van die Afrikaanse kernwoordeskat blyk eenders te wees as dié wat in vorige kernwoordeskatstudies gevind is, siende dat ’n relatiewe klein getal woorde gevind is wat ’n groot deel van spraak verteenwoordig het. Die resultate van die studie kan gebruik word om die woordeskatseleksieproses vir kinders van ’n Afrikaanse taalagtergrond wat AAK benodig, te lei.

Sleutelwoorde: Aanvullende en alternatiewe kommunikasie (AAK), Afrikaans, kernwoordeskat, kleuters, woordeskatseleksie.

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CHAPTER 1

PROBLEM STATEMENT

1.1 Introduction

The aim of this chapter is to inform and orientate the reader with regard to the content and structure of the study. In this chapter, the purpose and rationale for undertaking the research are discussed. Furthermore, important terminology and abbreviations are described, with a concluding section briefly describing the content and structure of each chapter.

1.2 Problem statement and rationale

Communication can be regarded as an essential element of daily life (Light & McNaughton, 2012), enabling people not only to send and receive messages, but also to connect emotionally and to gain deeper understanding of one another (Beukelman & Mirenda, 2013; Kent-Walsh & Binger, 2010; Light & McNaughton, 2014). Individuals with little or no functional speech (LNFS), who are unable to use speech to communicate effectively (Beukelman & Mirenda, 2013), require augmentative and alternative communication (AAC) to meet all their communication needs (Sigafoos, Ganz, O'Reilly, Lancioni, & Schlosser, 2007). AAC refers to various methods of communication, which include gestures, sign language, facial expressions, picture or alphabet-based systems, as well as electronic systems such as computer-based systems (Baxter, Enderby, Judge, & Evans, 2012). AAC can enable individuals with LNFS to communicate functionally in a variety of communicative contexts and activities in which these individuals participate or are expected to participate (Baumgartner, Bland, & Dressler, 2016; Beukelman & Mirenda, 2013). AAC has many benefits, including facilitation of language development (Baumgartner et al., 2016; Drager, Light, & McNaughton, 2010), enhanced functional communication (Drager et al., 2010), improved social closeness (Drager, Light, & McNaughton, 2010; Light, 1988), increased communication competence (Hill, 2006; Light & McNaughton, 2014), and improved quality of life (Hill, 2010; Light & McNaughton, 2012).

Although the benefits of AAC have been supported by clinical and research-based evidence, providing appropriate and effective AAC systems to those who require these

systems remains a complex task. Crucial decisions on the design and appropriate implementation of graphic symbol-based AAC systems have to be made by the relevant team members. This is especially relevant to persons who are not (yet) literate and those who do not typically benefit from unaided methods owing to a physical disability (Thistle & Wilkinson, 2015). These decisions revolve around selecting, organising and representing an appropriate vocabulary on the system so that it can be accessed by the individual using the system to perform different communication functions. As yet, limited empirical evidence is available to guide this process (Thistle & Wilkinson, 2015).

Selecting the vocabulary and messages to be included on an AAC system is in many ways an unnatural and challenging task (Boenisch & Soto, 2015). Persons without disabilities typically do not need to select their words carefully ahead of time when performing everyday communication functions, nor are they limited in the number of words they can use by factors other than their own vocabulary knowledge. Professionals and stakeholders in the field of AAC may therefore find themselves ill-equipped to perform this task (Van Tilborg & Deckers, 2016).

In an attempt to ease the process of vocabulary selection, a core-fringe approach has long been suggested as a helpful framework for vocabulary selection. Core vocabulary refers to a relatively small selection of words that are used with a high frequency across a variety of communicative contexts, and are commonly used by all speakers (Baker, Hill & Devylder, 2000; Banajee et al., 2003; Cross, Baker, Klotz & Badman, 1997; Witkowski & Baker, 2012). Fringe vocabulary, on the other hand, refers to words that are individualised and are specific and unique to certain contexts and activities (Beukelman & Mirenda, 2013). Core vocabulary is needed for building sentences, as these words typically provide the grammatical framework of a language (Banajee et al., 2003). Core vocabulary lists consisting of frequently and commonly used words have been gathered from spoken samples produced by persons with and without disabilities from various age groups (Van Tilborg & Deckers, 2016). Most core vocabulary research has focused on English (Banajee et al., 2003; Beukelman, Jones, & Rowan, 1989; Fallon, Light, & Paige, 2001; Fried-Oken & More, 1992; Trembath, Balandin, & Togher, 2007), with some more recent literature examining the core vocabulary from other languages, namely isiZulu (Mngomezulu, 2017), Korean (Shin & Hill, 2016), German (Boenisch & Sachse, 2007) and Mandarin Chinese (Lui & Sloane, 2006).

There is growing recognition that issues of language diversity and multilingualism require increased attention in the field of AAC (Soto & Yu, 2014; Tönsing, van Niekerk, Schlünz, & Wilken, 2018). Regarding core vocabulary, for example, it has been noted that a core vocabulary established in one language may not be translatable into another language (Baker & Chang, 2006; Lui & Sloane, 2006; Mngomezulu, 2017; Shin & Hill, 2016). Morphological and linguistic differences between different languages are likely to affect particularly the core vocabulary, since it usually comprises words specifically related to language structure. A recent study identified an isiZulu core vocabulary and found that the linguistic structure of isiZulu affected the core vocabulary in a unique way, making it hard to compare it to English core vocabularies (Mngomezulu, 2017).

To date, the current author is not aware of any core vocabulary study conducted among Afrikaans-speaking preschoolers based on speech samples. Since such a list could be a valuable resource to guide vocabulary selection for Afrikaans preschoolers who require AAC, the aim of this study was to determine the Afrikaans oral core vocabulary of preschoolers without disabilities. In doing so, this study has the potential to contribute to the growing body of research on vocabulary selection for young children who rely on AAC to meet their communication needs.

1.3 Terminology

In this section important and frequently used terminology will be defined in order to enhance readers' understanding of specific concepts used throughout this paper. The list is provided in alphabetical order.

1.3.1 Augmentative and alternative communication

Augmentative and alternative communication (AAC) is an umbrella term used to describe methods of communication that are used to replace or supplement the speech of an individual who is unable to use spoken communication adequately to meet all his or her communicational needs (Beukelman & Mirenda, 2013). Alternative or additional means of communication may include a variety of communication methods, such as gestures, sign language, facial expressions, picture- or alphabet-based systems, as well as electronic systems such as computer-based systems (Baxter et al., 2012). The main purpose of AAC is to increase an individual's ability to achieve different communicative functions in environments and activities in which the individual participates or is expected to participate (Baumgartner

et al., 2016; Beukelman & Mirenda, 2013).

1.3.2 Code switches

Code switches refer to alternations between languages in conversational speech and this can be seen as a commonly occurring socio-linguistic phenomenon, especially in multilingual environments (Barnes, 2011; van Dulm, 2007). Inter-sentential switching refers to code switching at phrasal, sentence or discourse level following the first language's production, whereas intra-sentential switching involves a change in language on sentence level by means of adding morphemes or lexical units of another language to a sentence that is spoken in the first language (Zirker, 2007).

1.3.3 Commonality score

In core vocabulary studies, the commonality score refers to the number of participants who used a word occurring in the sample obtained (Trembath et al., 2007). In the present study, core vocabulary is defined by a commonality score of at least six or 50% (i.e. at least six of the 12 participants had to have used the word), combined with a frequency criterion of at least 0.5‰ in the sample obtained (see Section 1.3.5).

1.3.4 Content words

Content words refer to highly referential words that carry meaning and are typically nouns, verbs and adjectives (Trembath et al., 2007). These words can often be used in isolation for labelling and do not necessarily need to be combined with other words to have meaning (Tomasello, 2005).

1.3.5 Core vocabulary

Core vocabulary refers to a set of words that is characterised by its small size, while remaining relatively constant across different communicative environments (Banajee et al., 2003; Beukelman & Mirenda, 2013; Beukelman, McGinnis, & Morrow, 1991; Boenisch & Soto, 2015; Trembath et al., 2007). In this study, core vocabulary was defined according to its frequency and commonality. Only words that occurred with a frequency of at least 0.5 per 1000 words (0.5‰) and that had a commonality score of at least six (see Section 1.3.3), were designated as core vocabulary.

1.3.6 Frequency per mille

Frequency per mille (‰) refers to the measurement applied to determine the occurrence of a certain word out of a thousand. In this study it was used to determine the frequency of the words that occurred in the sample obtained. Frequency per mille is calculated by dividing the total number of word occurrences by the total number of words (TNW) in the sample obtained and multiplying by thousand.

1.3.7 Fringe vocabulary

Fringe vocabulary, also known as extended vocabulary (Hill & Romich, 2004), refers to words that are specific to an individual and to certain contexts and activities (Beukelman & Mirenda, 2013). Fringe vocabulary by definition refers to words with lower frequency and/or commonality scores and typically consists of nouns, adjectives, and verbs used to communicate about specific topics in specific environments (e.g. 'swing', 'paper', 'toys') (Dark & Balandin, 2007; Van Tilborg & Deckers, 2016).

1.3.8 Grade R

In the South African educational system, Grade R forms part of the foundational phase and is considered to be the year prior to learners starting formal schooling (Janse van Rensburg, 2015).

1.3.9 Graphic symbols systems/sets

Graphic symbol systems or sets (e.g. Picture Communication Symbols[1], Widget Symbols[2], Symbolstix[3], Blissymbols[4]) comprise a collection of line drawings, each of which represents a referent (Bornman & Tönsing, 2011). These symbols are static in nature and can be represented in the form of pictures consisting of line drawings and pictorial representations.

[1] Picture Communication Symbols (PCS™) is a product of Mayer Johnson of the Tobii Dynavox Family, 2100 Wharton Street, Suite 400, Pittsburgh, PA 15203. www.mayer-johnson.com
[2] Widgit Symbols is a product of Widgit Software. 26 Queen Street, Cubbington, Leamington Spa, CV32 7NA , United Kingdom,. www.widgit.com
[3] SymbolStix PRIME® is a product of n2y (News2You). 909 University drive, South Huron, OH 48858, United States of America. www.n2y.com
[4] Blisssymbols is a product of Blissymbolics Communication International (BCI), a registered non-profit organisation. C/o Margareta Jennische, Department of Neuroscience, Speech and Language Pathology, BMC 593 SE-75124 Uppsala, Sweden. http://www.blissymbolics.org

1.3.10 Home language

Home language refers to the language acquired by the child through engagement at home. It is usually the language a child knows best before entering an educational setting (Eisenchlas, Schalley, & Guillemin, 2013).

1.3.11 Inflection

Inflection refers to a variation in the form of a word that is typically achieved by means of adding an affix. It often leads to words having more than one form. An example of inflection would be morphological inflection where morphemes are used, for example, to indicate the plural form (‘cats’) of a singular noun (‘cat’) or variations of a verb by means of verbal inflection (‘run’ becomes ‘ran’). It differs from derivation, as it does not cause a change of word class according to the parts of speech (Payne, 1997).

1.3.12 Parts of speech

Parts of speech refer to a set of categories into which words can be classified according to their syntactical functioning in the language. This is therefore a grammatical classification (Schachter & Shopen, 2007). Examples of parts of speech are nouns, verbs and adjectives.

1.3.13 Persons with little or no functional speech

Individuals with little or no functional speech are unable to use spoken communication to meet all their functional and participatory needs adequately (Beukelman & Mirenda, 2013).

1.3.14 Root words

Root words are morphologically simple words that cannot be divided into smaller meaningful units (Crystal, 2008).

1.3.15 Structure words

The term structure words refers to words that provide a framework for functional language and would typically include prepositions, articles and pronouns (Banajee et al., 2003). Structure words typically contribute to the grammatical correctness of sentences, mostly serving a syntactic purpose while lacking semantic meaning. These words are usually

not meaningful in isolation; for example the preposition ‘to’ would not have linguistic value when used in isolation.

1.3.16 System for Analysing Language Transcripts software program

Throughout this study reference is made to the System for Analysing Language Transcripts (SALT) program (Miller & Iglesias, 2012). This is a software program designed to assist in language sample analysis and automates the process of obtaining descriptive statistics and counts based on transcripts. SALT can be used, for example, to perform analyses such as word counts, determining the TNW, the number of different words (NDW), as well as the type-token ratio (TTR) of a given sample (Watkins, Kelly, Harbers & Hollis, 1995).

1.3.17 Type-token ratio

The TTR refers to the NDW divided by the TNW (Kettunen, 2014).

1.3.18 Vocabulary selection

Vocabulary selection refers to a dynamic process of selecting appropriate vocabulary items aimed at meeting the communication needs of an individual using AAC (Beukelman, McGinnis, & Morrow 1991). This includes the vocabulary required to communicate in functional living, learning, and social-interactional activities (Fallon, Light, & Paige, 2001; Morrow, Mirenda, Beukelman, & Yorkston, 1993).

1.4 Notations

In this paper, linguistic examples in Afrikaans are italicised. English translations of these examples are either indicated by means of single quotation marks or given in brackets.

1.5 Abbreviations

AAC: Augmentative and alternative communication

AN: Adult’s names

CN: Children’s names

CS: Code switches

LNFS: Little or no functional speech

NDW: Number of different words

PN: Place or location name

SALT: Systematic Analysis of Language Transcripts

TNW: Total number of words

TTR: Type-token ratio

1.6 Outline of chapters

In Chapter 1 the rationale for the study is briefly explained. In addition, important terminology and abbreviations that are used in the study are set out in order to enhance the reader's understanding of the rest of the paper. Chapter 1 ends with a brief description and outline of each chapter of the dissertation.

In Chapter 2, the literature pertaining to the topic of this dissertation is reviewed. The chapter commences with a discussion on how the identification of an Afrikaans core vocabulary can assist to inform the design of graphic symbol-based AAC systems for children whose receptive language is Afrikaans. This is followed by a description of the populations for whom graphic symbol-based systems are relevant and the nature of graphic symbols. Various vocabulary selection approaches are described, with a detailed discussion of the role of core vocabulary in system design. The translatability of core vocabulary is considered by comparing English core lists to each other and to lists in other languages. In addition, a short overview of the history and structure of the Afrikaans language is given, as well as the implications of the latter for the identification of a core vocabulary in Afrikaans.

Chapter 3 describes the research methodology used for this study. This includes a detailed description of the research aims, including the main and sub-aims. Furthermore, research settings and participants are described. These descriptions concern the recruitment process, criteria for selection and descriptive criteria. Descriptions of the materials and equipment are followed by a discussion of the pilot study pertaining to the participants, the

aims, materials, procedures, results, and recommended changes or amendments to improve the main study. Finally, the procedures for data collection and analysis are discussed with attention to ethical, reliability and validity considerations.

In Chapter 4 the results obtained in the study are presented. These include a description of the vocabulary in terms of the TNW, total NDW and the TTR, the identification of a core vocabulary by frequency and commonality, word classification of the words contained in the core vocabulary and a comparison of the Afrikaans core vocabulary obtained to an English counterpart.

In Chapter 5 the results of the study are discussed and interpreted in the light of previous literature. Firstly, the TNW and NDW obtained in the Afrikaans speech sample are described and compared to those found in other studies. This is followed by a discussion and comparison of the most frequently and commonly used words (i.e. core vocabulary) to other core vocabulary lists found in literature. Similarly, vocabulary classification according to word characteristics (content and structure words, as well as parts of speech) is discussed and compared to that found in other core vocabulary studies. Finally, the translatability of the Afrikaans core vocabulary is considered. Throughout the chapter, the implications of the findings for vocabulary selection are highlighted.

Chapter 6 provides a general summary of the study. The chapter also gives a critical evaluation of the study, together with implications for clinical practice. In conclusion, recommendations for future research are provided.

1.7 Summary

This chapter aimed to introduce the reader to the study by clarifying its purpose and the structure of the dissertation. This was done by briefly explaining the problem and consequent rationale for the study. Important terminology was defined, as was the notation format that is used in the study. A list of commonly used abbreviations was provided for reference. Lastly, the content of each chapter was briefly summarised and explained.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, an argument will be put forward on how the identification of an Afrikaans core vocabulary can assist to inform the design of graphic symbol-based AAC systems for children whose receptive language is Afrikaans. In order to support this notion, the population for whom graphic symbol-based systems are relevant is first described. The nature of graphic symbols is considered next, since it is the nature thereof that makes preselection of vocabulary necessary. Various vocabulary selection approaches are then described. The role of core vocabulary in system design is then discussed, and the translatability of core vocabulary is considered. An argument is then put forward explaining why a core vocabulary study in Afrikaans is required. The chapter concludes with a short history of Afrikaans and a description of its structure, stating the implications of the latter for the identification of the core vocabulary that is proposed to be established.

2.2 Individuals in need of AAC for expression

According to von Tetzchner and Martinsen (1992), there are three categories of individuals who require AAC. One of these groups is referred to as the expressive language group. For this group, their comprehension skills exceed their ability to express themselves verbally. Children in the expressive group hear and understand the spoken language of the individuals around them. However, they cannot express themselves adequately through speech to meet all their communication needs. AAC is therefore primarily used as a method of expression, and the aim of providing it would be to enable children to express themselves as well as possible, and in a manner that would allow them to participate similarly to peers without disabilities. When children in the expressive group are pre-literate (not yet literate) and have additional physical disabilities that limit their use of gestures and signs from sign language as a method of expression, graphic symbol-based systems are typically used as an alternative method of expression.

2.3 Graphic symbol systems/sets

Graphic symbol systems or sets (e.g. Picture Communication Symbols, Widget Symbols, Symbolstix, Blissymbols) comprise collections of line drawings, where each line drawing represents a referent (Bornman & Tönsing, 2011). Smith (2006) highlighted how graphic symbol systems or sets differ from spoken language in both structure and organisation – these differences ultimately have a direct influence on the expressive potential of the system and need to be accommodated in the design and use of AAC systems.

Spoken language is produced by the body of the sender in the form of a dynamic acoustic signal. There is an arbitrary mapping between the referent and the spoken word (Patel, Schooley, & Wilner, 2007). These linguistic signs (spoken words) therefore have no natural connection to their referent. Furthermore, these producible linguistic signs have duality of patterning, meaning that a finite number of phonemes (meaningless segments) can be combined into words (meaningful linguistic units) following certain phonological rules, ultimately creating the opportunity for the production of an unlimited number of meaningful linguistic units. In the spoken language of Afrikaans, for example, 41 phonemes can be combined in a variety of ways to create various meanings (Donaldson, 1993). For example the word *kas* (cupboard) comprises the phonemes /k/, /a/ and /s/; the same phonemes can be rearranged to produce the word *sak* (bag).

Most graphic symbols do not share these features (Smith & Grove, 2003). Many are not arbitrary, since they attempt to represent a concept in such a manner that there are some (usually visual) similarities between symbol and referent (i.e. what the symbol refers to) (Smith, 2006). This perceived relationship between a symbol and its referent is described as iconicity (Blischak, Lloyd, & Fuller, 1997; Schlosser & Sigafoos, 2002). Furthermore, graphic symbols typically lack duality of patterning (the potential to combine meaningless elements to create new meanings), since each symbol typically represents a concept or referent. For example, the PCS™ symbol for bag is the picture of a bag, and this picture is not segmentable into smaller units. This characteristic limits the generativity of the system, since each word that is intended to be communicated must be available as a symbol in the system (Smith, 2006; Von Tetzchner et al., 1996). A vocabulary of 3,000 words, for example, would require 3,000 symbols, rather than only 41 phonemes that can be used to create an endless number of words and utterances (Akmajian, Demers, & Harnish, 1979; Smith, 2006).

Not only do graphic symbols lack duality of patterning; since they are relatively static and invariant, it is also important to consider that they are selected and not produced (Smith, 2006). Therefore, they must be made available to the person using them on an external device such as a communication board or speech-generating device. It is thus clear that graphic symbols and spoken linguistic signs differ fundamentally in both their structure and organisation, complicating the process of message generation for a pre-literate child who relies on a graphic symbol-based AAC system (Banajee et al., 2003; Zangari, 2012).

2.4 Vocabulary and its importance in the field of AAC

McCarthy and Schmitt (1997) argued that vocabulary can be viewed as the key aspect when it comes to the learning of a language. It is widely acknowledged that vocabulary is essential for language learning, and that no one can communicate meaningfully without it (Hohenberger & Peltzer-Karpf, 2009). Inadequate vocabulary inhibits people from expressing their thoughts and feelings. Contrary to this, a large, rich vocabulary enables them to communicate the right words at the appropriate time, leading to increased communication efficiency (Baker et al., 2000; McGinnis et al., 1991). The benefits of having access to appropriate vocabulary include enhanced speed and efficiency of communication (Beukelman et al., 1991), discourse that is rich in narrative (Crestani, Clendon, & Hemsley, 2010), as well as increased success in vocational and educational settings (Johnson, Reichle, & Evans, 2004). Infrequent, yet crucial communication functions, such as being able to report abuse successfully, also rely on the availability of relevant vocabulary (Bornman, Bryen, Kershaw, & Ledwaba, 2011; McNaughton & Bryen, 2007).

It can therefore be argued that vocabulary can be viewed as a tool for individuals to think, to express ideas and feelings, as well as to explore and analyse the world around them. Although grammar should not be neglected, it should never outweigh the importance of vocabulary; as Wilkins (1972) stated; “Without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed” (p. 97). Poor vocabulary knowledge, access and application can have detrimental effects on communication, even when considering communication difficulties outside the realm of AAC (Soto & Dukhovny, 2008). Children without disabilities who communicate using spoken language demonstrate the use of a wide range and number of words. A five-year-old English-speaking child typically demonstrates the use of approximately 2,100 to 2,200 words and a six-year-old has an expressive

vocabulary of as many as 2,600 words and a receptive vocabulary of 20,000 to 24,000 words (Owens, 2012; Stahl, 1999).

Vocabulary-related topics have received in-depth attention in the field of AAC and frequently feature in literature, as the appropriate vocabulary selection for individuals in need of graphic symbol-based systems is of the utmost importance for communicative efficiency (Baker et al., 2000). It is evident from both research and clinical accounts that AAC systems that do not give adequate access to relevant and broad enough vocabulary tend to be abandoned (Johnson, 2008; Johnson, Inglebret, Jones, & Ray, 2006). Thus, for a system to be used effectively, it must contain relevant vocabulary that enables the individual to meet his/her communicative need (Johnson, Inglebret, Jones, & Ray, 2006).

While the importance of sufficient and relevant vocabulary cannot be over-emphasised, it is essential to consider that an AAC system making use of single-meaning graphic symbols remains limited in its capacity to contain all desired words and phrases (Lui & Sloane, 2006). While many non-dedicated devices have a relatively large storage capacity, allowing for pre-storing of a large amount of vocabulary, and paper-based systems such as communication books and boards can also always be expanded (such as adding another page in a communication book), memory and navigation demands of the system on the user need to be considered (Thistle & Wilkinson, 2013). Even in the absence of co-existing linguistic-cognitive deficits, as in the case of an individual falling under the expressive language group, accurate recall of relevant vocabulary can be challenging in comparison to spoken language, which typically requires minimal effort to access a word (Beukelman & Mirenda, 2013; Light et al., 2004). Large displays tend to increase cognitive demands on individuals attempting to locate a particular vocabulary item, with consequent high visual search times and increased error selections (Herold, 2012). Similarly, dynamic displays (where vocabulary is distributed across multiple overlays or pages that can be accessed by using page navigation buttons) also impose learning demands on children (Light et al., 2004). In a study by Light et al. (2004), 60 vocabulary items were selected and programmed into AAC devices using four different language organisations, namely a taxonomic grid organisation, a schematic grid organisation, a schematic scene organisation, and an iconic encoding language organisation. Participants in the study were 80 four-to-five-year-olds without any developmental concerns. It was found that during the first exposure to the systems, the participants were only able to find an average of 26% to 41% of the target items accurately. Performance improved somewhat with

repeated exposure, with the iconic encoding condition proving most difficult. It is clear that locating vocabulary items accurately in graphic symbol-based systems imposes considerable learning demands on the individual using them. Therefore, the larger the vocabulary, the larger the learning demands.

Typically team members of the child in need of AAC will therefore attempt to select a limited number of words, and will aim to include the vocabulary that can be considered most relevant, important, flexible and usable in different environments (Van Tilborg & Deckers, 2016). Different vocabulary selection approaches, with specific attention paid to the core vocabulary approach will be discussed in the following sections.

2.5 Vocabulary selection approaches

Children who use speech will independently select the words they wish to use from the vast array of words in their expressive vocabulary. Children who use aided graphic symbol-based AAC systems will select the words they wish to use from the vocabulary that other people have made available for them to use (Porter & Kirkland, 1995).

Vocabulary selection refers to a dynamic process of selecting vocabulary items that individuals using the system may require to meet all their communication needs, including communication for functional living, learning, and social interaction activities (Beukelman et al., 1991; Fallon, Light, & Paige, 2001). According to Yorkston, Dowden, Honsinger, Marriner, and Smith (1988), vocabulary selection can be viewed as "the process of choosing a small list of appropriate words or items from a pool of all possibilities" (p. 201). This process of selecting vocabulary from "a pool of possibilities" can take place in more than one way and can be conducted by a number of people, both professionals and non-professionals (Fletcher, 1997; Trembath, Balandin, & Togher, 2007). Vocabulary for children should be selected with two aims in mind: (1) to convey essential messages; and (2) to enhance the speed of gradual development of language skills (Beukelman & Mirenda, 2013). In other words, the method of vocabulary selection and consequently the chosen vocabulary should ultimately enable the person using AAC to communicate more independently, while simultaneously promoting the development and expansion of language-related skills.

Vocabulary selection remains a difficult process and guidelines for selection are limited (Fallon et al., 2001), since it requires people other than the individual who will use the vocabulary to predict which words this person will require in all the communication situations that he/she encounters (Dark & Balandin, 2007). Although there are guidelines on how to select vocabulary, relevant team members still rarely have sufficient knowledge and experience to select the appropriate vocabulary for a person in need of AAC (Beukelman & Mirenda, 2013; Van Tilborg & Deckers, 2016). Natural speakers (often adults) guiding the vocabulary selection tend to be unaware of the specific vocabulary that they require and use to communicate on a daily basis, thus often selecting irrelevant and seldom-used words (Dark & Balandin, 2007). Increased availability of AAC applications and software with pre-programmed vocabulary included in the system can provide team members with a starting point in vocabulary selection (Robillard, Mayer-Crittenden, Minor-Corriveau, & BéLanger, 2014; Witkowski & Baker, 2012). It is, however, important to question the origin of these vocabulary lists. They may be based on the vocabulary used by children without disabilities, or may be determined by the adults developing the systems. Similarly, one should remain cautious of seeking a ‘one fits all’ solution, as a measure of individual customisation will always be necessary (Boenisch & Soto, 2015). In an attempt to move away from a trial-and-error approach, various methods of vocabulary selection have been suggested to reduce the haphazard nature of vocabulary selection (Fried-Oken & More, 1992; Thistle & Wilkinson, 2015). Vocabulary selection methods include the use of (1) informants; (2) environmental inventories; and (3) word lists (Trembath, Balandin, & Dark, 2006). These approaches will be discussed in more detail.

2.5.1 Informants

Informants are stakeholders that play an important role in the vocabulary selection process and include family members, teachers, colleagues, friends and professionals such as speech therapists (Trembath, Balandin, & Dark, 2006). Informants can suggest vocabulary through non-categorical or categorical nominations. Non-categorical nominations (also known as the blank page method) can be used when informants know the person in need of AAC well. Informants are expected to write down lexical items that they feel should be included in an AAC system on a blank page (Fried-Oken & More, 1992; Karlan & Lloyd, 1983; Nigam, 2006). In contrast, categorical nominations refer to vocabulary lists where participants such as teachers and family members are required to select vocabulary they deem appropriate from a variety of categorically based words (Fallon et al., 2001). In other words,

important team members receive a set of words grouped under specific categories, whereafter they are expected to choose the vocabulary they deem most important and appropriate for the person requiring the vocabulary (Carlson, 1981; Karlan & Lloyd, 1983; Nigam, 2006). Informants can also contribute to the vocabulary selection process in the form of a structured interview during which vocabulary for the system is generated in an interview between the clinician and other relevant team members, taking into account the daily routine and activities of interest of the individual using AAC (Yorkston, Honsinger, Dowden, & Marriner, 1989).

In a study by Balandin and Iacono (1998) the abilities of professionals to predict the vocabulary and topics of conversations of individuals without disabilities accurately during mealtimes was investigated. These professionals included speech therapists, counsellors and teachers. The results indicated that only 67% of the predicted words were used in the conversation during mealtimes; 33% or 136 words were not used. The study showed that even experienced individuals were only partially able to predict and select the exact vocabulary that was required to communicate in a specific context (Balandin & Iacono, 1998b). Although informants may know the person in need of AAC to some degree, it is important to remember that the process is inherently subjective. Stakeholders/informants tend to select content vocabulary containing mostly nouns and verbs (Banajee et al., 2003; Dark & Balandin, 2007), as these words are usually more concrete in nature compared to words such articles and conjunctions (i.e. structure words) (Mngomezulu, 2017; Smith & Witten, 1993). Although these words are certainly important, such vocabulary often lack conceptual and structural words required to build sentences and express relationships between subjects, verbs and objects (Adamson, Romski, Deffenbach, & Sevcik, 1992; Balandin & Iacono, 1998a; Sutton, Soto, & Blockberger, 2002). The generativity of such a vocabulary remains limited, as a noun-and-verb-dominated vocabulary would predispose users to express themselves mainly in single words or simple semantic combinations.

2.5.2 Environmental inventories

Environmental (ecological) inventories refer to vocabulary lists obtained by examining or observing specific environments and activities relevant to the individual, and consequently compiling words and phrases that individuals typically use or require in those specific environments and activities (Mirenda, 1985; Morrow et al., 1993). It involves observing the person who uses AAC in a particular environment, followed by collaboration with informants to identify relevant vocabulary ultimately aiming to provide vocabulary

based on the individual's specific context (Trembath, Balandin, & Dark, 2006). Formal environmental inventories differ from sources compiled solely by informants in that a word list is created only after initial contextual observations (Fried-Oken & More, 1992). Observations provide detailed information about specific communicative requirements in certain contexts (Millikin, 1997). Environmental inventories have some advantage over non-categorical and categorical methods, as environmental inventories take the environment into consideration. Although environmental inventories tend to lead to more accurate vocabulary, the process of compiling them still entails some degree of guessing, as the informant might not select the appropriate vocabulary for the person in need of the vocabulary. Selection remains relatively subjective, as individuals other than the person using the AAC system decide which words and messages should be included.

2.5.3 Word lists

Various word lists have been created over the years that have been suggested to be useful resources for the AAC vocabulary selection process. Yorkston et al. (1988), for example, made reference to 'standard vocabulary lists' and described relevant lists that could be used as potential sources for individuals in need of AAC. These included lists developed for English second language learners (ESL) (Ogden, 1968), lists for individuals using sign language (Fristoe & Lloyd, 1980), and lists that system developers included in their AAC devices (Higgins, Shane, Baker, & Costello, 1986). In recent years, vocabulary lists based on frequency of use (and usually also commonality across speakers) by various populations have become more popular as a vocabulary resource (Van Tilborg & Deckers, 2016). Unlike various other vocabulary lists, lists containing the most frequently used words (i.e. core vocabulary) are generated based on samples of conversational speech, samples of written productions, or samples of AAC used in conversation, rather than being based on perceptions of usefulness by the creators of the list. Vocabulary lists have been generated based on the production of persons with and without disabilities from a variety of age groups, including the spoken productions of toddlers (Banajee et al., 2003), preschoolers (Beukelman et al., 1989; Fallon et al., 2001; Trembath et al., 2007), and school-aged children (Robillard et al., 2014) without disabilities; adults (Balandin & Iacono, 1999) and elderly individuals (Stuart, Beukelman, & King, 1997) without disabilities; individuals with intellectual disabilities (Boenisch, 2014; Chen, Chen, & Chen, 2013); children on the autism spectrum (Chen et al., 2011); and children with physical disabilities (Dark & Balandin, 2007; Yorkston, Beukelman, Smith, & Tice, 1990). The written productins of children without disabilities have also been

used as a source (Clendon & Erickson, 2008; Clendon, Sturm, & Cali, 2013). For an overview of studies, see Van Tilborg & Deckers (2016).

In summary, all three above-mentioned approaches for selecting vocabulary have merit; however, as previously mentioned, using a combination of different methods will increase the likelihood of relevant words being selected (Trembath, Balandin, & Dark, 2006). According to Beukelman and Mirenda (2013), the first two approaches are particularly useful when selecting individualised or fringe vocabulary. Fringe vocabulary refers to words that are specific to the individual and to certain contexts and activities (Beukelman & Mirenda, 2013; Dark & Balandin, 2007; Van Tilborg & Deckers, 2016). Lists based on frequency of use, in turn, are proposed to be useful for the selection of core vocabulary – words that "are commonly used by a variety of individuals and occur very frequently" (Beukelman & Mirenda, 2013, p. 31). The concept of core vocabulary and its application to the field of AAC will be discussed in more detail in the next section.

2.6 Core vocabulary

2.6.1 Origin of the concept

One of the earliest references to core vocabulary can be found in the *Journal of Educational Research*, Volume 19(1), in an article entitled; "A core vocabulary for elementary school pupils," authored by Shambaugh and Shambaugh (1929). The aim of the article was to identify "those words which the (elementary) student uses in his daily life" (p. 39). This core vocabulary was identified by providing word lists compiled by the authors to 50 students from grades four to eight and requesting them to write down four to five words they associated with each of the words provided. The 1,309 words that were common to all grades were then designated 'core words.' This method of identifying the core words was critiqued by Horn (1929) who advocated frequency data to be considered in the designation of a word as either 'core' or what the author termed 'marginal' (p. 311). Since the coining of this term, the concept of core vocabulary has been defined and debated in the fields of applied linguistics, language learning, and literacy instruction, without a universally accepted definition having as yet been established (Carter, 1987; Lee, 2001). The aim of establishing a core vocabulary list has usually been to identify the most useful, most basic, or simplest words for initial language learning purposes (Carter, 1987).

2.6.2 Core vocabulary in AAC

As indicated in Section 2.6.1, word lists based on frequency and commonality of use by various populations have come to be regarded as core vocabulary in the field of AAC (Van Tilborg & Deckers, 2016). Baker et al. (2000), for example, define core vocabulary as the words most commonly and frequently used for communication-related purposes. A core vocabulary that is established in this way is characterised by high frequency of use and small size, while simultaneously remaining relatively constant across different environments and individuals (Baker, Hill, & Devylder, 2000; Banajee, Dicarlo, & Stricklin, 2003; Witkowski & Baker, 2012; Yorkston, Dowden, Honsinger, Marriner, & Smith, 1988). Various authors have therefore advocated the inclusion of core vocabulary on AAC systems, as this could possibly ensure increased communication effectiveness for persons using the system (Baker, Hill, & Devylder, 2000; Banajee, Dicarlo, & Stricklin, 2003; Trembath, Balandin, & Togher, 2007; Witkowski & Baker, 2012). Core vocabulary tends to consist of more general, multipurpose words (Morrow et al., 1993) having conceptual, rather than concrete referents (Mngomezulu, 2017; Smith & Witten, 1993). These words would typically include generic and numerous structure words such as pronouns, conjunctions, auxiliary verbs, modals, indefinites and adverbs (Renvall, Nickels, & Davidson, 2013; Stuart et al., 1997; Witkowski & Baker, 2012). Core vocabulary lists do not require frequent revision, as few words are added over time (Stuart, Vanderhoof, & Beukelman, 1993). From previous research studies it was found that 250-350 words collected in English language samples accounted for approximately 75-80% of the words communicated (Beukelman et al., 1989; Boenisch & Soto, 2015; Marvin, Beukelman, & Bilyeu, 1994; Stuart et al., 1997, 1993; Trembath et al., 2007). The remaining words from the speech samples are known as fringe vocabulary (see Section 2.6.3). This ratio between core and fringe vocabulary in speech samples correlates with what is sometimes called the 80% - 20% rule of core vocabulary, as approximately 80% of speech samples consist of core vocabulary, while the remaining 20% are covered by fringe vocabulary (Baker et al., 2000). Similar results were found in languages other than English (Boenisch & Sachse, 2007; Mngomezulu, 2017; Robillard et al., 2014; Shin & Hill, 2016).

2.6.3 The utility of core and fringe vocabulary

It has been argued that core vocabulary is particularly useful for AAC-related purposes (Boenisch & Soto, 2015; Trembath et al., 2007). Its usefulness can be attributed to its relatively small size, while remaining rather constant across different communicative

environments, activities, contexts, and age and demographic groups. Furthermore, it can be considered generative and robust in nature, thus allowing application in a variety of communicative and linguistic contexts (Boenisch & Soto, 2015). This relatively small set of words usually comprises structure words such as articles, pronouns and prepositions (Renvall et al., 2013; Stuart et al., 1997; Witkowski & Baker, 2012), mostly serving a syntactic purpose while lacking semantic meaning. Including these words contributes to the grammatical correctness of sentences.

Fringe vocabulary, also known as extended vocabulary (Hill & Romich, 2004), by definition refers to words with lower frequency and/or commonality scores. It typically consists of content words, such as nouns, adjectives, and verbs that people use to communicate about specific topics in specific environments (e.g. 'swing', 'paper', 'toys') (Beukelman & Mirenda, 2013; Dark & Balandin, 2007; Trembath et al., 2007; Van Tilborg & Deckers, 2016). Adding fringe vocabulary to AAC systems ensures that the vocabulary remains personal and unique to the individual relying on AAC (McNaughton & Bryen, 2007). A challenge with regard to fringe vocabulary is the fact that it is typically context- or situation-bound and that it has to be updated and modified frequently to ensure its usefulness (Balandin & Iacono, 1999).

Most studies indicate that core vocabulary should be the predominantly used vocabulary in an AAC system, as it allows for optimal flexibility across different communicative contexts (Banajee et al., 2003; Dodd & Gorey, 2004; Van Tatenhove, 2009). It can also be argued that in the absence of fringe vocabulary, it is possible to approximate the meaning of words through circumlocution (an indirect way of expressing a desired utterance or idea by using many words instead of expressing it directly and simply). However, such circumlocution requires a high level of linguistic and metalinguistic skills, and may also reduce the rate of communication. The importance of adding fringe vocabulary should therefore not be overlooked (Trembath et al., 2007).

When core vocabulary and appropriate fringe vocabulary are appropriately combined in an AAC system, they provide the individual with increased communicative options in a variety of communicative contexts. These systems also tend to be used more effectively and frequently (Banajee et al., 2003; Beukelman et al., 1991; Yorkston et al., 1988). Such a comprehensive system would ultimately empower the individual to communicate more

independently, being one of the main objectives of the field of AAC (Beukelman & Mirenda, 2013). It is fair to argue that if one of the main objectives of AAC is to provide a system as generative and flexible as possible, both core and fringe vocabulary should be incorporated.

2.6.4 Core vocabulary in different languages

Research pertaining to the design of AAC systems for persons from non-English backgrounds has slowly been gaining momentum in the field of AAC over the past years (Boenisch & Sachse, 2007; Lui & Sloane, 2006; Mngomezulu, 2017; Robillard et al., 2014; Shin & Hill, 2016). As part of this process, researchers and clinicians have considered the translatability of core vocabularies established in English into other languages (Lui & Sloane, 2006; Mngomezulu, 2017; Shin & Hill, 2016). These authors question whether core vocabulary lists can be considered translatable. If this were the case, the need for collecting language samples in a specific language would become somewhat obsolete. Theoretical arguments against the translatability of core vocabulary have been proposed, claiming that direct translation is not necessarily that simple (Mngomezulu, 2017; Shin & Hill, 2016). It has been argued, for example, that, since core vocabulary comprises mostly structure words rather than content words, it is likely that the core vocabulary of a specific language would differ considerably from that of a language with a different linguistic structure. One can also debate the influence of geography. For example, it may be questionable whether vocabulary determined for individuals living in the United States would be applicable to individuals in Australia (Trembath, Balandin, & Togher, 2007). However, there do not seem to be any known attempts to compare core vocabulary lists formally across languages.

In order to understand the necessity (or lack of it) for establishing an Afrikaans core vocabulary based on data from actual language samples, an attempt was made to obtain an impression of the translatability of core vocabulary. To this end, a two-step process was followed. This was done in collaboration with another researcher. First, the author of this dissertation compared various English core vocabulary lists to each other, in order to determine how common vocabulary items were across various English lists, and to identify a comprehensive list for the sake of comparing it to lists compiled in other languages. Secondly, Mothapo (2018) then compared the vocabulary items found in at least 50% of the compared English lists with a German, Zulu and a Korean core vocabulary list.

2.6.4.1 Identifying an English comparison list

In order to compile an English list for comparison to lists in other languages, the results of a systematic search to identify core vocabulary studies were used as a starting point (Mngomezulu, 2017). Mngomezulu (2017) used the search engine EBSCOhost with keywords: '*AAC*', '*vocabulary selection*' and '*core vocabulary'.* Twelve key articles were identified. A further 39 potential articles were found by means of a manual search and forward citation search of the 12 identified articles. Twenty studies were included in the findings. The author of this dissertation perused the 20 studies identified by Mngomezulu (2017) and selected vocabulary lists from these studies for inclusion in the comparison, provided that the lists and the studies met a number of criteria. The criteria are set out in Table 2.1.

Table 2.1

Selection Criteria Used to Identify English Comparison Lists

Criterion	**Justification**
Vocabulary lists used for the comparison needed to be English core vocabulary lists.	This was done as the aim of the first step was to identify an English comparison list.
Core vocabulary needed to be defined by a frequency count of at least five per 10,000 words (0.5‰).	This definition of core vocabulary was used to ensure that the lists were comparable.
It was required that the 100 most frequently used words be identifiable from a published list.	This requirement was intended to facilitate comparisons.
Studies needed to include at least five participants.	This enhanced the generalisability of the comparison. Studies with fewer than five participants were deemed as having a too small sample size.
Studies needed to have been conducted in 1980 or later.	This was done to optimise the relevancy of the vocabulary used.
Communication samples obtained from spontaneous natural conversations (as opposed to researcher-directed activities or theme-based conversations) needed to have been collected as a basis for determining the core vocabulary.	This was done to increase the likelihood that the identified core vocabulary was indeed applicable to more than one context rather than being limited to specific activities and themes. It can be argued that theme-based conversations tend to examine fringe vocabulary.

No additional inclusion criteria regarding the age of participants were set, as literature states that core vocabulary remains relatively constant across certain ages (Boenisch & Soto, 2015; Witkowski & Baker, 2012). One of the aims of this comparison was to determine whether this claim is in fact accurate.

Five core vocabulary lists complying with the above-mentioned criteria were identified, emanating from four published core vocabulary lists (Beukelman et al., 1989; Boenisch & Soto, 2015; Stuart et al., 1993; Trembath et al., 2007). An overview of each of the studies can be found in Appendix A.

Because the lists had different lengths, it was decided to compare the 100 words occurring with the highest frequency from each list. This arbitrary cut-off has been used in other studies that describe core vocabulary (e.g. Boenisch, 2014; Van Tilborg & Deckers, 2016) and was chosen as a manageable number of words that could be compared across different lists, since most lists identified in the literature comprise at least 100 words. It was also hypothesised that, since the concept of core is linked to frequency, the likelihood of overlap being found in different lists would be higher in the words with the highest frequency of use (i.e., there would be more overlap in the top 100 words than in the top 200 words. These words were then entered into an Excel spreadsheet, with words common to more than one list entered into adjacent columns in the same row. In this way, a composite alphabetical list was compiled by combining all the lists, while a commonality score for each word on the composite list could also be determined. The commonality score indicated the number of times a particular word could be found across the lists. For example, a commonality score of 2 indicated that the word was found in two of the five lists.

The summarised results of the comparison are given in Table 2.2.

Table 2.2

Word Frequencies Across Five Compared Vocabulary Lists

Commonality score [a]	**NDW with this commonality score**	**% of words with this score in relation to total NDW**
1	67	37%
2	30	16%
3	18	10%
4	21	11%
5	47	26%

Note. Boenisch and Soto's (2015) native and ESL lists were taken as two separate vocabulary lists.
[a] The commonality score indicates across how many lists the particular word appeared.

The composite list comprised 183 different words. Of these, 37% only occurred in one of the word lists, while only 26% occurred in all five word lists. Overall, 47% of the words occurred in at least three lists. Several reasons could contribute to the difference found between lists, such as the inclusion of proper names (Beukelman et al., 1989) in some lists but not others (Boenisch & Soto, 2015; Stuart et al., 1993; Trembath et al., 2007), and separate counting of different grammatical forms of the same word (e.g. want/wanted) by some authors (Beukelman et al., 1989; Boenisch & Soto, 2015) but not others (Stuart et al., 1993; Trembath et al., 2007). Other differences could be attributed to different ages of participants and different contexts of sampling (Trembath et al, 2007).

It was decided to identify the words that were common to at least three of the lists in order to compile a comparison list against which core words identified for other languages could be compared. This decision was based on the precedent that many core vocabulary studies regard a commonality score of at least 50% as indicative of 'core' (Mngomezulu, 2017; Trembath et al., 2007). In this case a commonality score of 3 represented 60% commonality across lists. The resulting comparison list comprised 86 words and is provided in alphabetised format in Appendix B.

2.6.4.2. Comparison of the English composite list with lists developed for other languages

In order to identify core vocabulary lists in other languages, Mothapo (2018) consulted the lists of core vocabulary studies identified by Mngomezulu (2017) and identified six studies that aimed at identifying core vocabulary in a language other than English – three studies that sampled Korean, two that sampled Mandarin, and one that sampled French. She furthermore consulted the article by Van Tilborg and Deckers (2016), and identified an

additional study examining the German language, and two additional studies conducted with Taiwanese children (language not specified) from their given reference list. She traced these references to identify whether they included core vocabulary lists of at least the top 100 words. She identified only two studies (one for German [Boenisch, 2014] and one for Korean [Shin & Hill, 2016]) that (1) were accessible through her institution's data base; and (2) provided a published list of at least the top 100 most frequently used vocabulary items. She supplemented these two lists with Mngomezulu's (2017) core vocabulary list of isiZulu. The top 100 most frequently occurring items in each of the lists were identified to simplify comparisons. English translations of vocabulary items were provided by the authors for the isiZulu and Korean lists. The German list was translated by a German speaker and cross-checked against the online Langenscheidt German-English Dictionary (https://en.langenscheidt.com/german-english/). The English translations were alphabetised and compared to the English comparison list described in Section 2.6.4.1. For each non-English list, the number of vocabulary items that had an equivalent in the English list was determined. Mothapo (2018) found that 31 vocabulary items in the isiZulu top 100 list, 45 items in the Korean top 100 list and 63 items in the German top 100 list had an equivalent in the English composite list.

These scores or differences might be due to the linguistic typology of each language. The typology of a language refers to the categorisation of language units according to similar characteristics, such as word order and morphology. isiZulu (Kosch, 2006) and Korean (Shi, 2015) can be described as primarily synthetic agglutinative languages, meaning that the words consist of a set of distinct morphemes and each component of meaning is represented by its own morpheme (Kosch, 2006), whereas English can mainly be viewed as an analytic language, meaning that most words are composed of a single morpheme or that each morpheme can be recognised as a word in isolation and not a mere prefix or suffix. German can be described as occupying a position close to the middle of the synthetic-analytic continuum, although it is slightly closer to the synthetic end (Machová, Charvátová & Bacuvcíková, 2017) .

It may be tempting to conclude, in spite of different typologies, that the overlap is relatively high, considering that among the five English lists compared, only 47% of all words had a commonality of more than 50%. However, it is important to remember that the comparison of the English lists was more rigorous, since five lists were compared rather than

only two at a time. These results do support the notion that core vocabulary should be determined from language samples in specific languages, rather than being translated. Lui and Sloane (2006) argue that the identification of a core vocabulary list based on natural speech samples in a specific language is still the most valid and rigorous method. It is therefore recommended that language samples be collected and analysed when determining an Afrikaans core vocabulary.

2.7 The Afrikaans language

The Afrikaans language is a rich and unique language resonating with historical and political events in South Africa's history (Penn & Jordaan, 2016). Although the exact detail of the beginning of Afrikaans is still somewhat contested, the broad outlines of the history of the settlement of South Africa, and in particular of the Western Cape Province, seem to be relatively clear. Everyone agrees that Dutch traders settled in Cape Town in 1652, and that the Afrikaans spoken today originated from 17th century Dutch, with other additional linguistic influences.

Originally, approximately 10,000 years ago, nomadic Khoi and San groups settled in the Cape, whereafter it is recorded that Jan van Riebeeck settled in the Cape in the year 1652. This is regarded as the commencement of the Dutch influence in the Cape district. In 1697 Simon van der Stel is known to have founded Stellenbosch, consisting of a population speaking mostly Dutch. Owing to continuous trading over 40 years between the Khoekhoe and Dutch populations, a language containing linguistic characteristic of each population's language emerged. Furthermore, additional linguistic influences emanated from other populations, as labourers were brought to work on farms between 1660 and 1750. Labourers were brought from as far as Madagascar, India, Malaysia and the Dutch East Indies. In 1795 the English capture of the Cape Province caused English to emerge slowly and be adopted in the province, thus becoming a second dominant language in the region. This led to the consequent 'Afrikaner movement', as Afrikaners started to experience difficulty with the recognition of their language. In the year 1931 South Africa became an independent country, known as the Republic of South Africa. In 1948 the National Party won the elections, leading to the apartheid regime. Extensive political reform ultimately led to Afrikaans and English being adopted as the two official languages of South Africa, excluding other frequently spoken languages. Finally, in 1996, a new constitution was adopted and Afrikaans was

recognised as one of the 11 official languages of South Africa (van der Wouden & Muysken, 2012).

The South African Constitution (the Bill of Rights of the Constitution of the Republic of South African, 1996) recognises 11 official languages, namely English, Afrikaans, IsiZulu, IsiXhosa, IsiNdebele, SiSwati, Sesotho, Sepedi, Setswana, Xitsonga and Tshivenda. The use of English has increased, and largely dominates the educational and economic realm (Kamwangamalu, 2002; van der Walt & Steyn, 2016). Even so, an estimated 6.85 million South Africans speak Afrikaans as home language, making it the third most frequently used home language in South Africa (Statistics South Africa, 2011). A rich literature exists in the language, and it is widely used in the media and also as a language of instruction in educational settings.

Section 31 of the Bill of Rights of the South African Constitution (1996) established the notion of languages as a fundamental human right and states that:
i) Every person shall have the right to use the language of his/her choice.
ii) No person shall be discriminated against on the grounds of language.
iii) Every person has a right to insist that the state communicate with him/her at national level in the official language of his/her choice.

One can argue that this goes for any individual regardless of the method of communication. It is thus deemed necessary that individuals from Afrikaans backgrounds in need of AAC have adequate access to Afrikaans as a medium of expression. Previous Afrikaans vocabulary frequency lists have, however, been released or mentioned in literature. Some of these lists originated as early as 1932. Most are based on the most used words from written sources or the vocabulary selection approach or source of origin is not mentioned (Barnes, 1995; Malan, 1943; Nienaber & Barnes, 1985). Aucamp (1932) compiled an Afrikaans vocabulary list of the 1,000 highest frequency words based on a variety of written sources of adults and children. Written language has been shown to differ from spoken language, as it is usually more structured and formal in nature (de Schryver & Prinsloo, 2000; Lui & Sloane, 2006). Therefore, a frequency list that is specifically based on speech samples is required.

One phenomenon that can be expected to be encountered in studies that sample spoken language in mutilingual constexts such as South African is code switching. Code switches refer to alternations between languages in conversational speech and this commonly occurring socio-linguistic phenomenon (Barnes, 2011; van Dulm, 2007) is typically found in spoken rather than written language (Falk, 2013). Code switching can be described as the linguistic phenomenon of moving back and forth between two different languages (Shay, 2015). Previous research has shown that adolescents and school-age children use code-switching to fulfil a variety of pragmatic functions, which include asserting their shifting identities and allegiances, structuring games and play activities, as well as negotiating meanings and rights (Cromdal, 2004; Howard, 2003; Paugh, 2001). Code switching in a multilingual context is somewhat ineffable. In a previous core vocabulary study conducted in the South African context, evidence of code switching was found in the core vocabulary (Mngomezulu, 2017).

2.7.1 The structure of the Afrikaans language

Linguistically, Afrikaans can be described as an Indo-European language predominantly influenced by the Dutch language, but linguistic borrowing from the Malay, Portuguese and German languages occurred as well (van der Wouden & Muysken, 2012). Regarding its linguistic structure, it is classified as a predominantly analytic language, meaning that Afrikaans has little morphology and that the sentences are composed of free morphemes, where each word consists of or corresponds mostly to only one morpheme (Machová, Charvátová & Bacuvcíková, 2017). Words are therefore relatively immune to inflectional affixations, meaning that grammatical words instead of inflection are used to indicate syntactic relations. Possession, for example, is indicated by the possessive pronoun *se* (e.g. *die man se hoed* – ‘the man’s hat’), rather than by inflection of the word ‘man’ itself. In general, Afrikaans can thus be described as an inflection-poor language (Butler, 2016).

Afrikaans is, however, not completely free of all inflections, and there is evidence of some inflectional morphology remaining in the language. Inflectional morphemes are those that are added to the word and perform a grammatical function, causing a word to have different forms without changing the part of speech the word is classified as (Crystal, 2008). An example would be adding the plural morpheme *–e* to the word *huis* (house), so that singular and plural forms exist (*huis* and *huise*). In the context of the current study, verbs, adjectives, nouns, pronouns and numerals can be subjected to inflection.

The prefix *ge-* is the only remaining overt instance of verb inflection in the Afrikaans language. The past tense is usually indicated by means of an auxiliary verb *het* and the additional afore-mentioned prefix *ge-*, whereas future tense verbs are formed by means of an auxiliary verb, *sal*.

With regard to adjectives, when applied attributively prior to a noun, many adjectives, but not all, take an *-e* at the end. Adjectives that are subjected to an *-e* are those with more than one syllable and monosyllabic adjectives that end in *-d, -f, -g* or *-s* (Donaldson, 1993). For example, the word *vinnig* (fast) would change to *vinnige* when used attributively. Take the following two sentences, for example: *Die kar is vinnig* (The car is fast) and *Dit is 'n vinnige kar* (It is a fast car).The word gains an *–e* at the end to indicate that is used attributively. Inflectional morphemes are also added to adjectives to indicate degrees of comparison, for example, *vinnig*, *vinnig**er***, *vinnig**ste*** (fast, faster, fastest).

Nouns in Afrikaans are subject to plural and diminutive inflection. Most nouns with emphasis on the final syllable gain a suffix *-e* to indicate the plural form. This rule is also relevant to monosyllabic words. It is important to note that these words are subjected to a set of spelling rules depending on the preceding vowel. The spelling of the word in plural (but not necessarily the pronunciation of the root) thus often changes. Polysyllabic words with emphasis on the first syllable typically gain the suffix *–s* in the plural form. In Afrikaans compound nouns are always written as one word (sometimes joined by a hyphen '-'), whereas in English compound words are usually written as two words. An example is the word *boomhuis* (tree house) (Van Zaanen, Van Huyssteen, Aussems, Eiselen, & Emmery, 2014).

Some pronouns and numerals can also be subject to diminutive or plural inflection, where the plural or diminutive forms of these words are indicated by means of an extra linguistic unit, for example *een* (one) becomes *enetjie* in its diminutive form. These types of inflections are usually more prevalent in conversational speech, compared to written speech.

When inflectional morphemes are added to Afrikaans words, the pronunciation of the root typically does not change. However, there are exceptions to this, for example in the plural form of the word *dag* (day), which loses one consonant when the plural morpheme is added, and becomes *dae.* The past tense of the verb *het* (have) is another example, where the

addition of the past tense morpheme *ge-* changes the vowel of the root (*gehad*). However, most roots remain unchanged in pronunciation (although not always in spelling) with the addition of an inflectional morpheme.

The Afrikaans language also shows some evidence of derivational morphology. A derivational morpheme, when added to the word, changes the meaning of the word and also typically changes the part of speech to which the word belongs. An example is the word *bou* (to build). This is a verb; however, *bouer* (a builder) with the same root form, is a noun. The addition of the morpheme *-er* consequently causes these two words to be distinct with regard to their word classification.

Afrikaans words can be classified by parts of speech. These include adverbs, nouns, pronouns, verbs and adejctives (Donaldson, 1993). Furthermore, these parts of speech can also be classified as structure or content words. Van Rooy (2017) describes nouns, verbs, adverbs, and adjectives as content words, whereas pronouns, articles, auxillary verbs, conjunctions, prepositions are described as structure words.

The Afrikaans language contains homonyms. Homonyms refer to two or more words that have the same spelling and/or pronunciation, but distinct and unique meanings (Mojela, 2007). For example, the word *sy* can be used; (1) as a noun denoting ‘side’; (2) as a noun denoting ‘silk’; (3) as a possessive pronoun denoting ‘his’; or (4) as a personal pronoun denoting ‘she’. These homonyms of the word *sy* would therefore have unique graphical representations, as all four are used in unique ways. Figure 2.1 indicates the possible graphical representations of the word *sy*.

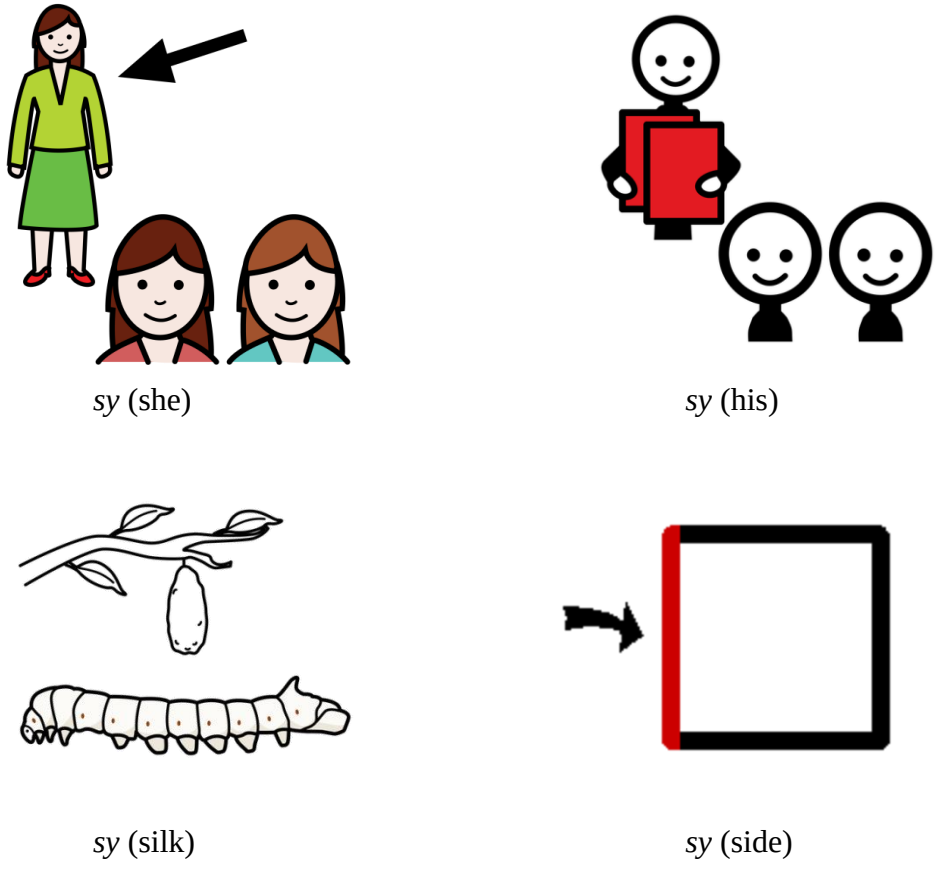

Figure 2.1. Graphic symbols (Picto4me)[5] of the word sy in English.

Afrikaans also contains polysemes. These are words with related yet slightly different meanings (Vicente, 2018). Such words can often perform different grammatical functions and might in some cases (not all) belong to different parts of speech (Panman, 1982). The word *begin* for example, can be both a noun (beginning) and a verb ([to] begin). Although it is clear that the meaning of both the noun and the verb are related (unlike homonyms where the meanings are not related), these words sometimes belong to different parts of speech. When attempting to describe a core vocabulary in terms of parts of speech, for example, it would be important to separate polysemes.

[5]Picto4me. Rua Prof Ferreira Lima, 352 Campinas, Brasil, SP. www.picto4.me/site[5]

2.7.2 Implications of the linguistic structure of Afrikaans for core vocabulary

It can be argued that the main aim of the study is to determine a relatively small set of words that can be reused in a variety of communicative environments for Afrikaans-speaking individuals who are not (yet) literate. In order to do this ultimately, it is critical to take the linguistic structure of the Afrikaans language into consideration.

In many previous studies (specifically those done in English, such as the studies of Trembath et al. [2007], Boenisch and Soto [2015] and Beukelman et al. [1989]) the most frequently used words have been determined by the use of the orthographic space in order to indicate linguistic units or words. This frequently used method may, however, not be suitable for all languages owing to unique linguistic characteristics (Mngomezulu, 2017). The afore-mentioned method can, however, be deemed the most suitable route for the determination of an Afrikaans core vocabulary, as Afrikaans can be seen as a predominantly analytic language. This means that grammatical relations between words are generally conveyed by separate words or in some instances (minimal) by means of affixation.

An analysis of words based purely on orthographic space, however, does present some challenges, namely those related to inflection and those related to homonymity and polysemy. When inflections of words are all counted as separate words, a risk exists that the core vocabulary will become diluted. Also, such different inflectional forms may not have separate graphic representations. Commercially available systems with English pre-programmed vocabulary (for example, Proloquo2go[6]) have provided access to inflectional morphology through features such as auto-conjugation. This means that verbs with different inflectional forms are stored under one root form (e.g., the verbs forms ‘going’, ‘gone’, and ‘went’ are all stored under the root ‘go’). It therefore seems appropriate that words with different grammatical variations due to morphological inflection (i.e. nouns, verbs, numerals, pronouns and adjectives) be considered as single word units in core vocabulary studies of predominantly analytical languages such as English and Afrikaans. A precedent for this method of counting has been set by Boenisch and Soto (2015). However, in cases were derivational morphology occurs, causing the root word to change regarding its part of speech, a word should not be transcribed according to the root word, but as an entity on its own, as

[6] Proloque2 by Assistive Ware, 183 Laurierstraat, 1016, Amsterdam PL, The Netherlands. www.assistiveware.com

these words would have meanings that differ enough to warrant distinct graphic representations (e.g., *bou*— 'build' versus *bouer*—'builder').

Homonyms and words with identical orthographic representation belonging to different categories of parts of speech are not distinguished if the analysis only considers orthographic space. This may lead to over-counting words that potentially have completely or slightly different meanings and/or belong to different parts of speech, and may require different graphical representation (not in all cases). Since Afrikaans contains homonyms and polysemes, this will need to be considered in the analysis.

2.8 Summary

In this chapter, the question was asked how the identification of an Afrikaans core vocabulary can assist to inform the design of graphic symbol-based AAC systems for children whose receptive language is Afrikaans. Individuals in need of AAC, as well as graphic symbol-based systems, were first described in order to support this notion. This was followed by a discussion of vocabulary and its importance in the field of AAC. Furthermore, a variety of relevant vocabulary selection approaches was described, followed by a discussion pertaining to the role of core vocabulary in system design and the feasibility of translating a core vocabulary into another language. In addition, it was examined why a core vocabulary study of Afrikaans is required. The chapter concludes with a short history of the Afrikaans language and a description of its structure, with the implications of the latter for the identification of a core vocabulary being considered.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes the research methodology chosen for this study. This includes a description of the research aims (main and sub-aims). Furthermore, the research setting and participants are described. The discussion on participants includes descriptions of recruitment, criteria for selection and descriptive criteria. A description of the materials and equipment is followed by a discussion of the pilot study – the participants, the aims, materials, procedures, results and recommended changes or amendments to improve the main study. Finally, the procedures for data collection and analysis are discussed, with attention to ethical, reliability and viability considerations.

3.2 Research aims

3.2.1 Main aim

The main aim of the study was to determine the core vocabulary of home language Afrikaans-speaking preschoolers without disabilities aged between 5; 0 (years; months) and 6; 11, as used during regular preschool-based activities.

3.2.2 Sub-aims

The sub-aims of the study were as follows:

i. To determine the TNW, as well as the NDW used by Afrikaans-speaking preschoolers aged between 5; 0 and 6; 11, during regular preschool activities.
ii. To determine the most frequently and commonly used words of Afrikaans-speaking preschoolers aged between 5; 0 and 6; 11 (i.e. the core vocabulary) during regular preschool activities.
iii. To describe the words in the core vocabulary by classifying them into content and structure words, as well as parts of speech.
iv. To compare the core vocabulary of Afrikaans-speaking preschoolers found in this study with the core vocabularies determined in previous studies.

3.3 Research design

A quantitative non-experimental descriptive observational design was used in this study (McMillan & Schumacher, 2010). Since the aim was to determine the words most frequently and commonly used by preschoolers during typical preschool activities, this design was deemed appropriate, as it allowed the researcher to gather data about the participants' speech in their natural, everyday environment. This design allows for the collection of primary data, increasing the internal validity of the design (Creswell, 2009; McMillan & Schumacher, 2010). A disadvantage of this design is that participants' behaviour may change because they are taking part in research (Jean, 2013). Children's spoken output may therefore have been influenced and consequently altered by the presence of the recorders and their knowledge of the fact that they were being recorded. This could threaten the internal validity of the research (see Section 3.9.5). Another disadvantage of observational designs is that the sample size is typically small and limited to one geographic location or facility (Carlson & Morrison, 2009), therefore limiting generalisability (i.e. external validity).

3.4 Stages of the study

Ethics approval was first obtained from the relevant authorities, as explained in Section 3.9. A pilot study was also carried out to test the validity of the proposed data collection and analysis methods (see Section 3.8).

The main study consisted of three stages, as illustrated in Figure 3.1.

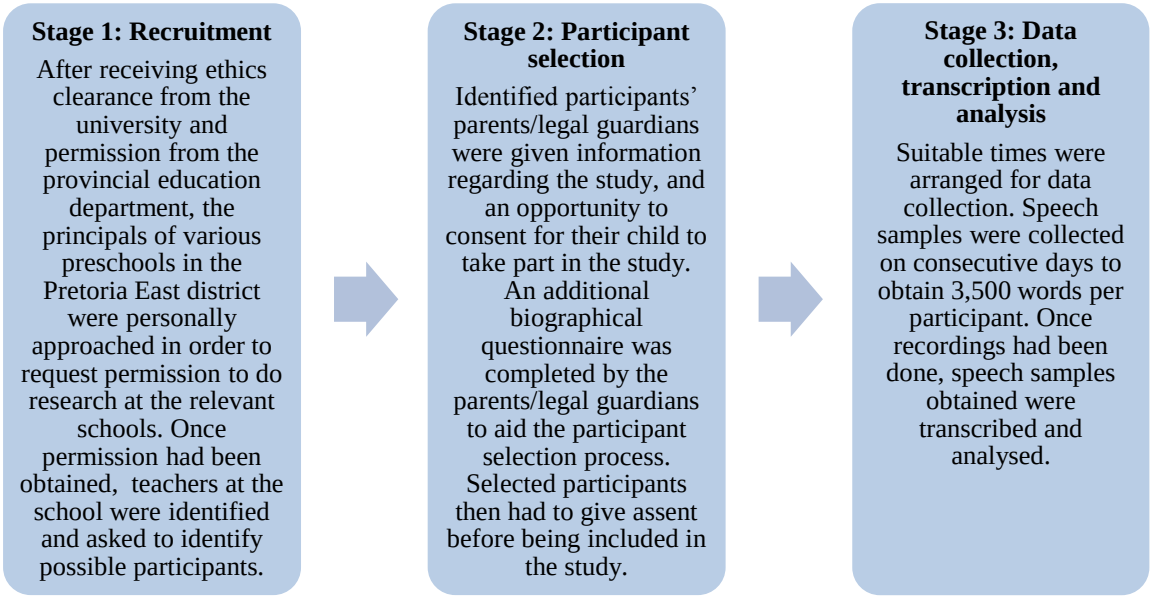

Figure 3.1. Stages of the study.

3.5 Setting

Three preschools with Afrikaans as the language of instruction were selected in the City of Tshwane Metropolitan Municipality, situated in the Gauteng Province. Gauteng is the province with the second highest proportion of Afrikaans home language speakers, with 12.4% of its population speaking Afrikaans as home language, amounting to 1,502,940 individuals (Statistics South Africa, 2011). The City of Tshwane Municipality is situated in Northern Gauteng and incorporates the city of Pretoria at its centre. According to 2011 statistics, the City of Tshwane Municipality consists of an area of 6 297.83 km², with a population of 2,921,488 (463.89 per km²) and 911 536 households (144.74 per km²) (Statistics South Africa, 2011). In the City of Tshwane 18.8% of the population speak Afrikaans as home language (Statistics South Africa, 2011).

All three preschools (Sites 1 to 3) that formed part of the study were situated in the east of Pretoria, Gauteng. All three selected schools had Afrikaans as the primary language of instruction. Two of the three schools formed part of a public primary school, which had pupils up to Grade 7, while the third was a private preschool, which only catered for toddlers and children up to Grade R. With regard to socio-economic status (SES), all three schools were located in a relatively high-income area. Parents/legal guardians were expected to pay annual school fees ranging from R33,000 to R39,425 per year for a child enrolled for a full

day (eight hours). For children enrolled half-day, fees ranged from R24,666 to R26,775 per year. These fees suggest that all three schools were located in a rather affluent area.

All three schools opened at approximately 07h00 each morning with play-based activities or free play during the arrival of all the children. This was followed by various daily activities such as clean-up time, Bible reading, toilet routine, outside play time, story-reading time, snack and lunch times, theme-based discussions on different topics, arts and crafts, life orientation activities, as well as specific subject-centred activities such as mathematics, Afrikaans and English. All children were dismissed between 12h30 and 13h00, when they could either be picked up at school or remain at school as part as the full-day programme. The above-mentioned activities were similar in all the relevant schools. Preschool children at each school had varying amounts of involvement with the children from other classes. While Sites 1 and 3 shared the playground and playtime with children from the age groups below Grade R, Site 2 had a separate playtime during which they could only interact with preschoolers from the other Grade R classes. See Table 3.1 for additional information about the sites.

Table 3.1

School Site Information

Site (school)	**Class**	**Number of of boys and girls**	**Age range of students (youngest to oldest)**	**Number of teacher assistant(s)**	**Exposure to other languages**
S1 [a]	A	7; 8	5 - 6 yrs	None	English
S2	A	14; 10	5 - 6 yrs	1	English
	B	14; 10	5 - 6 yrs	1	English
S3	A	12; 16	5 - 6 yrs	1	English
	B	13; 16	5 - 6 yrs	1	English

[a] *Site 1 had only one Grade R class*

3.6 Participants

3.6.1 Sampling and recruitment

For this study, convenience sampling (McMillan & Schumacher, 2010) was used to recruit 12 Afrikaans-speaking preschoolers aged 5; 0 to 6; 11. These participants had to meet the selection criteria (see Section 3.6.2). Published core vocabulary studies have involved various numbers of participants, ranging from six to more than 50 participants (Banajee et al., 2003; Beukelman et al., 1989; Robillard et al., 2014; Trembath et al., 2007). The TNW found in speech samples per participant ranged from 1,900 to 3,000 (Banajee et al., 2003; Trembath et al., 2007). It was therefore deemed sufficient to include a total of 12 participants in this study, with a total of 3,500 words to be collected per participant. Prior to recruitment of the relevant participants, the study was approved by the Research Ethics Committee of the Faculty of Humanities of the University of Pretoria (Appendix C). Permission was also received from the Gauteng Department of Education to approach preschools under its auspices for the recruitment of participants (Appendix D).

Three reasonably accessible preschools (within a radius of 50 km of the researcher's residence) with Afrikaans as the primary language of instruction were identified in the east of Pretoria. The heads or principals of the preschools were personally approached to request permission to recruit participants from their schools. Prior to data collection, a detailed information letter and a permission form were hand-delivered to the principals of the selected preschools (see Appendix E). Six schools were initially approached and five gave permission to conduct research at their schools. When enough participants were recruited at the first three schools, the principals at the other two schools were thanked for their willingness to take part but no data was collected from children enrolled at these schools.

After permission had been obtained from the principals, Grade R teachers were requested to identify one male and one female participant in their classes[7] whom they regarded as 'typical' speakers with age-appropriate speech and language skills, but no additional developmental concerns. The teachers were provided with detailed information letters explaining all necessary aspects of the study, as well as consent forms (see Afrikaans

[7] In the case of Site 1, the teacher of the Grade R class identified one boy and one girl for the pilot study, and an additional boy and girl for the main study. The data from pilot participants was included in the main study.

originals and English translations provided in Appendix F), which they were then requested to send to the parents/legal guardians of the potential participants they had identified. The information letters included information about the purpose and duration of the study, as well as the proposed use of the data obtained. The rights of the participants and parents/legal guardians were also explained in the letter, which will be discussed in more detail in Section 3.9.1 of this chapter. Parents/legal guardians who consented to their children taking part were requested to complete a biographical questionnaire (Appendix G), which included information on the specific participants' home environment, language exposure and developmental milestones. This questionnaire was used to ensure that potential participants did indeed meet the selection criteria. Of the original 12 parents/legal guardians approached, 11 gave consent. One did not provide consent, and the teacher then sent another information letter, consent form and biographical questionnaire to the parents/legal guardians of another child in her class. These parents consented to their child participating in the study. Teachers were provided with an information letter providing the necessary information regarding the study (Appendix H). Through this letter they were also requested to complete a preschool background questionnaire containing some general questions on the class setup (Appendix I).

After consent had been obtained from parents/legal guardians, an appointment was made with the relevant schools to meet the potential participants. Based on the assent procedure used by Trembath et al. (2007), the researcher met with each potential participant individually and explained all aspects of the study in child-friendly language, using a script (see Appendix J for Afrikaans original, as well as English translation). Visual support material was also used to enhance comprehension. Children were informed that their participation was completely voluntary and that they would suffer no negative consequences if they chose not to participate. The researcher gave the children an opportunity to indicate verbally whether or not they chose to participate in the study. They were also asked to indicate their answer by marking a picture on the assent form with a pen or marker to indicate 'yes' or 'no' (Appendix K). Twelve children were approached and all 12 agreed to take part in the study.

3.6.2 Participant selection criteria

The participant selection criteria are presented in Table 3.2

Table 3.2

Participant Selection Criteria

Criteria	Justification	Measure used
Afrikaans as home language, and also as the language of instruction (defined as language used by the teacher when instructing the whole class) in the preschool where he/she was enrolled.	The aim of the current study was to determine an Afrikaans core vocabulary for the design of Afrikaans AAC systems. Since South Africa is a multilingual society, most South Africans are exposed to other languages, such as English. Participants were therefore not excluded based on exposure to other languages, but were expected to be exposed primarily to spoken Afrikaans at home and at school.	Biographic questionnaire (Appendix G). Preschool background questionnaire (Appendix I).
Age: 5; 0 to 6; 11.	By the age of five years most children with typical language development use a wide range of different sentences, roots and morphological components, as well as most language-related sounds and syllables (Owens, 2012). Their language structures therefore resemble adult language.	Biographic questionnaire (Appendix G). Teacher report.
No teacher or parental concerns about language development and no history of language impairment or delay.	The core vocabulary should reflect the vocabulary used in typical conversations by preschoolers without language delays or impairments. Any participants with a history of disfluency, diagnosed articulatory disorders and phonological and language disorders were excluded from the study.	Biographic questionnaire (Appendix G). Teacher report documented on preschool background questionnaire adapted from Mngomezulu (2017) (Appendix I).
No developmental concerns or delayed milestones of general developmental domains as reported by teacher or parent(s).	Participants with reported developmental concerns or delayed milestones were not included in the study. This was done as delays in other developmental areas may have an influence on an individual's language development (He, Walle, & Campos, 2015; Walle & Campos, 2014).	Biographic questionnaire (Appendix G). Teacher report.
Period of preschool attendance: Two months prior to data collection, as well as weekly attendance of at least twice a week.	This criterion aimed to ensure that participants were well adapted to the preschool environment, since this can influence talkativeness (Andriacchi, Nockerts, & Miller, 2011; Trembath et al., 2007).	Biographic questionnaire (Appendix G).

Selection criteria did not include factors such as SES, parent education and ethnicity, as the aim was not to bias the sample according to these variables.

3.6.3 Participant description

A description of individual child participants is given in Table 3.3. The mean age across the participants was 5; 10. All participants had been enrolled in the preschool for an appropriate amount of time, while also being present on a daily basis. All participants were exposed to the radio, with six being exposed to Afrikaans, four to English, and two to both languages via this medium. All but one participant had exposure to television, with nine being exposed to English via this medium, and two to both Afrikaans and English. According to the information obtained from the biographical questionnaires, all participants were able to speak English, while all participants except for Participant 7 were also exposed to a language other than Afrikaans at home.

Table 3.3

Participant Description

Part. No.	Site	Gender (M/F)	Age (years; months)	Length of time attending preschool	Frequency of attendance	Primary languages exposed to over radio	Primary language exposed to over television	Other languages exposed to at home
P1 [a]	1	F	6; 10	4 Years	Daily	Afrikaans	n/a	English
P2 [a]	1	M	6; 10	5 Years	Daily	Afrikaans	English	English
P3	1	F	6; 1	4 Years	Daily	Afrikaans	English	English
P4	1	M	5; 2	3 Months	Daily	Afrikaans	English	English
P5	2	F	5; 5	1 Year	Daily	Afrikaans and English	Afrikaans and English	English
P6	2	M	5; 10	1 Year	Daily	English	English	English and Northern Sotho
P7	2	F	5; 5	3 Years	Daily	Afrikaans and English	Afrikaans and English	n/a
P8	2	M	5; 5	3 Years	Daily	English	English	English
P9	3	F	6; 0	2 Years	Daily	Afrikaans	English	English
P10	3	M	5; 11	2 Years	Daily	English	English	English
P11	3	F	5; 6	2 Years	Daily	English	English	English
P12	3	M	6; 2	3 Years	Daily	Afrikaans	English	English

[a] Participants 1 and 2 were part of the pilot study. Since the data gathered during the pilot study was considered reliable and valid, it was included in the main study. See also Section 3.8.

3.7 Materials and equipment

3.7.1 Equipment

3.7.1.1 Voice recorders and microphones

Language samples were recorded by using digital voice recorders (Olympus, model DM 650 and Philips VoiceTracer DVT6010) with lapel microphones (Audio Technica ATR 3350) – see Figures 3.2 and 3.3. The voice recorders were placed in small zipped pouches that were fitted around each participant's waist; while the lapel microphones were attached to their clothing's collars (see Figure 3.4).

Figure 3.2. Digital voice recorders (Olympus, model DM 650 and Philips VoiceTracer DVT6010).

Figure 3.3. Lapel microphones (Audio Technica ATR 3350).

Figure 3.4. Participant wearing the recording equipment.

3.7.2 Materials

3.7.2.1 Information letters and consent/permission forms

An information letter with all the relevant details pertaining to the study was provided to preschool principals, together with permission forms to obtain written permission to recruit participants and consequently conduct the study on the preschool premises (Appendix E). Relevant teachers as identified by principals were provided with information letters containing general information on the study, as well as the preschool background questionnaire (see Appendix I). An additional information letter was provided to teachers for distribution to parents/legal guardians, together with a consent form to obtain written consent for the participation of their children (Appendix F). All three letters, as well as consent/permission forms, were provided in Afrikaans. For the sake of readers who do not understand Afrikaans, English translations are available in the relevant appendices.

3.7.2.2 Child assent script and assent form

An Afrikaans script was used to explain all aspects of the study to the participants in a child-friendly manner. The script was accompanied by age-appropriate coloured pictures that were used to illustrate the most important aspects of the study to enhance and support the children's comprehension. Assent forms enhanced with pictures were used to obtain assent from the children. See Appendix J for the script and Appendix K for the assent forms used.

3.7.2.3 Preschool background questionnaire

A preschool background questionnaire (see Appendix I) was created to fulfil three purposes: (1) to ensure that Afrikaans was the primary language of instruction used in the class; (2) to gather data on the preschool environment for descriptive purposes; and (3) to enable teachers to nominate potential participants who were likely to fit the required selection criteria (see Section 3.6.2). Since this study is one of three known core vocabulary studies based on speech samples conducted in South Africa, descriptions of the preschool environment may assist in understanding possible similarities and differences in the core vocabularies found. Although the bulk of a core vocabulary is arguably not bound to one context, previous core vocabulary studies have shown that context may exert a nominal influence on core vocabularies in English (Mngomezulu, 2017; Trembath et al., 2007). The extent to which context influences core vocabulary in other languages with a different linguistic structure is not known. Information was therefore sought on the number of children in the specific preschool class, as well as the number of children in the whole preschool, age ranges catered for, staff-child ratio, possible exposure to languages other than Afrikaans and typical preschool activities.

3.7.2.4 Biographical questionnaire

Parents/legal guardians of participants were required to complete a paper-based Afrikaans biographical questionnaire (see Appendix G), that was used to (1) ensure compliance with selection criteria, particularly with regard to determinants such as school attendance, home language, language development and absence of speech and language, as well as general developmental concerns; and (2) gain additional descriptive information on participants, namely the child's exposure to other languages and his/her ability to speak other languages. Although it has been found in other studies that the core vocabulary of bilingual and monolingual French-speaking children did not substantially differ (see Robillard et al., 2014), the latter types of questions were included to describe the sample to contextualise results thoroughly.

3.7.2.5 Systematic Analysis of Language Transcripts software

Recorded language samples were transcribed using the SALT software (Miller & Iglesias, 2012). SALT can be used as a reliable tool to measure the oral or spoken language of individuals by analysing transcripts of an individual's speech utterances. It is used for language sample analysis and automates the process of obtaining descriptive statistics and

counts based on the transcripts. SALT was used to perform analyses such as word counts, determining the TNW, NDW, as well as the TTR (Watkins, Kelly, Harbers & Hollis, 1995). By using the automated analysis features of SALT, the probability of calculation errors was reduced.

3.8 Pilot study

A pilot study was done prior to the actual data collection process. This was done to test the equipment, materials and procedures, which included components such as the assent and consent procedures, as well as the actual collection of speech samples. Pilot studies can be considered an important component of a good study design (Hassan, Schattner & Mazza, 2006).

The pilot study involved two participants, one female and one male, from Class A at Site 1 (see Table 3.1). Participants were selected based on the selection criteria given in Section 3.6.2. Both participants had been attending the preschool daily, while also attending the school for four or more years. Both participants' home language was Afrikaans and they were exposed to English by means of either television or radio. Participants continued with their normal school routine throughout the course of the day. During the pilot study the teacher was requested to check the equipment bi-hourly. It was found that the data collected in the pilot study yielded quality recordings that were representative of an Afrikaans-speaking child. It was also noted that the equipment did not interfere with or interrupt the participants' participation in their regular school day activities. This data was therefore included in the main study. Table 3.4 summarises the aims, procedures and relevant adaptations that were made in the data collection process.

Table 3.4

Aims and Procedures of the Pilot Study

Aims	Materials	Procedures	Outcomes	Amendments made for main study
To determine whether the method of participant recruitment was efficient and suitable.	Teacher information letter (Appendix H), preschool background questionnaire (Appendix I), biographical questionnaire completed by caregiver (Appendix G).	Information regarding the study was given to the relevant teachers in a letter; they subsequently identified participants to take part in the study. Parents/legal guardians of children who consented provided information to indicate if children complied with the selection criteria.	It was found that the process followed for the recruitment of participants was successful. Principals gave permission, teachers nominated appropriate children and parents/legal guardians gave informed consent.	No change required.
To determine whether the informed consent process from primary caregivers was efficient and adequate.	Parent/legal guardian information letter and consent form (see Appendix F).	The relevant teacher handed the forms to the parents/legal guardians five days before data collection was scheduled to begin. Parents/legal guardians then returned the form to the teacher prior to the commencement of the pilot study.	Consent forms were given to the teacher a week before the data collection. Completed forms were received at least two days prior to the data collection.	No change required.
To establish whether the planned assent procedure was sufficient and easily understood by participants.	Assent script and assent forms (see Appendix J and K).	Each child was seen individually. The details of the study were explained to the child verbally in Afrikaans using a script, supported by pictures (see Appendix J). The participants were then asked a series of questions supported by pictures (see Appendix K) to determine whether or not they were willing to participate. They were asked to answer using speech and marking pictures on the form.	Both participants gave their full cooperation during the assent procedure. They did not have any additional questions.	No change required.
To establish whether the biographical questionnaire was concise, clear and easily understandable.	Preschool background questionnaire (Appendix I).	Preschool background questionnaires were sent to parents/legal guardians who completed them and returned them to the teacher.	Preschool background questionnaires were fully completed and parents/legal guardians did not raise any concerns. Some questions were somewhat	Three questions were adapted in order to be more concise and less repetitive.

Aims	Materials	Procedures	Outcomes	Amendments made for main study
			repetitive in nature and were deemed unnecessary.	
To establish whether the preschool questionnaire was concise, clear and easily understandable.	Preschool background questionnaire (Appendix I).	Preschool background questionnaires were given to relevant teachers who completed them and returned them to the researcher one to two days after receiving them.	It was found that the teachers understood the questions, with no uncertainties.	No change required.
To determine whether recording equipment interfered with the usual school day.	Lapel microphones (Audio Technica ATR 3350), digital voice recorders (Olympus, model DM 650 and Philips VoiceTracer DVT6010) and waist pouches to hold recorders (see Section 3.7).	Recording equipment was fitted at pre-arranged times by the researcher. Recorders were placed in a small padded pouch fitted around the children's waists, while microphones were attached to the collars of their clothing. Children were encouraged to ask for assistance if they became uncomfortable at any time while wearing the recorder.	Recording equipment was worn throughout the school day, and did not seem to interfere with any activity. The relevant teacher asked the participants bi-hourly whether they were comfortable or not. The teacher did not report that the pouches had to be adjusted or tightened. It was, however, noted that pouches with recorders inside were rather visible, which seemed to attract some attention, as perceived from the language samples obtained. This was mainly due to the shape and size of the pouches.	Padding was removed from the pouches to reduce the size in an attempt to decrease the visibility of the equipment. Smaller pouches were also used.
To determine whether equipment allowed for sufficient and continuous recordings of speech samples during appropriate times at the discretion of the teacher.	Digital voice recorders (Olympus, model DM 650 and Philips VoiceTracer DVT6010).	The 'hold' button on the recording equipment was activated to disable the 'stop' and 'pause' buttons – this would ensure continuous recording. Prior to the use of the recorders, the researcher ensured that they had sufficient battery power.	The researcher fitted and activated the recording equipment on Days 1-3. The recorders were left running for the whole school day, except when the teacher found it necessary to remove them. On the last day, the recording equipment was not fitted by the researcher, as the children took part in a water-based activity during the first part of the school day. The teacher was expected to fit the children, leading to the equipment not being switched on. As a result, no recordings were obtained on the last day.	Verbal instructions were given to teachers on how to handle equipment if necessary. The researcher flitted and activated the recorders herself every morning.

Aims	Materials	Procedures	Outcomes	Amendments made for main study
To determine whether relevant equipment produced high-quality speech recordings.	Digital voice recorders (Olympus, model DM 650 and Philips VoiceTracer DVT6010), Lenovo laptop (Model G50), and SALT software.	Recordings were listened to and transcribed by the researcher.	It was found that the recordings obtained were clear. Participants' speech was distinguished by loudness, as recording equipment recorded sounds and speech in close proximity to the participant.	No change required.
To determine whether a period of four consecutive days would be sufficient to obtain 3,500 words per child.	Lenovo laptop (Model G50), SALT software, transcriptions	Word counts were performed on the transcriptions using SALT analytics to determine if enough words had been recorded per child.	It was noted that 3,500 words (including unintelligible words) were collected within a period of two to three days.	No change required.
To determine the amount of time needed for children to become accustomed to the equipment. This amount of time would then be omitted from the analysis.	Transcriptions, Lenovo laptop (Model G50).	The transcriptions were inspected for any references to the recording equipment made by the child.	It was found that for the first 20 minutes of the recordings the children and participants conversed somewhat about the recording equipment. Thereafter it was noted in the samples that the participant seemed to continue with typical conversations. Throughout the course of the school day it was found that other children and the participant did make some reference to the recording equipment. These references where, however, not extensive.	The first 20 minutes of the first day of recording will be excluded from transcriptions in order to reduce the possible novelty effects of recordings, as well as to ensure participants become well-adjusted to the presence of the equipment. Additional utterances relating to equipment will be omitted from the transcriptions.

3.9 Procedures

3.9.1 Ethical issues

Prior to data collection, the study was approved by the Research Ethics Committee of the Faculty of Humanities of the University of Pretoria (Appendix C). Permission from the Gauteng Department of Education (Appendix D), and the principals of the relevant preschools (Appendix E) was also obtained. Furthermore, written informed consent from parents/legal guardians (Appendix F) and written (Appendix K) and verbal assent from participants were obtained prior to the commencement of the data selection process.

According to Beauchamp and Childress (2008), research involving human participants needs to comply with four ethical principles, which include (1) the principle of respect for autonomy; (2) the principle of non-maleficence; (3) the principle of beneficence; and (4) the principle of justice. This research study complied with these principles in the following manner:

Autonomy refers to the act of being independent without external influence contributing to one's decisions (Owonikoko, 2013). Informed consent contributes largely to autonomy. According to Parahoo (2006), informed consent refers to "The process of agreeing to take part in a study based on access to all relevant and easily digestible information about what participation means, in particular, in terms of harms and benefits" (p. 408). Informed consent is essential pertaining to research involving human participants. It is therefore important that those who participate in research understand exactly what the research entails before freely agreeing to participate (continuously) in the study. When legal minors are involved in research, proxy consent is required from their legal guardians, while the legal minors may be requested to give assent (Waligora, Dranseika, & Piasecki, 2014).

Parents/legal guardians of the participants were required to give written informed consent for participants to take part in the study (see Appendix F). To enable the parents/legal guardians of the participants to make an informed decision, they were given detailed written information on the nature of the proposed research (i.e. purpose, possible risks and benefits, duration, application of results and availability of results) in written Afrikaans format. It was made clear that they were not obliged to take part in the study and that participation was voluntary at all times. They were therefore able to withdraw their child from the study at any

given time without any negative consequences or repercussions. All data pertaining to the specific participant was to be destroyed if parents/legal guardians chose to withdraw their child's participation during the research process. Parents/legal guardians were encouraged to contact the researcher if they had any concerns or questions.

Participants were required to give written (see Appendix K) and verbal assent, as a minor's affirmative agreement to participate in research was required. Assent is used to express a participant's willingness to take part in a study (McMillan & Schumacher, 2010). To ensure understanding and consequently voluntary participation or assent, participants were met prior to data collection and all aspects of the research were verbally explained to the participants in an age-appropriate manner using child-friendly language and showing the child pictures to enhance comprehension. Children were informed that they were not obliged to take part in the study and that they were able to withdraw from the study at any time without any negative consequences. They were then given the opportunity to communicate whether or not they wanted to take part in the study by means of verbal and written assent. The assent procedure was based on Trembath et al.'s (2007) assent procedure. Continuous assent was ensured, as all participants had to indicate verbally at the commencement of each day of data collection whether they were still willing to take part in the study.

During the study it was attempted to minimise any potential risks or forms of disadvantage to the participants. This complies with the principle of non-maleficence, as this principle obliges the researcher to prevent intentional harm or injury to the participant and to minimise the risk of unintentional harm as best possible. Recording equipment was used and fitted in a way that would interfere as little possible with the regular preschool routine. Placing recorders into waist-worn pouches was intended to minimise interference with movements such as walking, running and sitting. Participants were instructed to ignore recorders as best they could and they were informed that if any damage were to occur to the equipment, they would not get into trouble. The nature of the study was also explained to them and they were therefore reassured that the process was not to test or evaluate them in any way, but solely for the researcher to listen to the words that they used throughout the day. In addition they were at all times encouraged to report any discomfort with equipment to their teacher or teacher assistants. Teachers were furthermore asked to monitor the children's comfort and experiences bi-hourly.

The principles of respect for autonomy and non-maleficence require the privacy of participants to be respected at all times during the study. Because of the invasive nature of the study, the participants and their parents/legal guardians were assured that only the researcher and research assistant would listen to the recordings and that their names and personal information would not be shared with any other individuals. They could also ask for the equipment to be removed in case they did not want a particular situation to be recorded. To comply fully with the requirements for confidentiality, participants' names were only known for administrative reasons to the researcher and research assistants who assisted with the transcriptions process. Names of individuals and specific places or locations that children mentioned while being recorded were replaced by codes during transcription (teachers: TN, names of places: PN, children's names: CN, and other adults: AN.), thus replacing any personal information and protecting their privacy. Data, including materials such as consent and assent forms, will be securely stored for 15 years at the Centre for AAC (University of Pretoria), whereafter the relevant data will be destroyed in 2032.

Regarding the principle of beneficence, there was no direct benefit to the participating children. However, the results will ultimately benefit the Afrikaans AAC society at large, as the data obtained and Afrikaans vocabulary could potentially be used and incorporated in the systems for individuals using AAC. This could empower them to communicate more independently with the vocabulary they require to have meaningful interaction with other communication partners.

The principle of justice refers to the moral obligation to consider the fair distribution of any potential benefits or burdens (Owonikoko, 2013). The principle of justice is therefore closely linked to fairness, entitlement and equality. It was intended to comply with the principle of justice as best possible, while simultaneously taking the nature of the study into consideration. The study was thoroughly explained to each participant's class by the teacher to clarify that participating children were neither positively nor negatively singled out from the rest.

3.9.2 Data collection

The main data collection procedures were preceded by obtaining permission from the school, parental consent and participant assent, as described in Section 3.6.1. Permission to

use particular schools sites, as well as parental consent, was obtained in advance, whereas the assent procedures occurred on the first day of data collection. Continuous assent was also received on subsequent days of data collection.

A predetermined time was arranged with the relevant teachers at the schools to familiarise them with the equipment and explain to them the guidelines on when to remove/refit the equipment and the procedures to follow to do so. Teachers were specifically asked to remove the equipment if they felt it was inappropriate or unsafe for the child to wear it during a particular activity. They were also asked to remove or readjust the equipment when the child requested it and/or reported any discomfort.

Times were then arranged for the researcher to fit the children with the recording equipment at the beginning of the school day. Participants who had given assent were required to carry body-worn digital audio-recording devices (see Section 3.7.1.1) in a small zipped pouch around their waist, while lapel microphones were attached to the collars of their clothing. The devices were switched on at the beginning of the day by the researcher. The relevant teachers were then instructed to switch off and/or remove the devices at their own discretion – if they felt it necessary (e.g., during activities when they felt it was unsuitable or unsafe for children to wear the equipment), and to refit/turn on the recorders again when possible. Before fitting the child with the equipment, verbal assent was once again obtained, and children were reminded that they should not remove, readjust or play with the recorders during the course of the day, but should seek assistance from a teacher or teacher assistant if they experienced any discomfort or wanted to stop wearing the recorders.

At the end of each school day the relevant teacher removed the recording equipment and body-worn pouches from the participants, whereafter the researcher collected the equipment from the schools as pre-arranged with the teachers.

The aim was to gather high-quality recordings from each participant that amounted to transcriptions of 3,500 words (including unintelligible words and utterances) per participant The number of words per participant was based on a study by Trembath et al. (2007). The number of days and the recording times required to reach a total of 3,500 recorded words per participant are given in Table 3.5 below.

Table 3.5

Participant Data Collection

Participant	Recording time	Number of days
P1	3 hours, 02 minutes	2
P2	2 hours, 26 minutes	2
P3	2 hours, 16 minutes	2
P4	4 hours, 36 minutes	3
P5	3 hours, 56 minutes	2
P6	3 hours, 45 minutes	1
P7	4 hours, 45 minutes	2
P8	3 hours, 44 minutes	2
P9	3 hours, 17 minutes	1
P10	5 hours, 09 minutes	3
P11	6 hours, 50 minutes	3
P12	6 hours, 15 minutes	3

3.9.3 Data analysis

3.9.3.1 Transcription

The first 20 minutes of the recordings were discarded to ensure optimal results and increased validity. This was done to exclude potential data that might have been affected by the novelty effects participants might have experienced owing to wearing the recording equipment. In addition, any subsequent utterances relating to the equipment or data collection process were also excluded from the transcriptions, as these may have had an influence on the vocabulary presentation (Trembath et al., 2007). Recordings obtained were transcribed into SALT software (Miller & Iglesias, 2012). All selected samples were transcribed verbatim (word for word) by the researcher, using relevant transcription rules (Appendix L). These were compiled based on the protocol used by Trembath et al. (2007), as well as the transcription rules suggested by SALT (Miller & Iglesias, 2012) and included rules about the transcriptions of vocalisations, pronunciation variations and the transcriptions of character names and vocabulary belonging to songs and chants. Additional rules were added based on the linguistic characteristics of the Afrikaans language. One SALT file per participant was initially created during transcription. Some SALT analyses were done of these individual

files, whereafter these files were copied into one composite file to allow analysis of the whole sample.

3.9.3.2 Coding

Additional codes or tags were added by the researcher to ensure that inflectional morphological variations of nouns, verbs, numerals, pronouns and adjectives were traceable to the uninflected root form of the word (see Appendix M).

3.9.3.3 Data analysis

The SALT program was used to calculate a standard measure report, which obtains data relating to the TNW, the NDW, as well as the TTR. The TTR refers to the ratio obtained by dividing the total NDW (i.e. type) by the TNW (i.e. tokens) in a transcription. A high TTR would be indicative of a high degree of lexical variation, whereas a low TTR would indicate a low degree of lexical variation (Kettunen, 2014). In addition, word root tables were used to examine the frequency of occurrence of words.

The above-mentioned parameters were determined and examined for each of the 12 participants, as well as collectively within the composite sample containing the data from all the participants.

The word root tables also allowed inflected forms of words to be traced back to the root that had been chosen to represent the word. For example, in Afrikaans the words *katte* (cats) and *katjie* (kitten or small cat) are forms related to the same root word, *kat* (cat), being the root form or most basic form as such. Word root tables were also inspected to determine word commonality scores and ‰.

Since no distinctions were made in the transcriptions between words with the same orthographic forms but two or more distinct meanings and/or functions, a three-step process was necessary to determine the core vocabulary. First, the frequency and commonality criteria were applied. This meant identifying words that occurred with a frequency of at least 0.5 per 1,000 words (i.e., 0.5‰) and that were used by at least six or 50% of the participants (i.e., commonality score of 6). This operationalisation of a core vocabulary was based on previous research (Balandin & Iacono, 1999; Beukelman et al., 1984; Dark & Balandin, 2007; Stuart & Beukelman, 1993; Stuart et al., 1993).

The second step involved identifying whether words that met these criteria were potentially separable into words with different meanings and/or functions (that just happened to share the same orthographic representation). This involved homonyms, English units or code switches with the same orthographical representation as Afrikaans words, as well as words that were spelled the same but with distinct qualities regarding classification according to parts of speech (related to polysemy). Examples of each of these instances are given in Table 3.6.

Table 3.6

Examples of Words with the Same Orthographic Representation but Distinct Meaning and/or Functions

Instance of a word having multiple meanings and/or part of speech classification but one orthographic form	**Example**	
	Orthographic form	**Distinct meanings/functions as explained by English translation**
Homonym	*by*	1. Noun: ‘bee’ 2. Preposition: ‘at’, ‘by’
English code switch vs. Afrikaans word	*of*	1. Afrikaans conjunction: ‘or’ 2. English code switch: ‘of’
Distinct parts of speech	*al*	1. Numeral: ‘all’, ‘all of’ 2. Adverb: ‘already’, ‘yet’

This was done to avoid oversampling of a specific orthographic form that had two or more distinct and unique meanings and functions. Each word that provisionally met the frequency and commonality criteria was therefore looked up in the dictionary (Botha, n.d.; Odendal & Gouws, 2005) to determine if it had more than one meaning and/or classification in terms of parts of speech. If so, the word was traced in the composite sample and it was determined from the linguistic context which meaning/part of speech was intended by the speaker. If more than one meaning/function of the word could be discerned from the transcript, the word was separated into its respective meanings/functions and the frequency and commonality score of each distinct meaning/function was recalculated as part of Step 3. For example, originally the vocabulary list indicated that the homonym *by* was used with a frequency of 2.9‰. Since this word can be used as a noun (bee) and as a preposition (at/by), each occurrence of the word in the sample was inspected and classified as either a noun or a preposition. It was found that the word was used at a frequency of 0.05‰ (≈ 0.1‰) in the form of a noun (singular and plural) and a frequency of 2.85‰ (≈ 2.9‰) in the form of a

preposition. The usage of the word *by* as a noun therefore had a frequency lower than 0.5‰ and was consequently excluded from the core vocabulary list. The use of *by* as a preposition was retained in the core vocabulary with a frequency score of 2.9‰. After excluding the noun form of *by* the commonality score had to be re-examined to determine if the preposition form was still used by six or more of the participants. It was found that the preposition form of *by* still had a remaining commonality score of 12, thus justifying the inclusion of the word in the core vocabulary list.

This was also done for English code switches with the same orthographical representation as Afrikaans words, as well as instances were words were not necessarily homonyms as such, but belonged to two or more distinct parts of speech with identical orthographic representations (related to polysemy). Once this process was complete, the final core vocabulary list was established.

The final core vocabulary list was then also classified according to structure versus content words, and analysed in terms of parts of speech. Classification into parts of speech was done according to the *Woodeboek van die Afrikaanse Taal* (WAT) [Dictionary of the Afrikaans Language] (Botha, n.d.) and the *Verklarende Handwoordeboek van die Afrikaanse Taal* (HAT) [Explanatory Pocket Dictionary of the Afrikaans Language] (Odendal & Gouws, 2005).

3.9.4 Reliability of data

3.9.4.1 Transcriptions

The reliability of transcriptions was checked by randomly selecting 20% of the recordings (based on recording time) per child and allowing a second independent transcriber to transcribe this portion of the recordings, as suggested by Ayres and Ledford (2014). This research assistant (qualified on tertiary level) was fluent in written and spoken Afrikaans. The research assistant was familiarised with the transcription rules (see Appendix L) and had a written copy available to refer to. Table 3.7 gives an overview of the recording time per child required to reach the 3,500-word mark, and the amount of time that constituted 20% of the recording.

Table 3.7

Participant Data Collection

Participants	**Recording time**	**Recording time for interrater validity (i.e. 20% of sample)**
P1	3 hours, 02 minutes	36 minutes
P2	2 hours, 26 minutes	29 minutes
P3	2 hours, 16 minutes	27 minutes
P4	4 hours, 36 minutes	55 minutes
P5	3 hours, 56 minutes	47 minutes
P6	3 hours, 45 minutes	45 minutes
P7	4 hours, 45 minutes	57 minutes
P8	3 hours, 44 minutes	45 minutes
P9	3 hours, 17 minutes	39 minutes
P10	5 hours, 09 minutes	62 minutes
P11	6 hours, 50 minutes	82 minutes
P12	6 hours, 15 minutes	75 minutes

The transcription of the independent transcriber was compared to the original transcription generated by the researcher. The percentage of word-by-word agreement was determined by dividing the number of agreements by the sum of agreements and disagreements multiplied by 100 to get a percentage (Cucchiarini, 1996; Kazdin, 2011). The number of agreements describes the total number of words that were identically transcribed, whereas disagreements were counted when the independent transcriber added, omitted or substituted a word. This calculation (as below) was used to indicate a reliability score.

$$\text{Percentage agreement} = \frac{\text{number of agreements}}{\text{number of agreements} + \text{number of disagreements}} \text{x} \frac{100}{1}$$

The percentage of agreement obtained in the study was 80%. According to McMillan and Schumacher (2010), a percentage agreement between 80 and 100% can be considered reliable. Although a percentage agreement of 80% is therefore at the lower end of acceptability, this seems common for studies where real-time conversations are recorded (Mngomezulu, 2017; Robillard et al., 2014). Differences between the transcriptions could possibly be ascribed to environmental noise in the class and playground.

3.9.4.2 Coding

Reliability of coding was checked by randomly selecting 20% of the transcriptions, accounting for 700 words of the recordings per child. An independent coder (the same research assistant who did independent transcriptions) was expected to code this portion of each transcript according to the coding rules (see Appendix M). These coding rules were thoroughly explained to the research assistant, and he was also provided with the coding rules in printed format. As in Section 3.9.4.1, the percentage of agreement was determined by dividing the number of agreements by the sum of agreements and disagreements multiplied by 100 to get a percentage (Cucchiarini, 1996; Kazdin, 2011). The percentage of agreement for coding was found to be 82%, indicating acceptable coding reliability.

3.9.5 Validity

Validity refers to the credibility of the research – the degree to which observations made in the study match reality (McMillan and Schumacher, 2010). Observational studies are evaluated in terms of both internal and external validity (Carlson & Morrison, 2009). Internal validity refers to the degree to which the results are influenced in relation to the independent variable. External validity, on the other hand, refers to the extent to which the results obtained can be generalised (Carlson & Morrison, 2009; Howell, 2005).

The observer effect or Hawthorne effect refers to participants changing their behaviour because they are being watched or observed, therefore potentially influencing the outcome of the study (Rosenthal, 2005). This phenomenon threatens internal validity, but can be decreased to some degree by informing the participants that they should continue in a manner as natural as possible. Participants were put at ease, as it was explained to them that their personal information would be kept confidential at all times. The nature of the study was also explained to them and they were therefore reassured that the process was not aimed at testing or evaluating them in any way, but solely at listening to the words that they used throughout the day. As mentioned in Section 3.9.3.1, the first 20 minutes of recording were not transcribed, to avoid the novelty effect of wearing the recorder influencing the data. This procedure was aimed at increasing the naturalness of the recordings. Furthermore, any utterances referring to the data collection process or recording equipment were omitted from transcription, as this could influence the validity of the results.

Since the observations relied on recordings, the integrity of the functioning of the equipment had a direct bearing on the integrity (and validity) of the data collected. To optimise the functioning of the equipment, teachers and teacher assistants were guided on how to handle equipment. Participants were also requested not to adjust equipment but rather to ask for assistance. Furthermore, as mentioned in Section 3.8, a pilot study was done to identify potential threats to the functioning of the equipment.

As previously mentioned, external validity refers to the degree to which the results of a study can be generalised (Carlson & Morrison, 2009; Howell, 2005). In this observational study the biggest threat to external validity remained the small sample size within one geographic location or facility (preschools in the east of Pretoria). Data obtained was only relevant to certain school-based activities, as teachers and participants could choose to remove recording equipment during certain activities (which was reported by the relevant teacher on a daily feedback form). Equipment was rarely removed, as the participants did not request its removal. It was, however, removed twice at one site during break time, as requested by two of the participants. This decreased the generalisation to other environments, such as at home.

3.10 Summary

The aim of this chapter was to describe the research methodology chosen for this study. This included a description of the research aims (main and sub-aims). Furthermore, the research setting and participants were described, which included recruitment, criteria for selection, as well as descriptive criteria. A description of the materials and equipment was followed by a discussion of the pilot study – the participants, the aims, materials, procedures, results and recommended changes for the main study. Lastly, the procedures for data collection and analysis were discussed with attention to ethical, reliability and validity considerations.

CHAPTER 4

RESULTS

4.1 Introduction

The results of the present study are presented and discussed in the following chapter. The results are presented by means of graphs, tables and narrative paragraphs to summarise the results in a logical and structural manner. The results are organised according to the four sub-aims of the study. First, the whole corpus is described in terms of the TNW, the NDW and the TTR. Second, a core vocabulary is identified by following the three-step process described in Sections 3.9.3 and 4.3. The core vocabulary is described in terms of NDW, as well as the coverage (percentage of TNW in the corpus that is accounted for by core words). Third, the words found in the core vocabulary are classified according to content versus structure words, as well as by parts of speech. Last, the Afrikaans core vocabulary obtained is compared to its English counterparts.

4.2 Total number of words and number of different words

A word sample of 3,500 words per participant was collected over of period of one to three days. Recording times varied between two and seven hours (see Table 4.1). Words were counted based on orthographic spaces. The 3,500 words per participant included unintelligible words, phrases and utterances. After exclusion of the unintelligible units, the words collected per participant ranged from 3,108 to 3,419 words. The TNW, NDW and TTR per participant are also displayed in Table 4.1.

Table 4.1

Total Number of Different Words Used by Each Participant

Participant number	**TNW collected**[a]	**NDW**	**TTR**	**Recording hours**
P1	3,419	578	0.17	3 hours, 02 minutes
P2	3,413	458	0.13	2 hours, 26 minutes
P3	3,372	540	0.16	2 hours; 16 minutes
P4	3,242	602	0.19	4 hours, 36 minutes
P5	3,368	570	0.17	3 hours, 56 minutes
P6	3,253	447	0.14	3 hours, 45 minutes
P7	3,298	499	0.15	4 hours, 45 minutes
P8	3,271	521	0.16	3 hours, 44 minutes
P9	3,275	535	0.16	3 hours, 17 minutes
P10	3,362	535	0.16	5 hours, 09 minutes
P11	3,264	603	0.18	6 hours, 50 minutes
P12	3,108	568	0.18	6 hours, 15 minutes
M	3,304	538	0.16	4 hours, 10 minutes
SD	88,0	51	0.02	3 hours, 14 minutes
Total	39,645	3,304	0.08	50 hours, 01 minute

[a] After removal of unintelligible words, phrases and utterances

Participants used between 447 and 603 different words, with an average of 538 and a standard deviation of 51. Similarly, TTR ranged from 0.13 to 0.19 (*M* = 0.16, *SD* = 0.02). It is clear that participants did not vary greatly in terms of NDW and TTR. Little difference can be seen when comparing the number of different words used by the male and female participants. The male participants used an average of 525 different words (*SD* = 60.5, *Range* = 155), while the female participants used an average of 547 different words (*SD* = 36.92, *Range* = 104).

The composite sample across all 12 participants consisted of 39,645 orthographic words (i.e. TNW = 39,645). The NDW obtained from the composite sample as determined by the SALT software amounted to 3,304 different words, with an overall TTR of 0.08.

4.3 Core and fringe vocabulary

The core vocabulary was determined using the three-step process described in Section 3.9.3. After the frequency (≥0.5‰) and commonality (≥50%, or a score of ≥ 6) criteria were first applied, a list of 235 words was identified. When each of these words was subjected to scrutiny regarding possible multiplicity of meaning and/or function, it was found that 51 words in the unrefined core vocabulary list had two or more meanings and/or functions.

When separated into these meanings and functions, these 51 orthographically distinct forms mapped onto 117 different words. Each of these 117 words was inspected for commonality and frequency, and 60 words were consequently removed from the core vocabulary list, as they did not meet one or both of the criteria. Three orthographic forms (i.e., *lig*, *môre* and *oor)* were completely removed from the list, as none of the variations in meaning/function had a frequency and/or commonality score that was high enough. For the other 48 distinct orthographic forms, either one or two of the variations were retained. A total of 57 words were retained. Appendix N gives a summary of all homonyms or words with identical orthographic representation but different functions or parts of speech as identified in the provisional core list of 235 words, with their respective frequency and commonality scores. Post-refinement a final core vocabulary list of 239 words was established. A list of these core words with respective frequency data and commonality scores is presented in Appendix O.

The average commonality score of the 239 core words was 10 (*SD* = 2.0), with 98 words having a commonality score of 12 (100% commonality, i.e. used by all participants), and 14 words having the lowest score of 6 (50% commonality).

All the remaining words that did not have a frequency of 0.5‰ and above, as well as a commonality score above 6 (i.e. 50%) were considered to form part of the fringe vocabulary. This included the words that were excluded based on the second step of determining the core vocabulary. A total of 3,115 (including the 51 words that were separated) different words made up the fringe vocabulary identified in this study. These included the words originally not meeting the frequency and/or commonality criterion, as well as the 51 words (including homonyms, polysemes and other word variations) that were added after the core vocabulary had been refined. However, it has to be noted that the original 3,064 words (excluding the 51 words that were separated - words not meeting the frequency and/or commonality criterion) were not inspected for homonyms, English code switches with identical orthographic representation, or words belonging to different parts of speech performing different functions (i.e. polysemes). The number of different core versus fringe words is represented in Figure 4.1.

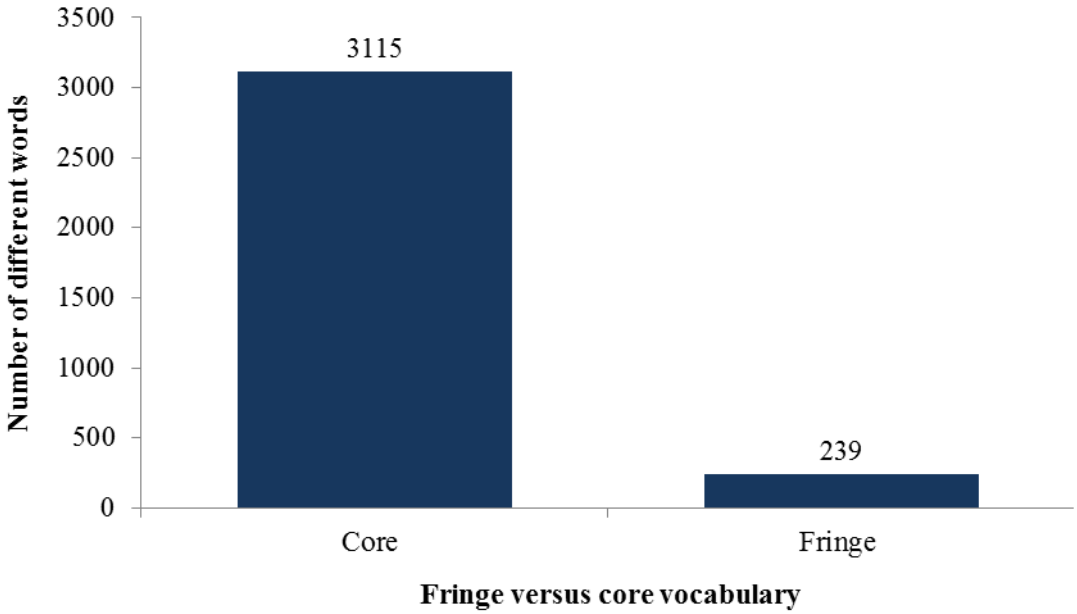

Figure 4.1. The number of different core versus fringe words.

The coverage of the core and fringe vocabulary was also determined. Coverage refers to the proportion of the composite sample that was 'covered' by core versus fringe words. Coverage of the core vocabulary was determined by summing all frequency counts of core words. Core words had a coverage of 79.4% (or 794‰) of the entire composite sample. Fringe words therefore covered the remaining 20.6% (or 206‰) of the sample. Figure 4.2 represents the coverage of core and fringe vocabulary.

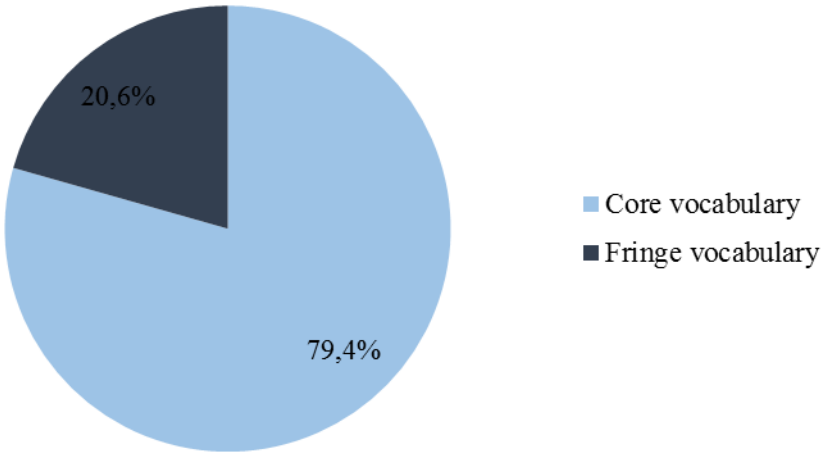

Figure 4.2. Coverage of core and fringe vocabulary represented as a percentage.

4.4 Content and structure words in the core vocabulary

The 239 words identified as core vocabulary in Section 4.3 were categorised into two broad categories consisting of content and structure words (Van Rooy, 2017) (see Chapter 2, Section 2.7.1). Of the 239 words in the vocabulary list, 76 were structure words and 163 content words. Figure 4.3 indicates the NDW that represent the content and structure words in the sample.

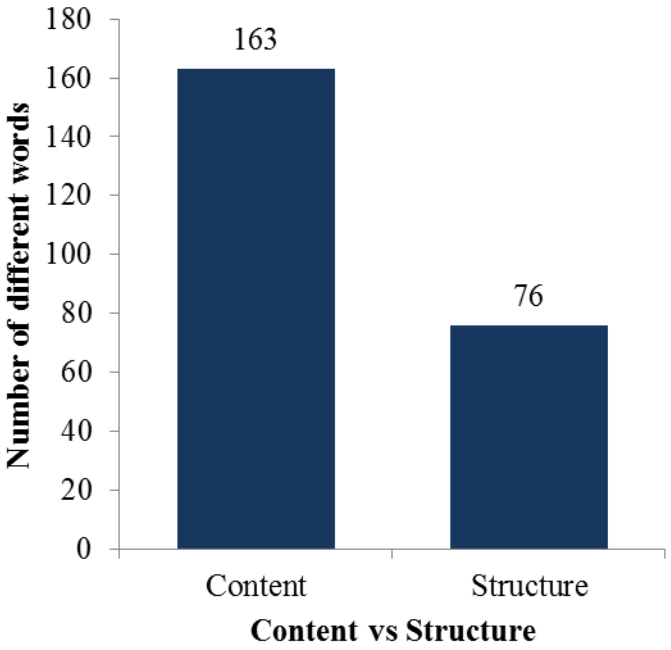

Figure 4.3. Number of different core words designated as content versus structure words.

The percentage of content versus structure words in the top (most frequently used) 20, 50, 100, 200 and total number of core words is provided in Figure 4.4. The percentage is expressed as a proportion of the top 20, 50, 100, 200 and total number of core words respectively.

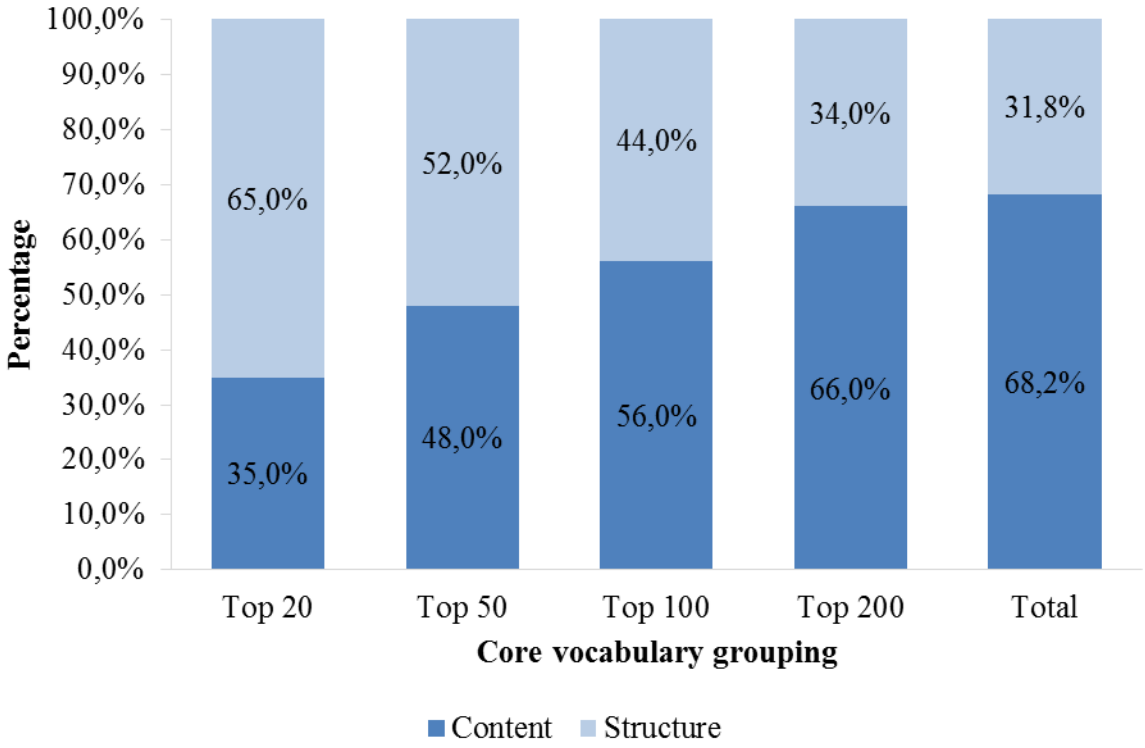

Figure 4.4. Percentage of content versus structure words in the top 20, 50, 100, 200 and total core vocabulary words.

Figure 4.4 shows the percentage representation of the content words compared to the structure words in the top 20, 50, 100, 200 and total number of core vocabulary words. Of the top 20 words, structure words constitute 65.0% of the words, whereas content words represented 35.0%. From this it can be seen that the percentage of content words increases as the number of words increases. Although there were more content than structure words (in number) in the core vocabulary, structure words were used only marginally less often than content words. While the total coverage of the core was 79.4%, 41.0% of words used during conversations were content core words, while 38.4% of words were structure core words. The remaining 20.6% were considered fringe vocabulary. Figure 4.5 shows the coverage of content core words, structure core words and fringe words.

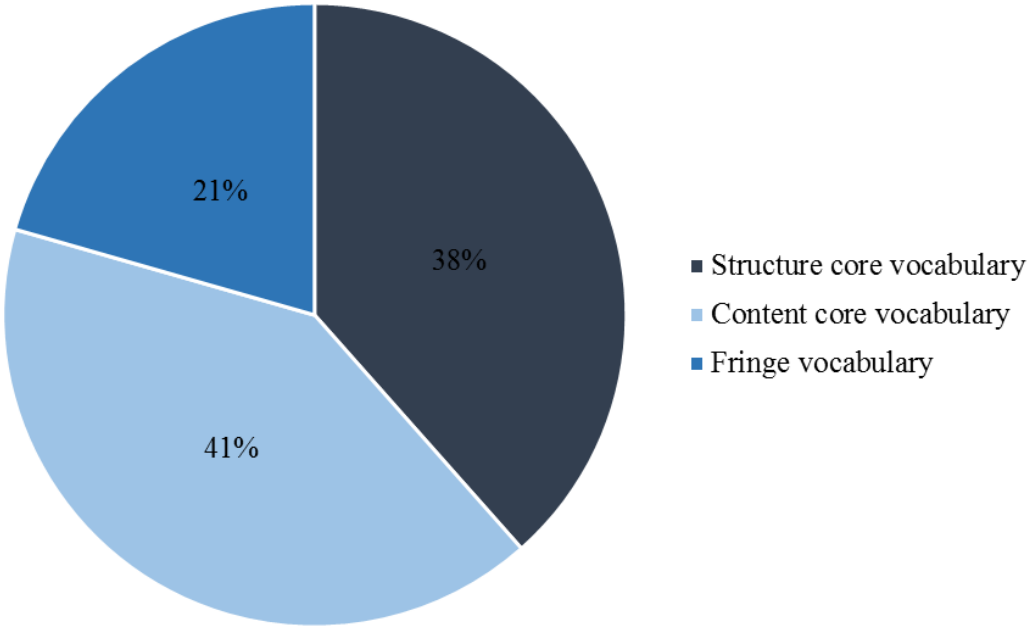

Figure 4.5. Coverage of content core and structure core versus fringe words expressed as a percentage.

4.5 Core vocabulary classification into parts of speech

To describe the core vocabulary further, core words were categorised according to parts of speech (Barnes, 1995) as described in the literature review (see Chapter 2, Section 2.7.1). The WAT (Botha, n.d.) and the HAT (Odendal & Gouws, 2005) were used to determine the specific parts of speech of each word. To the parts of speech were added a category called code switches and a category called miscellaneous. Code switches refer to alternations between languages in conversational speech, which is a commonly occurring sociolinguistic phenomenon (Barnes, 2011; van Dulm, 2007). Any songs, rhymes, sequential counting and word games formed part of the miscellaneous category (Mngomezulu, 2017). The different types of parts of speech and two additional categories, as well as the number of occurrences of different parts of speech, were determined in combination with the frequency with which different parts of speech occurred in the sample. The results are given in Table 4.2 and Figures 4.6 and 4.7.

Table 4.2

Core Words Classified by Parts of Speech

Parts of speech	NDW	Proportion in core (%)	Number of occurrences in the sample	Frequency of occurrence (‰)
Pronouns	29	12.1	8,013	202.1
Verbs	53	22.2	7,252	182.9
Adverbs	31	13.0	4,482	113.1
Interjections	22	9.2	2,345	59.1
Conjunctions	9	3.8	1,644	41.5
Articles	2	0.8	1,586	40.0
Nouns	29	12.1	1,362	34.4
Proper nouns[a]	3	1.3	1,178	29.7
Prepositions	10	4.2	1,138	28.7
Adjectives	21	8.8	960	24.2
Code switches	18	7.5	675	17.0
Numerals	9	3.8	499	12.6
Enclitics	2	0.8	337	8.5
Miscellaneous	1	0.4	22	0.6
TOTAL(S)	**239**	**100**	**31,493**	**794.4**

[a] The codes that were used, CN, TN and AN, were not differentiated. This might have led to an over-representation of proper names.

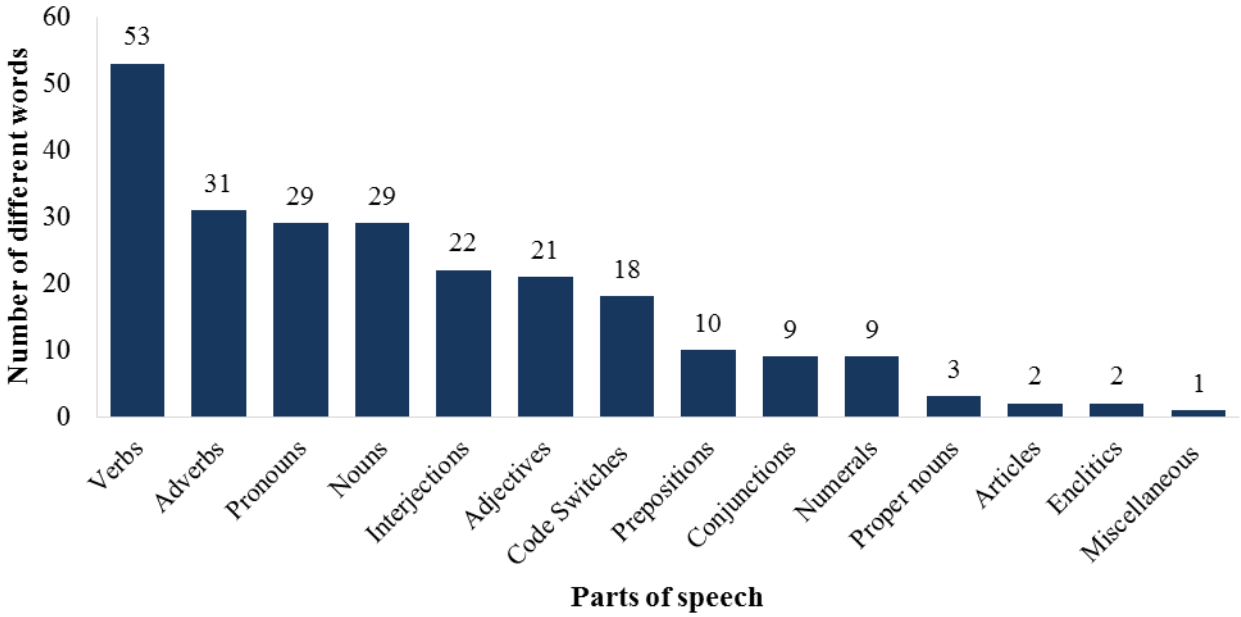

Figure 4.6. Number of different words per part of speech found in the core vocabulary.

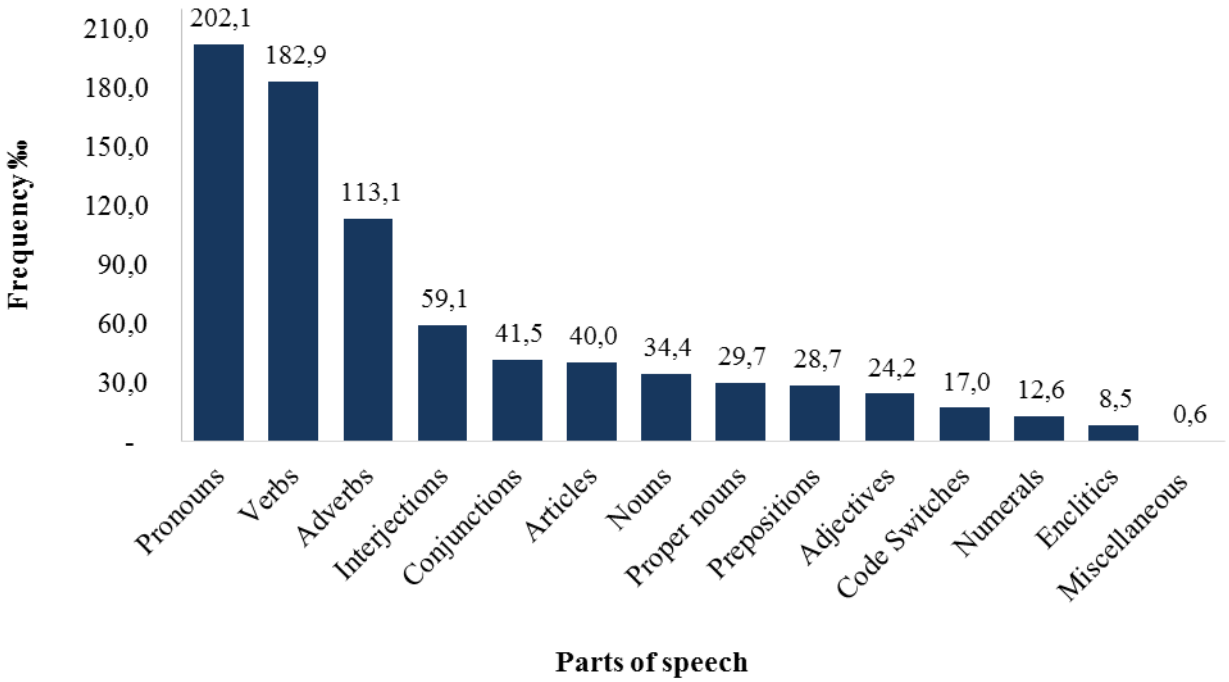

Figure 4.7. Frequency of use of core words classified into different parts of speech (‰).

From Table 4.2 and Figure 4.6 it can be seen that verbs have the highest NDW. This category contained 53 unique words. This was followed by adverbs (*n* = 31*)* and nouns and pronouns (*n* = 29 each). The categories miscellaneous words (*n* = 1), articles (*n* = 2) and enclitic words (*n* = 2) had the lowest NDW.

Regarding frequency of use, Table 4.2 and Figure 4.7 show that the part of speech most frequently used was pronouns, constituting 202.1‰ of the total sample. This was followed by verbs and adverbs, representing 182.9‰ and 113.1‰ of the total sample, respectively.

The NDW contained per category does not necessarily predict the frequency of use of that category. For example, 29 pronouns covered 202.1‰ of the sample, whereas 53 verbs covered 182.9‰. The category ‘articles’, on the contrary, contained only two words (*’n* and *die*), but accounted for 40.0‰ of the sample.

Below, the 14 different parts of speech that were found in the core vocabulary list are described in more detail.

4.5.1 Adjectives

Adjectives or *byvoeglike naamwoorde* form part of content vocabulary. Twenty-one different words were used a total of 960 times. Adjectives therefore constituted 8.8% of the core vocabulary and these core adjectives were used with a frequency of 24.4‰ in the sample. Closer examination of results showed that most adjectives were used in their root or uninflected form. Some words were, however, subject to inflection. This included the inflection or change that some adjectives undergo to show the attributive form (e.g. *Die lig**te** tas* versus *Die tas is lig* – meaning 'The light bag' versus 'The bag is light'), as well as comparative and superlative forms (e.g. *Die tas is swaar**der*** versus *Die tas is die swaar**ste*** – meaning 'The bag is heavier' versus 'The bag is heaviest'). Only one adjective in its attributive form (occurring five times) was included in the core vocabulary list (*lelike* – 'ugly'), whereas six adjectives were used in their comparative form (occurring 31 times) and seven in their superlative form (occurring 22 times). It was found that 14 adjectives were used in their uninflected form (occurring 902 times). Figure 4.8 represents the number of times adjectives occurred either in their original root (i.e. uninflected) form, as well as in inflected forms (comparative, superlative, attributive).

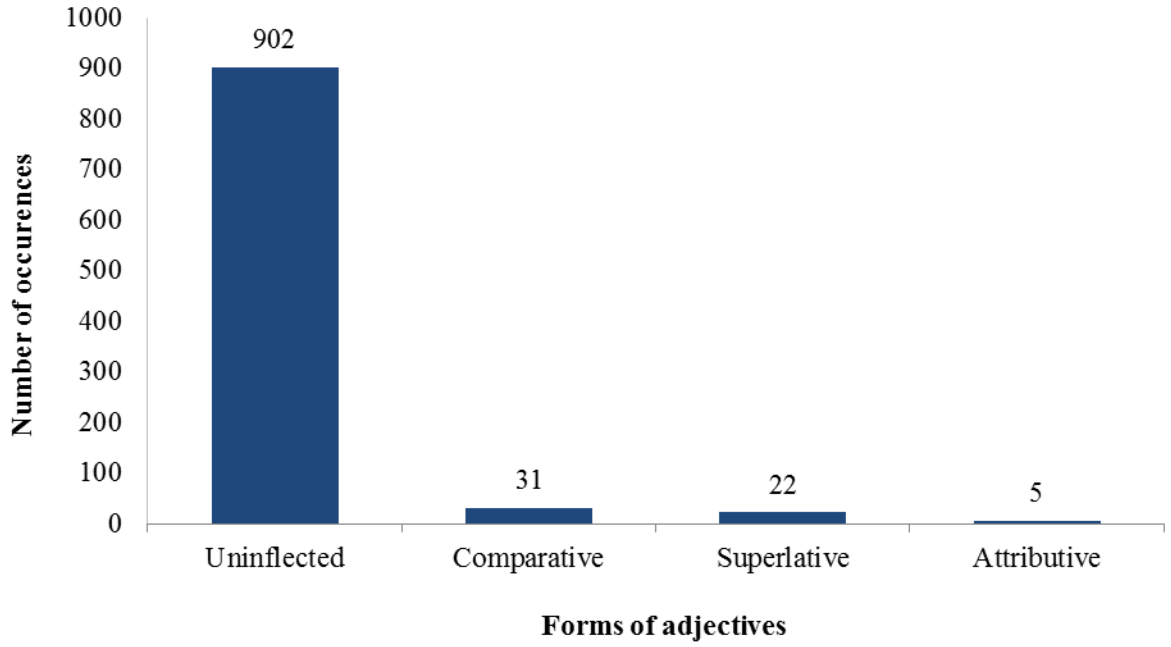

Figure 4.8. Number of occurrences of core adjectives in inflected and uninflected forms.

The most frequently used adjective was the word *lekker*, which occurred 89 times. Inflection of the root form of the word occurred in the form of degrees of comparison, being *lekker**der*** (comparative form) and *lekker**ste*** (superlative form). The word *lekker* is a frequently used Afrikaans word used to indicate the pleasant nature of something pertaining to food or activities. This differs somewhat from the original Dutch word, as the Dutch word *lekker* would only refer to food-related items, whereas the word 'leuk' would be used to indicate enjoyable activities.

4.5.2 Adverbs

Adverbs or *bywoord*e are typically words used to express the place, manner and time of things, and are considered content words. Thirty-one different adverbs were included in the core vocabulary, constituting 13% of the core vocabulary. They were used 4,482 times in the sample (frequency of 113.3‰). When compared to other parts of speech making up the core vocabulary, adverbs are ranked second highest with regard to the number of different words; however, they are the third most frequently used part of speech, after pronouns (occurring 8,013 times) and verbs (occurring 7,223 times). The most frequently used adverb of the 31 adverbs was the word *nie* (not). It is also the core vocabulary word with the third highest frequency, occurring 28.98 times per 1,000 words (i.e. 28.98‰). This high frequency might be due to the manifestation of the double negative, which is a specific and unique feature of the Afrikaans language (Donaldson, 1993). An example is *Die kind mag nie die bal skop nie* (The child may not kick the ball).

The two words *al* and *op* are both classified as adverbs, as well as separately being classified as a numeral and a preposition (see Appendices N and O). When the word *al* is used as an adverb, it means 'already'. It can, however, also be used to indicate quantity (all), therefore being classified as a numeral. Similarly, the word *op* (as an adverb) is used to indicate that something is finished, but it can also be used as a preposition to indicate the relative position of something. These two words were consequently counted as separate words, therefore each appearing twice in the 239 words of the core vocabulary list (see Appendices N and O).

4.5.3 Articles

Articles or *lidwoorde* are words used in combination with a noun, indicating the grammatical definiteness of the noun, and are considered structure words. Two different

articles were used in the sample, occurring 1,586 times. Articles were seen to have a frequency score of 40.0‰, while representing 0.8% of the core vocabulary. Only two different articles exist in Afrikaans; *'n* (indefinite article) and *die* (definite article). The article *'n* was the most used article with a frequency score of 20.5‰, occurring 812 times, whereas the use of the article *die* was only marginally lower with a frequency of 19.5‰, occurring 774 times. In the core vocabulary list a word with similar spelling or orthographic representation to the article *die* can be found represented as *dié.* This word is distinct in function from the definite article *die*, as it functions as demonstrative pronoun (as indicated by the acute or accent mark on the /e/) and should not be confused with the definite article. An example of the latter would be the sentence *Ek soek dié…* (translated as 'I want this [one]').

Even though the word class consist of only two words, it is interesting to note the high frequency of use, highlighting the importance of the inclusion of words such as these in AAC systems.

4.5.4 Code switches

Eighteen different articles were used in the sample, occurring 675 times. Code switches were seen to have a frequency score of 17.0‰, while representing 7.5% of the core vocabulary identified. Although this is not technically a part of speech, code switches were added as a category to describe words from languages other than Afrikaans that were identified in the core vocabulary. Words used in this category were divided between content and structure words according to each word's linguistic characteristics. Of the 18 words in this category, 13 were classified as content words and five as structure words.

All the code switches found in the core vocabulary were English words, with the three most frequently occurring words being; 'I' (84 times, 2.1‰), 'you' (62 times, 1.6‰), and 'a' (57 times, 1.4‰). Upon examining the linguistic context of the code switches, it seemed that they occurred mostly during free play or imaginative play. It was also found that most of the words were used in English utterances or phrases and as not that frequently as single English words in Afrikaans phrases (i.e. inter-sentential). English words were counted as linguistic units to determine whether a child using an AAC device might require words from another language. It is interesting to note that none of the words was a noun; they were mainly

pronouns (including the two most frequently used code swiches; 'I' and 'you') conjunctions, prepositions, adjectives, adverbs, articles and a small number of verbs.

4.5.5 Conjunctions

Conjunctions or *voegwoorde* can be regarded as the words that are responsible for connecting sentences with the same syntactic function and are classified as abstract relational units, therefore they are classified as structure words (Bechara, 2010). Nine different conjunctions were used in the sample, occurring 1,644 times. Conjunctions were seen to have a frequency score of 41.5‰, while representing 3.8% of the core vocabulary. In the core vocabulary the number of different conjunctions recorded was the fifth lowest number of different words. The conjunction *en* (and) was the conjunction used most often, with a frequency score of 16.6‰, used 658 times. The word *dat* was the least used conjunction, with a frequency score of 0.7‰, being used only 26 times.

4.5.6 Enclitic words

Enclitic words or *enklitiese woorde* usually comprise two words combined into one. Enclitic words were transcribed as the intended words except if represented otherwise according to the Afrikaans dictionaries (Botha, n.d.; Odendal & Gouws, 2005). In the core vocabulary two enclitic words featured, both structure words (Bechara, 2010) occurring 337 times, having a frequency score of 8.5‰ and representing 0.8% of the core vocabulary. The first, *dis* for *dit is* (it is) was used with a frequency score of 7.37‰ (used 292 times), whereas the second, *moenie* for *moet nie* (do not) was used with a frequency score of 1.14‰ (used 45 times). The word *dis* was the 19th most frequently used structure word and the 28th most frequently used core vocabulary word.

4.5.7 Interjections

Interjections or *tussenwerpsels* refer to words that can occur on their own and are used to express reaction or feeling (Crystal, 2008) and typically form part of structure words, for example *mmm,* indicating the pleasant taste or smell of something, and *hmm,* indicating agreement or affirmation. In the sample obtained, 22 different interjections were used 2,345 times, with a frequency score of 59.1‰ and representation of 9.2% of the core vocabulary. The most frequently used interjections were the words; *ja* (yes) and *nee* (no), used with frequencies of 16.6‰ and 11.9‰, respectively.

4.5.8 Miscellaneous

Words of songs, as well as lines and phrases used in word games, counting and rhymes were grouped under the category *miscellaneous*, and counted as one word. This was done to prevent possible disproportionate counting of words in the speech samples. Miscellaneous word units were considered as part of content words. Within the sample the phrase *een_twee_drie* (one_two_three) was the only linguistic unit that met the frequency and commonality criteria. This short phrase, used by 10 of the participants, was often used to indicate the start of an activity or song. This phrase was used 22 times, with a frequency of 0.6‰, and represented 0.4% of the total core vocabulary.

4.5.9 Nouns

The category of nouns or *selfstandige naamwoorde* was considered part of content words in the core vocabulary. Twenty-nine different nouns were used in the sample, occurring 1,362 times. Nouns were seen to have a frequency score of 34.4‰, while representing 12.1% of the core vocabulary. As mentioned in Section 2.7.1, nouns in Afrikaans are not subject to inflection to the same extent as some other Indo-European languages, but they are still subject to plural and diminutive inflection. Of the 1,362 times that nouns were used, 159 occurrences were in the plural form, 117 in the diminutive form, 84 in the plural diminutive form, and only one in the double diminutive form (*huisietjie or* 'small house'), with the remaining 1,001 nouns being used in their uninflected forms. Diminutive forms are commonly used in Afrikaans, especially in speech (Donaldson, 1993). Figure 4.9 shows the number of different nouns used in the forms mentioned above.

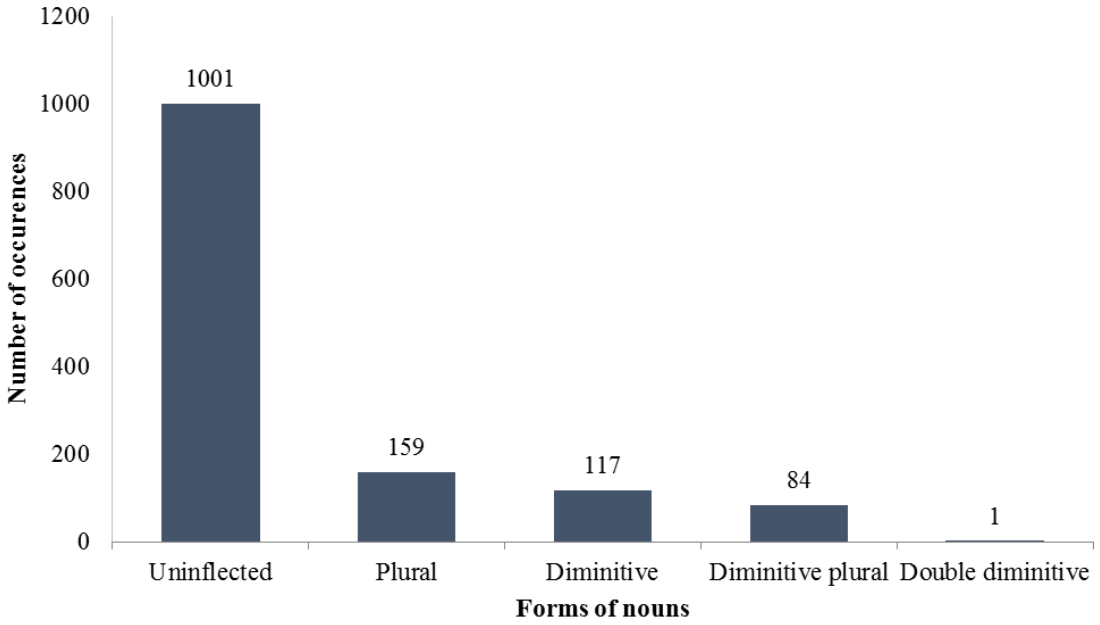

Figure 4.9. Number of occurrences of nouns in uninflected, plural, diminutive, diminutive plural and double diminutive form.

The most used noun, *juffrou* (teacher) occurred with a frequency score of 9.48‰ (376 occurrences) and was used by all the participants. It was used to address a female teacher and was seen to be the 20th most frequently used word in the core vocabulary list. It can be regarded as a contextual core vocabulary word, as it is specific to the educational realm and is unlikely to be used in other communicative environments (Mngomezulu, 2017; Trembath et al., 2007). The high occurrence of the word could furthermore be due to the fact that it is not acceptable to call a teacher by her name in the Afrikaans culture.

Other nouns may also reflect the context and timeframe of sampling, such as the word *blok* (block), that was used in its plural, *blokke* (blocks), diminutive *blokkie* (small block) and diminutive plural *blokkies* (small blocks) form. It was mostly used during free play, constituting a large portion of the recordings, as most of the data collection occurred just before the commencement of either the summer or autumn holidays. During this time children are usually allowed to have more playtime, as teachers are often occupied with assessment- or administrative tasks.

4.5.10 Numerals

Numerals or *telwoorde* are considered part of content vocabulary. In the core vocabulary nine different types of numerals were used 499 times (frequency of 12.6‰). Numerals were seen to have a frequency score of 12.6‰, while representing 3.8% of the total core vocabulary.

The word *een* (one) could be classified as both a numeral as well as a demonstrative pronoun, thus appearing twice in the core vocabulary list. It was used as a numeral with a frequency score of 1.9‰ (number of occurrences = 74). The same was seen for the most frequently used numeral, *al*, which was classified as both a numeral and an adverb, consequently featuring twice in the 239 words. The word (in the form of a numeral) had a frequency score of 2.1‰ (number of occurrences = 85). In the category of numerals only one ranking numeral, *eerste* (first) formed part of the core vocabulary, with a frequency of 1.4‰ (number of occurrences = 57).

In the results it was noted that two numerals were subject to plural or diminutive inflection. The first, *vier* (four) was subject to plural inflection, changing to *vier's* (fours), while the word *twee* (two) was changed to *tweetjies* ('small two's') thus being used in its plural diminutive form. Both words were used with a rather low frequency score of 0.1‰.

4.5.11 Prepositions

Prepositions or *voorsetsels* form part of structure words. Ten different types of prepositions were used 1,138 times with a frequency of 28.7‰, while representing 4.2% of the core vocabulary. The most frequently used preposition is the word *vir*, which can be translated as 'for' (e.g., *vir die eerste keer*—'for the first time') or 'to' (*Ek gee dit vir jou*—'I give it to you'). This word unit occurred 421 times, with a frequency of 10.6‰. The preposition *aan* (translated as 'on') is the least used preposition with a frequency of 0.5‰.

4.5.12 Pronouns

Pronouns or *voornaamwoorde* are considered to be structure words. In the core vocabulary list obtained, 29 different pronouns were used 8,013 times. Pronouns were the part of speech used with the highest frequency in the sample, having a frequency score of 202.1‰ or 20.2%, while representing 12.1% of the core vocabulary. The most frequently used pronoun *ek* (I), was also the most frequently used word overall (used with a frequency

of 47.2‰). As previously mentioned (see Section 4.5.9), the word *een* appears twice on the vocabulary list, since it can be classified as a demonstrative pronoun as well as a numeral.

It was furthermore noted from the results that five pronouns, having a total frequency score of 1.0‰, were subject to inflection. The pronoun *een* (one) had three different inflected forms (*enetjie, ene and eens*), whereas the remaining inflected pronouns had only one root variation. The remaining 24 pronouns that formed part of the core vocabulary were solely used in their original uninflected form.

4.5.13 Proper nouns

Proper nouns or *eiename* form part of content words. Three different codes occurred as proper nouns in the sample, occurring 1,178 times, while having a frequency score of 29.7‰. Proper nouns were found to represent 1.3% of the core vocabulary.

The three different codes included (1) CN – representing the names of children used in the sample; (2) TN – replacing the names of teachers; and (3) AN – replacing the names of any other adults mentioned that were not teachers. An additional code, PN, was used to replace the names of places or locations that featured in the language samples, but this was not used with a high enough frequency and commonality score to be considered part of the core vocabulary. It is clear that by using only one code to encode a variety of children's names, teachers' names and adult names, oversampling occurred, and individual names may not actually have occurred with a high enough frequency or commonality to be included in the core vocabulary. However, the frequency of these codes still highlights the importance of providing adequate access to the names of peers specific to an individual's needs. The arbitrary code (CN) used to replace the names of children in the recordings obtained featured in the top five words, occurring with a frequency of 27.7‰.

4.5.14 Verbs

Verbs or *werkwoorde* consist of lexical verbs (i.e. action and linking verbs) and auxiliary verbs. Action and linking verbs are content words, as they are seen to carry meaning independently. Auxiliary verbs are structure words, as they perform a grammatical function. Fifty-three different verbs were used 7,252 times, amounting to a frequency score of 182.9‰, while representing 22.2% of the core vocabulary. Of these 53 verbs, 42 were lexical verbs (i.e. action and linking verbs) with the remaining 11 verbs being auxiliary verbs.

The most frequently used verb was the lexical verb *is* (with inflectional variations; *was/wees/gewees*) with a frequency score of 41.6‰, being used 1,649 times. The second most used verb was the auxiliary verb *het*, with the least used verbs being *laat* (let), *tel* (count) and *werk* (work), all having a frequency score of 0.5‰ (number of occurrences = 20). The verb *werk* was classified as both a noun and a verb, thus occurring twice in the core vocabulary list (see Appendix N and O).

There is very little verbal inflection in Afrikaans (see Section 2.7.1). Thirty-eight of the verbs were used in both the present and past tense, as indicated either by the use of the past tense prefix *ge-* or an irregular past tense form. Regarding number of occurrences, it was seen that 500 verbs in the sample consisted of past tense core verbs, while uninflected core verbs occurred 6,752 times. This is demonstrated in Figure 4.10.

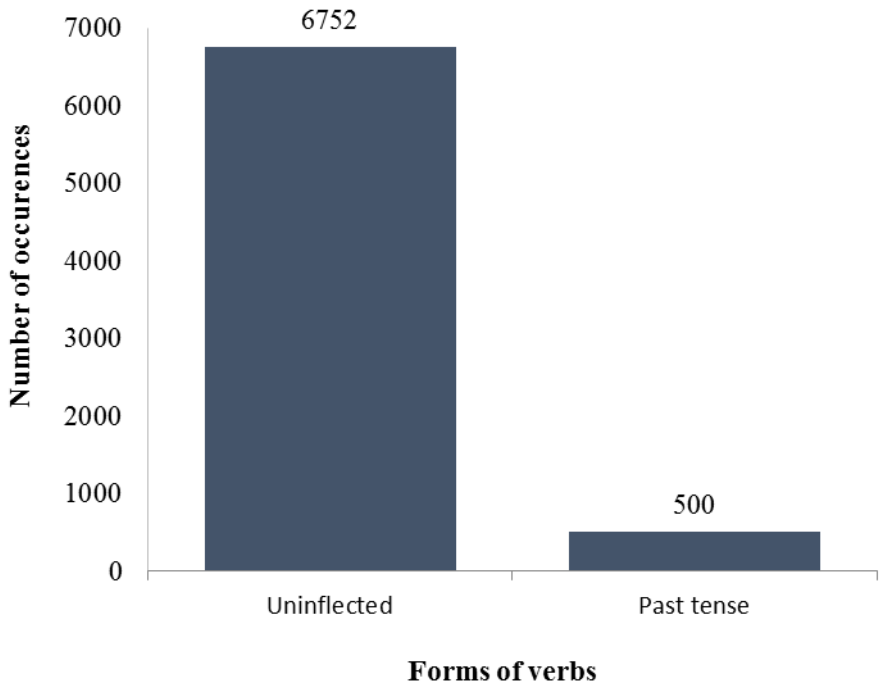

Figure 4.10. Number of occurrences of uninflected and inflected (past tense) verbs.

4.6 Comparison to English composite word lists

To examine the translatability of core vocabulary, two steps were followed. Firstly, the top 100 words of the Afrikaans core vocabulary obtained were translated into English according to the translations given by two Afrikaans-English dictionaries (du Toit, 2006; Kromhout, 2006). This meant that for some Afrikaans words in the list, more than one English word was given as a plausible translation, since words in different languages are not always exact translation pairs (Kilgarriff et al., 2014). All the translations of the 100 Afrikaans words according to *Patriot Woordeboek: Afrikaans-Engels* (du Toit, 2006) were then matched to the top 100 words of each of the five English core vocabulary list that had been used to compile the English composite list (see Appendix B). An Afrikaans word was considered to have an equivalent word in the English lists if at least one of its translations was identical to a word in the English list. Furthermore, if it was found that the Afrikaans word was translated by an English phrase, it was expected that all the words of the phrase had to be present in the composite list for the Afrikaans word to be regarded as having a counterpart in the English list. Appendix P gives the complete results of the comparison, while Table 4.3 indicates the number of words in the top 100 most frequently used Afrikaans words that had a counterpart in five, four, three, two, one, or none of the five English core vocabulary lists (taking only the top 100 words of each list into consideration). Figure 4.11 shows how many of the Afrikaans top 100 words had equivalents in the top 100 words of each of the English lists.

Table 4.3

Number of Afrikaans Words (from the Top 100 Most Frequently Used Words) that had Counterparts in Five, Four, Three, Two, One or None of the Top 100 Words from the Five English Core Vocabulary Lists

Number of Afrikaans core words	**Number of English lists in which equivalents were found**
55	5
13	4
4	3
9	2
3	1
16	0

Note. Only the top 100 most frequently used words of each list were considered.

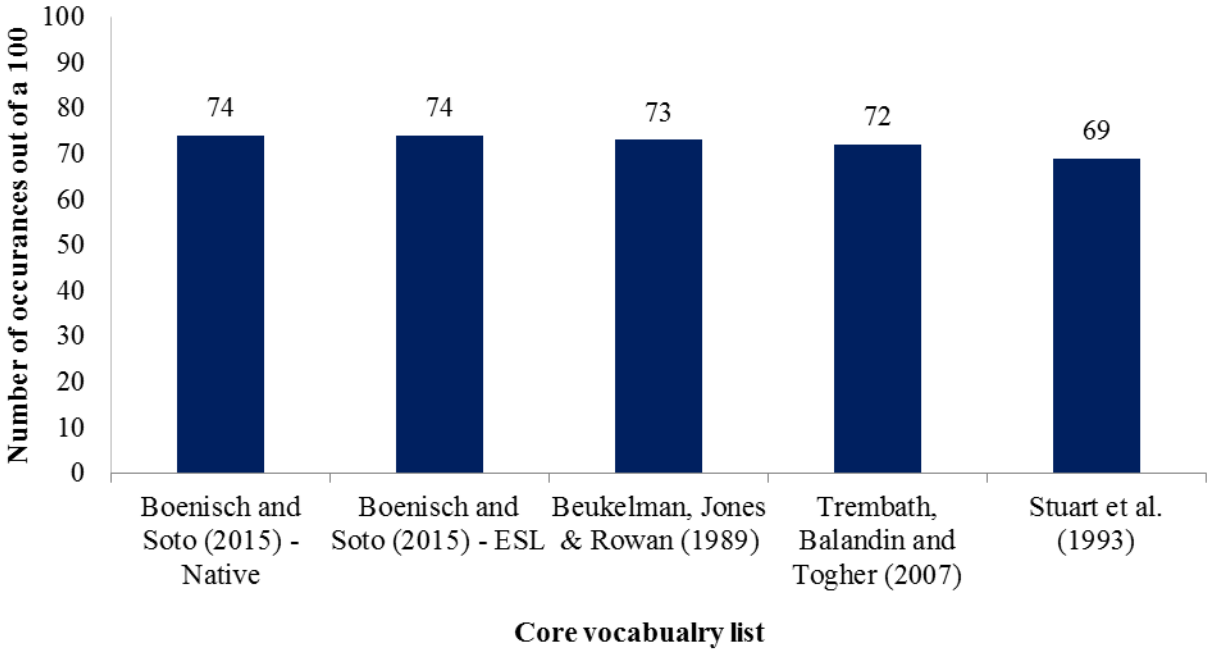

Figure 4.11. Overlap between top 100 Afrikaans words and top 100 words as identified in five English core vocabulary studies.

From the results is can be seen that 55 translated words occurred in all five of the lists, while 16 words could not be found in the English counterparts used in the comparison. Furthermore, most correlations between the words used were found to be used by Boenisch and Soto's (2015) native and ESL-speaking individuals, with the lowest number of correlations in Stuart, Vanderhoof and Beukelman's (1993) core vocabulary list.

4.7 Summary

In this chapter the results of the study were presented and discussed in more detail. First, the vocabulary obtained was described in terms of the TNW and NDW. Second, the core vocabulary was identified by applying frequency and commonality criteria. The NDW as well as coverage (frequency of use) of core versus fringe vocabulary was described. The core vocabulary was then further described by classifying core words into content versus structure vocabulary and also into different parts of speech. Lastly, the chapter closes with a comparison of the compiled Afrikaans core vocabulary to an English counterpart.

CHAPTER 5

DISCUSSION

5.1 Introduction

In this chapter the results of the study are discussed in more detail and interpreted in the light of previous literature. First the TNW and NDW obtained in the composite Afrikaans speech sample are described and compared to those found in other studies. This is followed by a discussion of the parameters of the most frequently and commonly used words (i.e. core vocabulary) in the light of previous findings. Similarly, vocabulary classification according to word characteristics (content and structure words, as well as parts of speech) is discussed and compared to that found in other core vocabulary studies. The chapter ends of with a final discussion regarding the translatability of the Afrikaans core vocabulary obtained. Throughout the chapter, the implications of the findings for vocabulary selection are highlighted.

5.2 Characteristics of the speech samples

The composite sample of the study was described with regard to its TNW (39,645), as well as its NDW (3,304) prior to analysis. A third important characteristic defined in the results was the TTR. In the study a TTR of 1:12 or 0.08 was found. This ratio indicates the number of unique words to the TNW in the sample (Kettunen, 2014).

When comparing the above-mentioned parameters to those of other studies, similar patterns were found across different languages, where the TNW or linguistic units used typically outnumbered the unique number of words or linguistic units by a considerable margin. It is therefore clear that speakers re-use many of the words/linguistic units over and over again as they speak. This re-use of words becomes more apparent as the TNW gathered in the corpus increases, as this evidently provides speakers with more opportunity to reuse words. In English studies, for example, TTRs vary from 1:29 or 0.03 (obtained by Boenisch and Soto [2015] from a total corpus of 98,053 words by 22 native English speakers) to 1:6 or 0.17 (obtained by Dark and Balandin [2007] from a total corpus of 7,586 words). A recent study by Mngomezulu (2017) identified an isiZulu core vocabulary, by determining the

frequency of use of formatives, which can be equated to a degree to a morphological level of analysis. From a composite sample of 20,137 formatives, 1,110 formatives were unique, resulting in a TTR of 1:18 or 0.06. These values are closely comparable to the current study, where a total number of 39,645 words yielded 3,304 different words and a TTR of 1:12 or 0.08.

The re-use of the same linguistic units is a characteristic of language that is partly responsible for its generative capacity. Speakers can therefore re-combine linguistic units such as words to create different meanings, as seen in sentences such as; 'the man chased the dog' versus 'the dog chased the man'. At the phonological level this combinatorial power is most striking, as a finite set of phones (e.g., 46 in English and 41 in Afrikaans) can be combined in various ways to express an unlimited number of meanings (Akmajian, Demers, & Harnish, 1979; Smith, 2006). At the next level (morphemes and/or words), the basic set of units is not finite (as new words appear in languages all the time), but the parameters of various spoken corpora show that many words and morphemes are still reused consistently. In contrast, many sentences that speakers construct are unique.

5.3 The Afrikaans core vocabulary and its characteristics

In the field of AAC, a core vocabulary is described as a relatively small number of words that is characterised by high frequency, while remaining relatively constant across different populations and environments (Baker, Hill, & Devylder, 2000; Banajee, Dicarlo, & Stricklin, 2003; Witkowski & Baker, 2012; Yorkston, Dowden, Honsinger, Marriner, & Smith, 1988). This means that a core vocabulary is characterised by a high proportion of re-use of words by and across speakers and in a variety of environments. The results of the current study confirm that such a core vocabulary could be identified in the Afrikaans speech sample, as it was found that 239 words accounted for 79.4% of the entire speech sample.

When comparing these results to other word frequency or core vocabulary studies, certain similarities and some differences were found. Regarding core vocabulary studies in English, the core vocabulary parameters (i.e. commonality and frequency scores) that were found in the four studies (i.e. five lists) and used to compile the English composite list (see Chapter 2, Section 2.6.4.1) are comparable to those found in the Afrikaans core vocabulary list. The unit of analysis considered in all five these lists was the same, as defined by the orthographic space during transcriptions. Some variation occurred between lists pertaining to

whether or not inflected forms of words were counted together or separately, as well as inclusion or exclusion of proper nouns. The results of these four studies are briefly discussed below.

Beukelman, Jones and Rowan (1989), studied the frequency of word usage by preschool children without disabilities. It was found that the 250 most frequently used words represented 85% of the entire speech sample. In a second study examining the topic and vocabulary use patterns of elderly women, Stuart, Vanderhoof and Beukelman (1993) found that 250 words accounted for 77.8% of the entire sample. The third study was that of Trembath, Balandin and Togher (2007). Their results indicated that a core vocabulary of 263 words accounted for 79.8% of conversations. The last study that formed part of the composite list compiled by Boenisch and Soto (2015), examined the vocabulary usage of 22 native English speakers, as well as eight ESL participants. Concerning the vocabulary usage of the native speakers, it was found that a total of 200 words accounted for 80% of the sample, while the 200 words used most frequently by the ESL participants accounted for 85% of the relevant speech sample.

It can be seen that the core vocabulary lists from these four English studies varied between 200 and 263 words, accounting for between 77.8 and 85% of all the speech samples. The Afrikaans core vocabulary list also falls between these limits, therefore correlating with the research findings and confirming that, similar to the case in English, a relatively small number of words account for a rather large portion of Afrikaans conversational speech. The size and coverage of the core vocabulary determined are therefore congruent with the definition of a core vocabulary, describing it as a vocabulary characterised by its relatively small size, but high frequency of use. This ratio between core and fringe vocabulary in speech samples also correlates with what is sometimes called the 80% - 20% rule of core vocabulary, as approximately 80% of samples used consist of core vocabulary, while the remaining approximate 20% constitute the fringe vocabulary (Baker et al., 2000). The similarities between English and Afrikaans core vocabularies may be partly ascribed to the fact that both languages are linguistically classified as analytic languages, with very little morphology (Machová, Charvátová & Bacuvcíková, 2017; Mngomezulu, 2017). An analysis based on words (as defined by orthographic space, with or without concession for inflectional morphology) would therefore probably result in similar core vocabulary parameters.

Chapter 5 – Discussion

When comparing the Afrikaans core vocabulary parameters to those established for core vocabulary lists in other languages than English, both similarities and differences were found. These may partly be ascribed to differences or similarities in linguistic structure, and also in the unit of analysis that was used to establish the core vocabulary in the respective languages. Robillard et al. (2014) determined a core vocabulary based on speech samples from French mono- and bilingual children with and without language impairment, and found that 200 words represented 73.03% of the sample. French is a synthetic rather than analytic language (Haspelmath, Michaelis, 2017), being rich in inflectional morphology. However, since inflected forms were counted under their root words, rather than as separate forms, the parameters of the core vocabulary still seem quite comparable to those found in Afrikaans.

Mngomezulu (2017) established a core vocabulary for isiZulu, a highly synthetic language with a conjunctive orthography (meaning that strings of morphemes are written together without orthographic space between them) (Kosch, 2006). The characteristics of spoken and written isiZulu led her to conduct an analysis on a morphological level, and she found that 221 formatives (which may be equated to morphemes) accounted for 88.9% of the total sample collected from isiZulu-speaking preschoolers. Shin and Hill (2016) compiled a core vocabulary based on Korean, also a synthetic language (Shi, 2015) with both the orthographic space between words and some morphemes as the applied unit of analysis. Their results indicated that 219 Korean words/morphemes accounted for only 60.82% of the entire sample.

From the discussion above it can be argued that the Afrikaans core vocabulary parameters are largely comparable to those found in other studies. As would be expected, the similarities were more noticeable when comparing the Afrikaans list to core lists established using the same unit of analysis in languages that share the same linguistic typology. However, it also becomes clear that, in spite of differences in these parameters, a large portion of speech, regardless of the specific language, can be represented by a relatively small number of words or morphemes. The implications of this would mean that AAC devices would have a set of relevant and reusable language items, which can be used in a variety of communicative contexts.

5.4 Classification of words

5.4.1 Content versus structure words

The results of the present study's core vocabulary indicated that 163 different words were content words, whereas the remaining 76 words were structure words. In two other studies, the authors remarked that the core vocabulary was made up mostly of structure rather than content words (Robillard et al., 2014; Trembath et al., 2007). This is in contrast to the current study, where content words were found to make up more than two thirds of the core vocabulary. However, none of the authors of the studies mentioned gives exact proportions of content versus structure (or function) words, and the method of classifying the core vocabulary into content and structure words is also not clearly described in the two studies mentioned. Boenisch and Soto (2015) found that in the top 300 words used most frequently by native English speakers, 68% were designated as verbs, adverbs, adjectives or nouns – the four parts of speech they describe as content vocabulary. In the current study, interjections and numerals were also designated as content (based on the classification proposed by Van Rooy, 2017), whereas Boenisch and Soto (2015) designated these as structure words. In spite of this difference in classification, the proportion of structure versus content words in the Afrikaans core vocabulary is closely comparable to that found by Boenisch and Soto (2015). A similar pattern was also discerned by Mngomezulu (2017), who found that 68% of the isiZulu core vocabulary established consisted of content formatives, whereas 29% consisted of structure formatives (with 3% consisting of words classified neither as content nor core).

Although the structure core words were also smaller in number among the different words in this study, it was seen that these words only differ marginally in terms of coverage. Mngomezulu (2017) also found that, while the content formatives were higher in number of different formatives, their coverage was less than that of structure formatives.

As seen in Figure 4.4. the occurrence of structure words is highest among the top 20 core words, and this decreases systematically as the top 50, 100, 200 and all core words are considered. It is clear that structure words occupy an important place in the core vocabulary, given their high coverage, as well as their prominence among the most frequently used words. Even so, content words or fringe vocabulary tends to feature more often on AAC devices (Adamson, Romski, Deffenbach, & Sevcik, 1992),. This could be related to the methods used for selecting them. Informants, for example, have been reported to select

mainly verbs and nouns (Banajee et al., 2003; Dark & Balandin, 2007). One reason may be that these content words typically have more concrete referents than structure words, which have little meaning in and of themselves. Content words are usually also easier to represent graphically compared to structure words, which are usually more abstract in nature and are less referential than content words (Mngomezulu, 2017; Smith & Witten, 1993). Adamson, Romski, Deffenbach, and Sevcik (1992) reported that nouns signifying foods and objects are usually the first symbols added to an AAC system. This could firstly be because of the ease of graphically representing the symbols, as well as the fact that food items lend themselves to eliciting requests – an early communication function with a tangible focus that is often targeted in beginning communicators (Hewett, Firth, Barber, & Harrison, 2012). Also, for beginning communicators, single-symbol utterances may be the target, and for such utterances content words may be more important than structure words, as the latter only become relevant when sentences need to be constructed. A second reason for the fact that content words tend to feature more often on AAC devices is that natural speakers (often adults guiding the vocabulary selection for pre-literate individuals in need of AAC) tend to be unaware of the specific vocabulary that they require and use to communicate on a daily basis, thus often selecting irrelevant and seldom-used words (Dark & Balandin, 2007). However, it is important that communication functions other than requesting are targeted in intervention, and, where possible, to move beyond single-symbol utterances. In production, some important linguistic meanings are not adequately expressed without the use of grammar facilitated by structure words (Sutton, Soto, & Blockberger, 2002). This is especially true when it comes to communication with unfamiliar partners who tend not to have enough experience to decipher messages correctly. Another important reason justifying the inclusion of structure words is that this ultimately supports language development (Sutton et al., 2002).

Without structure words, it is difficult to build more complex sentences, as these words typically connect words in sentences and utterances (Robillard et al., 2014) and are regarded as the framework for language (Banajee et al., 2003). An AAC device that does not allow the person using it the degree of communicative autonomy and range of expression this person is capable of, is likely to be abandoned (Johnson, 2008).

In spite of the importance of structure words, content words should not be overlooked. Structure words need to be combined with content words to form meaningful sentences, as these words provide important linguistic connections (Boenisch & Soto, 2015), whereas

content words are meaningful units (Tomasello, 2005) that are used to provide content and semantic value (Trembath et al., 2007). In the current study, 163 different content words formed part of the core. These include what may be described as 'generic content', which refers to verbs and nouns that seem less context-specific, for example *gaan* (go), *kyk* (look) and *ding* (thing). However, it is important to consider that the sampling context may have had an influence on the content core vocabulary. From the results is was noted that the activities and communicative situations that individual children engaged in do seem to have influenced their vocabulary use to an extent, as can be seen by the inclusion of words such as *slang* (snake), *blok* (block), and *bou* (build) in the core vocabulary. It was found that at Site 1, for example, the noun *blok* (block) was used relatively frequently, while it was used less at Site 3 and not at all at Site 2. Similarly, the lexical verb, *bou* (to build) was used by three of the four participants at Site 1, by three participants at Site 3, but by only one participant at Site 2. The participants at Site 1 were engaged in a block-building activity on more than one day of the data collection, and this might have resulted in this pattern of increased use of tis particular noun and verb. Both Trembath et al. (2007) and Mngomezulu (2017) observed a possible influence of context on the core vocabulary. Mngomezulu (2017), for example, found that the noun root 'crocodile' formed part of the core vocabulary. This was linked to the fact that a story was read about a crocodile at one of the sites used during the study. Trembath et al. (2007), found that the word 'Spiderman' appeared in the core vocabulary, which was linked to the fact that the release of the feature film 'Spiderman' coincided with the commencement of their data collection. They also found that the words 'swing' and 'plane' were used at a school located close to an airport, which had a swing set on the premises.

Providing adequate and age-appropriate access to both content and structure words enhances the linguistic sophistication of the AAC device (Baker & Chang, 2006), ultimately allowing the user to create sentences (Lui & Sloane, 2006), thus making the AAC device as functional as possible for communicative purposes.

5.4.2 Parts of speech found in the core vocabulary

The core words identified in the current study were further classified into 14 different parts of speech (see Chapter 2, Section 2.7.1 and Table 4.2). Other studies that predominantly made use of orthographic words as units of analysis made use of similar classifications (Boenisch & Soto, 2015; Robillard et al., 2014; Trembath et al., 2007). Studies that included or focussed exclusively on a morphological level analysis included some additional and

different parts of speech (e.g. particles in Shin and Hill [2016] and roots/stems, vocative formatives, ideophones, prefixal formatives, verbal auxiliaries, suffixes and concords in Mngomezulu, [2017]).

When looking at the percentage distribution of different types of words as per parts of speech, pronouns, verbs and adverbs were found to make up a large proportion of the core vocabulary in this and other studies (Boenisch & Soto, 2015; Mngomezulu, 2017; Shin & Hill, 2016; Trembath et al., 2007). In the current study pronouns were seen to represent 12.1% of the core vocabulary, whereas verbs and adverbs represented 22.2 and 13.0%, respectively (see Table 4.2). Similarly, Boenisch and Soto (2015) found that these three parts of speech accounted for over half of the 100 most frequently used words of native English and ESL speakers, while the eight other parts of speech made up the remaining proportion. They found that verbs accounted for 26 and 28% of the top 300 vocabulary words, while Fallon et al. (2001) found that 29% of their core vocabulary consisted of verbs. Furthermore, Shin and Hill (2016) found that 21.92% of their Korean core vocabulary was made up of verbs. In all the above-mentioned studies, verbs were found to represent the highest proportion of the core vocabulary. Mngomezulu (2017), in contrast, found that concords made up the largest proportion of her isiZulu core vocabulary. This difference can possible be attributed to the linguistic characteristics of the isiZulu language.

It was also seen that the three above-mentioned parts of speech (i.e. pronouns, verbs and adverbs) featured with a high frequency of use. Formatives related to verbs (verb roots, verbal auxiliaries and verb concords) also comprised the most frequently used category of core formatives in the study by Mngomezulu (2017), whereas formatives related to pronouns and adverbs ranked third and fourth in frequency of use in that study.

These similarities are an interesting finding, suggesting some apparent similarities in the way parts of speech are used across languages. From the results and the results found in previous studies, it appears that verbs represent a relatively high proportion of the core vocabulary. One reason why verbs were seen to feature relatively often is that verbs are essential for the construction of sentences (Sutton et al., 2002).

As for some of the remaining parts of speech, it was found that, of the 239 core words, 29 were nouns (i.e., approximately 12%). Most other studies also identified nouns (or

formatives related to nouns) as part of the core vocabulary, with some finding quite a number of different nouns (Mngomezulu, 2017; Shin & Hill, 2016) and others finding hardly any in the core vocabulary (Robillard et al., 2014). Although nouns seem to form part of the core vocabulary in various languages, the core vocabulary is by no means noun-dominant, as other parts of speech make up the bulk of the core vocabulary and are used more frequently. Although this is true, nouns tend to dominate graphic symbol-based systems, as nouns seem to be predominant in the minds of those who choose the vocabulary, because of their concrete nature (Dark & Balandin, 2007). This makes them easier to represent in graphic symbol format. This should, however, be prevented, as a system dominated by nouns will remain limited in expressive capacity. It will predispose the user to single-symbol utterances and does not allow for the generative nature of language to be harnessed (Sutton et al., 2002). This can ultimately lead to system abandonment (Adamson et al., 1992).

Of interest is that the category of proper nouns (names) that formed part of the core vocabulary were used with a frequency of 29.7‰ in the sample. Even though the use of codes led to an overrepresentation of names in the core vocabulary, it nevertheless highlights the importance of providing the names of teachers, peers and other relevant individuals to children who use AAC. Trembath et al. (2007) and Mngomezulu (2017) found a similar percentage of representation in their studies, as 4.1 and 3.1% of the core vocabulary consisted of the names of teachers and peers, respectively.

It is further interesting to note that interjections (also termed exclamations in some studies) seem to be a consistent part of core vocabulary, as their presence was found in various languages (Boenisch & Soto, 2015; Mngomezulu, 2017; Robillard et al., 2014), while other studies excluded interjections found in the speech samples, based on transcription rules (Shin & Hill, 2016). In the current study interjections ranked relatively high in the core vocabulary, being the part of speech used fourth most frequently and representing 9.2% of the entire core vocabulary. Mngomezulu (2017) found that interjections represented 2.9% of the core vocabulary, while Boenisch and Soto (2015) found that of native English speakers' top 300 words, 3% were interjections. It can therefore be seen that the current study's proportion of interjections in the core vocabulary list appears somewhat higher compared to that found in previous studies. It can thus be argued that the inclusion of interjections is of the utmost importance, as interjections function as pragmatic markers, allowing the initiation of utterances and general social interactions by allowing an individual to indicate a range of

emotions (Norrick, 2009). Children who require AAC have the same communicative needs as their peers and should therefore have access to the same pragmatic functions in order to participate effectively in communicative interactions.

Eighteen English words could be found in the category of code switches. Code switching can be described as the use of two or more languages in the same utterance or conversation (Barnes, 2011; van Dulm, 2007). Inter-sentential switching refers to code switching at phrasal, sentence, or discourse level, whereas intra-sentential switching involves a change in language on sentence level by means of adding morphemes or lexical units of another language into a sentence that is spoken in the first language (Zirker, 2007). In a study focusing on the core vocabulary of isiZulu-speaking preschoolers, Mngomezulu (2017) found that code switching was observable, with a number of English words in the isiZulu core vocabulary itself. This proportion of code switches was, however, somewhat lower compared to the current study. Mngomezulu (2017) reported that code switching mostly occurred at intra-sentential level, whereas most occurrences of code switching in the current study occurred on inter-sentential level, as a whole utterance or sentence.

Code switching is a common phenomenon in multilingual societies, such as South Africa (Mabule, 2015; Mesthrie, 2004). There are numerous reasons why code switching occurs. Ramsay-Brijball (1999) mentions that the presence of media related to television and radio might be a contributing factor, whereas Slabbert and Finlayson (2000) argue that it is a purposefully used linguistic tool ultimately applied to enhance listeners' understanding. They furthermore relate urbanisation, as well as socio-political factors, to its prevalence. It was noted that all except one participant were exposed to English on either television or radio.

It was previously thought that the use of code switching was associated with poor language command (Lipski, 2005), however, this notion has been largely challenged in contemporary views of code switching (Slabbert & Finlayson, 2000). Research indicates that adolescents and school-age children use code switching to fulfil a variety of pragmatic functions, which include asserting their shifting identities and allegiances, structuring games and play activities, as well as negotiating meanings and rights (Cromdal, 2004; Howard, 2003; Paugh, 2001). In the current study most code switching took place during free or imaginative play, suggesting that it had a particular function in this respect. In a multilingual context, it is thus important to consider the inclusion of code switches on graphic symbol

systems for children in need of AAC, among others because these seem to be part of imaginative play routines. Giving children in need of AAC access to play through their AAC systems has been described as an important, yet neglected function (Ferm, Claesson, Ottesjö, & Ericsson, 2015).

In summary, it is clear that the Afrikaans core vocabulary consists of a wide variety of different words belonging to different parts of speech. Similar findings were reached in core vocabularies established in other languages, especially those languages where the studies made use of the same unit of analysis (i.e. orthographic space) and the languages were analytic in structure. It is evident that some parts of speech are used more frequently than other words. This emphasises the importance of including a variety of words from different parts of speech on an AAC device, as a measure of generativity and novel sentence generation is desired. Specifically, the variety and proportion of content and structure words, as well as words from different parts of speech found in the core vocabulary, point to the necessity of including such a variety on a system that is intended to encourage novel utterance generation. However, independently selecting and sequencing words to produce sentences does increase physical, linguistic and cognitive demands on the person using the system, and the benefits and cost of such a system should always be carefully considered.

5.4.3 Uninflected versus inflected forms

This study is one of few that made use of a detailed and rigorous method of identifying and counting both inflected and uninflected forms of a word. This is somewhat different from previous studies, where inflected forms were either counted as separate words (Trembath et al., 2007) or collapsed onto the root, but without reporting on the number of inflected versus uninflected forms. From the results of the current study it can be seen that a number of inflected word forms were found, especially with regard to nouns and verbs, with a small number of inflections found among numerals and pronouns. Other studies also made provision for the inflected form of words (Mngomezulu, 2017; Robillard et al., 2014), possibly indicating that this might be a valuable method of presenting the vocabulary units. However, it also became clear that inflected forms were used at a much lower frequency than uninflected forms. This links with the fact that Afrikaans is an inflection-poor language that does not have many inflections compared to some other languages, such as isiZulu and French (Butler, 2016).

For example, most verbs were used in the present tense by the participants in the study. A similar finding was made by Balandin and Iacono (1998b), who found that the present time frame was referenced most often in meal break conversations by Australian adults. Since the present tense verbs in Afrikaans are not inflected, it follows that uninflected forms were used with a higher frequency.

The benefits and drawbacks of including inflected forms (possibly accessed via the uninflected root words, cf. Proloquo2go's auto-inflection) need to be weighed up carefully. Access to correct grammar can enable the person to convey a wider range of grammatical morphemes, in turn enabling him or her to use the correct tenses, for example, while also decreasing potential breakdown in communication and supporting language development (Sutton et al., 2002). At the same time, access to various word inflections can increase learning demands and decrease the rate of conversation. This also requires sufficient operational competence (Light & McNaughton, 2014).

5.5 Comparison of the Afrikaans core vocabulary to English core lists

When comparing the Afrikaans core list to English core vocabulary lists, a reasonable amount of overlap was found. This was a somewhat surprising finding and may be regarded as contradictory to the argument that core vocabulary is not translatable. It is possible that the linguistic relatedness of Afrikaans and English could have led to a higher degree of overlap between the core lists. Both are Indo-European languages, specifically Germanic languages (Donaldson, 1991). Both are also analytic languages (Machová, Charvátová & Bacuvcíková, 2017; Mngomezulu, 2017). As a result, a degree of both semantic and structural similarity can be found, which may have led to similarities in the core vocabulary. In contrast, limited overlap was found between the Afrikaans core vocabulary and that established for more synthetic languages, as these languages are not as closely related in terms of linguistic and grammatical characteristics.

Translation of a core vocabulary is nevertheless still complicated by the lack of one-on-one mapping between words of different languages. When inspecting Appendix P it becomes apparent that many Afrikaans words do not map onto only one English word. When attempting to translate a core vocabulary, the question arises as to which of these translations should feature in the translated core. For example the Afrikaans word *baie* can be translated as 'many', 'much', as well as 'very', therefore having more than one possible translation in

English. Furthermore, sometimes one word translates into a whole phrase in the other language. A phrase such as *hou op*, for example, requesting someone to stop doing something, could not be communicated in English if the translation proceeded only on individual word level. If the two words were translated and then combined into an English phrase, one would possibly get a phrase such as 'hold up' or 'keep at', therefore not correlating with the intended Afrikaans utterance.

Taking the above-mentioned information into consideration, the legitimacy and value of translating core vocabulary lists from one language to another should be carefully considered (Mngomezulu, 2017; Shin & Hill, 2016). It seems that the identification of a core vocabulary list based on natural speech samples in a specific language is still the most valid and rigorous method (Lui & Sloane, 2006).

5.6 Summary

In this chapter the results of the study were discussed in more detail. Firstly the TNW and NDW obtained in the Afrikaans speech samples were described and compared to those found in previous literature. This was followed by a discussion and comparison of the statistical parameters of the Afrikaans core vocabulary to other core vocabulary lists. Similarly, vocabulary classification according to word characteristics (content and structure words, as well as parts of speech) was discussed and compared to those found in other core vocabulary studies. Finally, the results of the comparison of the Afrikaans list to the English lists was discussed, with specific consideration of the translatability of the Afrikaans core vocabulary obtained.

CHAPTER 6

CONCLUSION

6.1 Introduction

In this chapter, a summary and overall conclusion of the study is provided. This is followed by a critical evaluation of the study, as well as implications for clinical practice. Finally, recommendations for future research are provided.

6.2 Summary of the study

Aided AAC systems for individuals who are not (yet) literate, require that the vocabulary for the system be preselected. Core vocabulary lists have been proposed and used as one source for selecting words for an aided AAC system. Including the most commonly and most frequently used words in an AAC system allows the person using the AAC device access to a robust and generative system of language.

The main aim of the study was to identify the core vocabulary of Afrikaans-speaking preschool children without disabilities, as a resource to guide vocabulary selection for preschoolers with LNFS who require an Afrikaans AAC system.

Twelve participants were recruited from three different preschools. Each participant was fitted with a voice recorder and lapel microphone while continuing to take part in his/her normal, everyday preschool routines. After exclusion of the unintelligible units, the number of words collected per participant ranged from 3,108 to 3,419. The composite sample across all 12 participants consisted of 39,645 orthographic words, of which 3,304 were orthographically unique words.

The core vocabulary was determined using a three-step process. In the first step, frequency (≥ 0.5‰) and commonality (≥ 50% or a score of 6) criteria were applied, while homonyms or words with the same orthographical representation but different functions such as polysemes were separated in the second step. In the third step, frequency and commonality

scores were re-examined to ensure that words that were separated into their respective meanings/functions complied with the set criteria as in Step 2.

An Afrikaans core vocabulary of 239 words was determined. These 239 words accounted for 79.4% of the composite sample. These results are thus consistent with the results from previous literature, indicating that a small set of frequently used words represent a considerable proportion of a language sample (Baker, Hill, & Devylder, 2000; Banajee, Dicarlo, & Stricklin, 2003; Witkowski & Baker, 2012; Yorkston, Dowden, Honsinger, Marriner, & Smith, 1988). The characteristics of the core vocabulary were found to be similar to core vocabularies found in other studies (Beukelman et al., 1989; Boenisch & Soto, 2015; Mngomezulu, 2017; Robillard et al., 2014; Shin & Hill, 2016; Stuart et al., 1993; Trembath et al., 2007). For example, words related to the structure of utterances were found to be more frequently used than those that had lexical content. Similarities were also found in terms of the parts of speech making up the core vocabulary; for example, many different verbs were found in the core vocabulary, and these verbs were also used with a high frequency. Similarly, pronouns and adverbs figured prominently, both in terms of NDW and in terms of frequency of use.

The identified list of Afrikaans vocabulary core words therefore seems to represent a useful and credible source for guiding vocabulary selection for preschoolders in need of an Afrikaans AAC system. Specifically, the variety and proportion of content and structure words, as well as words from different parts of speech found in the core vocabulary, point to the necessity of including such a variety on a system that is intended to encourage novel utterance generation.

Although (somewhat surprisingly) overlap was found between the translated Afrikaans and previously compiled English core vocabulary lists, the lack of one-to-one mapping of translations in itself complicates core vocabulary translation. It would therefore seem that core lists based on actual speech samples (like the one obtained in the current study) remain the most robust source of core vocabulary.

6.3 Critical evaluation of the study

6.3.1 Strengths

This study is the first to identify a core vocabulary list based on the speech samples of Afrikaans preschool children, thus providing a novel source of information for team members selecting the vocabulary items for preschoolers in need of an Afrikaans aided AAC system. Besides its novelty, specific characteristics of the data collection and analysis process strengthened the internal validity of the results and are highlighted here.

The observational design allowed the collection of primary data. Speech samples were collected throughout the school day, and the resulting core vocabulary list was based on the actual words children used, rather than those that informants thought they used. Such primary data is typically considered to be more valid than secondary data. Recordings were conducted across more than one activity, therefore not limiting the vocabulary to certain activities such as playtime or snack time. Furthermore, excluding the first 20 minutes of each sample reduced the novelty effect that the recorders might have had on the participants' speech. This was done to decrease the effects of participant reactivity, and to control for its possibly negative effect on the internal validity of the results.

Regarding the data analysis, various measures were employed to increase the rigour and internal validity of the results. This study is one of few where homonyms and polysemes were rigorously separated. The aim thereof was to increase the correct graphical representation of the words in the core vocabulary. This specifically relates to homonyms, as these words have totally different and unrelated meanings. Homonymy and homophony (the latter referring to the use of words with different spellings but the same sounds) have reportedly been used by children relying on graphic symbol systems to expand their communicative repertoire, for example using the graphic symbols indicating the noun 'butt' is used to indicate the meaning of the conjunction 'but'. This method of graphic representation nevertheless demands a high level of metalinguistic skills (Trudeau, Sutton, Dagenais, de Broeck, & Morford, 2007; Von Tetzchner, 2018). Ensuring that the individual has access to an appropriate graphical representation for each intended meaning may reduce the metalinguistic demands. In various previous studies (Boenisch & Soto, 2015; Trembath et al., 2007) homonyms and polysemes were not separated, affecting the word counts and

making the resulting core lists slightly less clear when they needed to be translated into graphic symbols.

Furthermore, words with related meanings but belonging to different parts of speech (and performing different grammatical functions) were separated. In this way, accurate counts of parts of speech could be conducted. Previous studies have not followed this rigorous process, and the resulting statistics concerning parts of speech have been acknowledged to be somewhat inaccurate (Boenisch & Soto, 2015). The rigour of the process followed in the current study can be regarded as a strength.

The current study allowed for inflected forms to be counted separately, but also allowed these forms to be traced back to the root word. This flexibility allowed for a more nuanced analysis than would have been possible if only roots were counted (e.g. Boenisch and Soto, 2015), or all inflected forms were counted as separate words (e.g. Trembath et al., 2007). The resulting list gives an indication of the frequency of use of inflected forms. This information can assist practitioners to make informed decisions about the necessity of including access to inflected forms on specific AAC systems.

6.3.2 Limitations

The relatively small sample size in combination with participants from similar ages (between five and six years of age) across three sites that are fairly similar, as well as the limited time span taken for data collection, influenced the generalizability of the data. Even though three different sites were used, all three of these sites were within relatively high-income areas and all the recordings were collected a few days apart (excluding the pilot study) during school-based activities, thus potentially limiting the vocabulary with regard to generalisability. The pilot study was done a few months prior to the actual data collection, thus contributing somewhat to increased variation in the sample.

It is not certain if the core vocabulary would be similar or different if the data were to be collected from other populations using dialectically unique characteristics specific to their regions. It should be noted that noisy classroom settings made the transcription process challenging and influenced the accuracy of the transcriptions. The transcription process could have been made easier by using video recordings in addition to audio recordings. This would,

however, have led to other challenges in terms of ethical considerations, as well as increased disruptions in the classroom setting.

The inclusion criteria for core vocabulary consisting of frequency and commonality scores have been criticised as arbitrary. Unfortunately, no clear guidelines exist as yet for determining the criteria for including and excluding vocabulary. In the present study, vocabulary was included based on a commonality score of at least six (i.e., at least 50%) and a frequency count of equal to or more than 0.5‰. Alternatively, grouped frequency counts could be a valuable method to determine the inclusion and exclusion of core vocabulary (Shin & Hill, 2016).

Another factor that might be regarded as a limitation is the fact that the entire composite sample was not inspected for homonyms or words with the same orthographical function but different function/meaning (i.e. polysemes). Because of not doing this, possible misrepresentation pertaining to the exact number of words and NDW in the entire sample could have occurred.

6.4 Clinical implications

The core vocabulary list of 239 Afrikaans words can be used as a basis for selecting vocabulary for inclusion in an Afrikaans graphic symbol-based AAC system that is being designed or customised for preschool-aged children with relatively intact receptive language skills. Clinicians and other team members such as family members can use the list to become cognizant of the words that preschoolers without disabilities use most frequently in preschool settings, and judiciously select words from this list for inclusion on low- and high-tech communication devices. The core word list can be particularly helpful to alert team members to the importance of including structure words, since these words are often omitted from AAC systems because of their abstract nature, making it challenging to represent them graphically. However, these words are crucial in giving access to grammar and syntax.

At the same time, the core list provided is not intended to be used in isolation, but in combination with child-specific fringe vocabulary, which is of the utmost importance for the success of an AAC system (Balandin & Iacono, 1998a; Beukelman et al., 1991; Robillard et al., 2014).

Since this is the first core word list established in Afrikaans based on a sample of spoken words, clinicians may also consider referring to it when selecting words for Afrikaans individuals of other ages or for use across other settings, as previous research has indicated that core vocabularies are, to some extent, useful across settings and individuals (Van Tilborg & Deckers, 2016). However, this should be done judiciously, as the core vocabulary list (specifically nouns and verbs) may have been influenced by the specific context and population. This can be seen in the inclusion of words such as *bou* (build) and *blokke* (blocks) in the current list (see Section 5.4.1). It can be argued that the use of these words was influenced to some extent by the activity in which the participants were engaged, as the participants from one site were engaged in a block-building activity on more than one day of the data collection, and this might have resulted in this pattern of increased use of this particular noun and verb.

Although the established core vocabulary list can be a useful resource, many other design decisions need to be made in compiling an aided AAC system for a non-literate person. A clinical aspect that remains challenging is graphically representing and teaching vocabulary units, specifically more abstract (structure) vocabulary. The lay-out and organisation of a bigger vocabulary also needs to be considered, as these aspects can impose physical, cognitive and linguistic demands on the person using the system. The effort and amount of time it takes to compose a message should always be taken into account. If the effort exceeds the benefits of sharing a message (Von Tetzchner et al., 1996; Wilkonson & McLlave, 2002), withdrawal from communication and system abandonment may result, not only for the users, but also the communication partners (Johnson et al., 2006).

6.5 Recommendations for further research

In future studies a larger, more heterogeneous sample size with participants from different ages, SES, and geographical settings should be included to enhance the generalisation of the results. Data collection should also be done across different environments and activity contexts to determine similarities between vocabulary used for instance at home and at school. It would furthermore be beneficial to determine the core vocabulary of individuals from different populations, for example those with learning difficulties.

The data obtained (sample of 39,645 words) can be analysed further to examine the conversational topics, use of different communication functions and fringe vocabulary usage of preschoolers. Such analyses may also attempt to establish similarities and differences across gender and activities. These data could be helpful to establish guidelines for fringe vocabulary selection. Future research is also required to investigate and determine the most appropriate graphic representation of the core vocabulary words obtained, paying specific attention to the structure words, as these words are challenging to represent graphically for children who are (not yet) literate. The best organisation in terms of layout should also be considered in order to limit the operational demands of attempting to access these graphic symbols.

Lastly, intervention studies are required to determine how AAC systems that incorporate Afrikaans core vocabulary can best be taught and implemented in various communication settings. Without such studies, the usefulness of core vocabulary on AAC systems will only be supported by theory, rather than empirical data.

6.6. Conclusion

In this chapter, a summary of the entire study was provided, with overall conclusions. The study was critically evaluated in terms of strengths and limitations. Implications for clinical practice were furthermore considered. Lastly, recommendations for future research were provided.

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Appendix A

APPENDIX A

TABLE OF STUDIES USED TO COMPOSE ENGLISH COMPOSITE LIST

This table provides an overview of the four studies (i.e. five vocabulary lists) used that complied with the inclusion criteria used. It is organised chronologically from the earliest to the latest studies.

Author(s), year, title	Aim	Population	Method	Definition of core	Number of words	Coverage
Beukelman, Jones and Rowan (1989): *Frequency of word usage by non-disabled peers in integrated preschool classrooms.*	To determine a core vocabulary list, as well as to study the vocabulary use patterns of individuals without disabilities integrated in a preschool setting.	Six children without disabilities between 3 years 8 months and 4 years and 9 months.	The authors collected speech samples from three classroom settings over a period of 2 - 8 days. Participants were fitted with voice recorders. In addition the researcher observed the participants while taking note of spoken output.	Words were included based on a frequency score of at least 0.5‰ and a commonality score of 50%.	250 words	85%
Stuart, Vanderhoof and Beukelman (1993): *The topic and vocabulary use of elderly women during extended conversations by two cohorts of older adults.*	To determine a list of core words used by older women.	Five older female participants between the ages of 63 and 79 years.	Voice-activated recorders were used to record the speech of participants in various environments.	Words were included based on a frequency score of at least 0.5‰ and a commonality score of 50%.	250 words	77.8%
Trembath,	To determine the most	Six (three male	Data obtained was used to	Words were included	263 words	79.8%

Appendix A

Author(s), year, title	Aim	Population	Method	Definition of core	Number of words	Coverage
Balandin and Togher (2007): *Vocabulary selection for Australian children who use augmentative and alternative communication.*	frequently and commonly used words by Australian children ultimately informing and aiding the AAC vocabulary selection process for users of AAC.	and three female) children between the ages of 3 and 5 years.	collect 3,000 words for each participant. Participants were fitted with portable voice recorders, which they could remove as they desired. Results reflected similar vocabulary compared to those used by users of AAC, preschool children, as well as school-aged children as found in previous studies.	based on a frequency score of at least 0.5‰ and a commonality score of 50%.		
Boenisch and Soto (2015): *The oral core vocabulary of typically developing English-speaking school-aged children: Implications for AAC practice*.	To determine the core vocabulary used by school-aged English-speaking children without disabilities while participating in a variety of school activities. The language samples were transcribed and analysed to identify the most frequently used words across the samples obtained.	30 children without developmental difficulties between the ages of 7 and 14 years. Eight of these children were English second language learners. The remainder of the participants were native English speakers.	Each participant was recorded for an average of 105 minutes during the course of a regular academic day.	No definition provided. Words were, however, ranked by frequency scores.	Native speakers Top 100 words Top 200 words Top 300 words ESL speakers Top 100 words Top 200 words Top 300 words	 71.2% 80.3% 85.1% 74.8% 84.5% 89.4%

APPENDIX B

COMPOSITE ENGLISH LIST

This composite table consists of the words that were common to at least three of the lists. This was compiled to serve as a comparison list against which core words identified for other languages could be compared. The resulting comparison list comprised 86 words and is provided in alphabetised format.

Composite list word	Studies in which these words occurred					Total number of occurrences
	Beukelman, Jones and Rowan (1989)	Stuart, Vanderhoof and Beukelman (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		
				Native	ESL	
a	a	a	a	a	a	5
all	all	all	all	all		4
and	and	and	and	and	and	5
are	are	are	are			3
at	at	at	at	at	at	5
back		back	back	back		3
be	be	be	be	be	be	5
because	because	because	because	because	because	5
but		but	but	but	but	4
can	can	can	can	can	can	5
come	come	come	come	come	come	5
did	did	did	did			3
do	do	do	do	do	do	5
down	down	down	down			3
for	for	for	for	for	for	5
get	get	get	get	get	get	5
go	go	go	go	go	go	5
good	good	good		good	good	4
got	got	got	got			3
have	have	have	have	have	have	5
he	he	he	he	he	he	5
here	here	here	here	here	here	5
hey	hey		hey	hey	hey	4
him		him	him	him		3
how	how	how		how	how	4
I	I	I	I	I	I	5
in	in	in	in	in	in	5
is	is	is	is			3

Appendix B

Composite list word	Studies in which these words occurred					Total number of occurrences
	Beukelman, Jones and Rowan (1989)	Stuart, Vanderhoof and Beukelman (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		
				Native	ESL	
it	it		it	it	it	4
just	just	just	just	just	just	5
know	know	know	know	know	know	5
let	let		let	let	let	4
like	like	like	like	like	like	5
little	little	little	little		little	4
look	look		look	look	look	4
make	make		make	make	make	4
me	me	me	me	me	me	5
mine	mine		mine		mine	3
my	my	my	my	my	my	5
need	need		need	need	need	4
no	no	no	no	no	no	5
not	not	not	not	not	not	5
now	now	now	now	now	now	5
of	of	of	of	of	of	5
oh	oh	oh	oh	oh	oh	5
ok/okay	okay	ok	okay	ok/okay	ok/okay	5
on	on	on	on	on	on	5
one	one	one	one	one	one	5
or		or		or	or	3
out	out	out	out	out	out	5
play	play		play	play	play	4
put	put	put	put	put	put	5
right	right	right		right	right	4
see	see	see	see	see	see	5
she	she	she		she	she	4
so	so	so		so	so	4
some	some	some	some			3
something		something		something	something	3
take	take	take		take	take	4
tell			tell	tell	tell	3
that	that	that	that	that	that	5
the	the	the	the	the	the	5
them	them	them	them	them		4
then		then		then	then	3
there	there	there	there	there	there	5
they	they	they	they	they	they	5
think		think		think	think	3

Appendix B

Composite list word	Studies in which these words occurred					Total number of occurrences
	Beukelman, Jones and Rowan (1989)	Stuart, Vanderhoof and Beukelman (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		
				Native	ESL	
this	this	this	this	this	this	5
three	three			three	three	3
time		time		time	time	3
to	to	to	to	to	to	5
too	too	too	too	too	too	5
two	two		two	two	two	4
up	up	up	up	up	up	5
us	us			us	us	3
want	want	want	want	want	want	5
we	we	we	we	we	we	5
well		well	well	well		3
what	what	what	what	what	what	5
where	where	where	where	where	where	5
will	will	will		will	will	4
with	with	with	with	with	with	5
yeah		yeah	yeah	yeah	yeah	4
yes	yes		yes	yes	yes	4
you	you	you	you	you	you	5
your	your	your	your	your	your	5

Appendix C

APPENDIX C

ETHICS APPROVAL (UNIVERSITY OF PRETORIA)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

7 November 2017

Dear Ms Hattingh

Project:	**The core vocabulary of South African Afrikaans-speaking pre-schoolers without disabilities**
Researcher:	**D Hattingh**
Supervisor:	**Dr K Tõnsing**
Department:	**Centre for Augmentative and Alternative Communication**
Reference numbers:	**11198232 (GW20171002HS)**

Thank you for your response to the Committee's correspondence of 6 October 2017.

The **Research Ethics Committee** formally approved the study at an *ad hoc* meeting held on 6 November 2017. Data collection may therefore commence.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely

Prof Maxi Schoeman
Deputy Dean: Postgraduate and Research Ethics
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

cc: Dr K Tõnsing (Supervisor)
Prof J Bornman (HoD)

Research Ethics Committee Members: Prof MME Schoeman (Deputy Dean); Prof KL Harris; Dr L Blokland; Ms A dos Santos; Dr R Fasselt; Ms KT Govinder; Dr E Johnson; Dr C Panebianco; Dr C Puttergill; Dr D Reyburn; Dr M Taub; Prof GM Spies; Prof E Taljard; Ms B Tsebe; Dr E van der Klashorst; Dr G Wolmarans; Ms D Mokalane

APPENDIX D

ETHICS APPROVAL (GAUTENG PROVENCE DEPARTMENT OF EDUCATION)

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**15 February 2018**
Validity of Research Approval:	**05 February 2018 – 28 September 2018** **2017/363**
Name of Researcher:	**Hattingh (Koch) D**
Address of Researcher:	**756 Loma Street**
	Moreletapark
	Pretoria 0044
Telephone Number:	**012 993 2259 076 627 8059**
Email address:	**danelhattingh@gmail.com**
Research Topic:	**The core vocabulary of South African Afrikaans-speaking pre-schoolers without disabilities**
Type of Degree:	**Masters**
Number and type of schools:	**Two Primary Schools**
District/s/HO	**Gauteng East**

Re: Approval in Respect of Request to Conduct Research

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

20/02/2018

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

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

Appendix D

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

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
4. *A letter / document that outline the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Ms Faith Tshabalala
CES: Education Research and Knowledge Management

DATE: 20/02/2018

2

Making education a societal priority

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

Appendix D

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**04 December 2017**
Validity of Research Approval:	**05 February 2018 – 28 September 2018** **2017/339**
Name of Researcher:	**Hattingh D**
Address of Researcher:	**18 Lancelot Street**
	Garsfontein
	Pretoria 0081
Telephone Number:	**076 627 8059**
Email address:	**danelhattingh@gmail.com**
Research Topic:	**The core vocabulary of South African Afrikaans-speaking pre-scholars without disabilities**
Number and type of schools:	**One Primary School**
District/s/HO	**Gauteng East**

Re: Approval in Respect of Request to Conduct Research

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

04/12/2017

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

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Appendix D

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
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8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Ms Faith Tshabalala
CES: Education Research and Knowledge Management

DATE: 04/12/2017

Making education a societal priority

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APPENDIX E

PRINCIPAL INFORMATION LETTER AND PERMISSION FORM

Original (Afrikaans)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

Februarie 2018

Geagte _____

Aangaande: Toestemming om navorsing by u kleuterskool te doen

My naam is Danél Hattingh. Ek is tans besig om my meestersgraad in Aanvullende en Alternatiewe Kommunikasie (AAK) te voltooi deur die Universiteit van Pretoria.

Die titel van my studie is: *Die kernwoordeskat van Suid-Afrikaanse kleuters sonder gestremdheid*. Die doelwit van die navorsingstudie is om die woorde wat 5- tot 6-jarige Afrikaanssprekende kleuters mees dikwels tydens alledaagse skoolaktiwiteite gebruik, te bepaal.

Ek sal baie gelukkig wees indien u my toelaat om by u skool,_____ navorsing te doen.

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Hatfield 0028, South Africa
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Email saak@up.ac.za
wwwcaac.up.ac.za

Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Appendix E

Hoekom is die studie van belang?
Aanvullende en alternatiewe kommunikasie (AAK) bemagtig individue met min of geen funksionele spraak om beter te kommunikeer. Kleuters wat nie kan praat nie en nie geletterd is nie, maak dikwels gebruik van hulpmiddels soos prentsimbole op kommunikasieborde of elektroniese toestelle soos ‘n *iPad*. ‘n Toepaslike prentwoordeskat moet egter vir sulke kommunikasiehulpmiddels gekies word.

Een manier om woorde vir die hulpmiddels te kies is om te bepaal watter woorde kleuters sonder gestremdheid dikwels gebruik. Hierdie mees gebruikte woorde word ook kernwoordeskat genoem.

Die doel van die studie is dus om ‘n kernwoordeskat vir die Afrikaanse taal te bepaal. Dit behels die insameling van bandopnames van Afrikaanse kleuters se daaglikse taalgebruik tydens normale kleuterskoolaktiwiteite. Die opnames sal geanaliseer word om die hoogste frekwensie woorde, asook die verskillende woordsoorte wat ‘n 5- tot 6-jarige kleuter gebruik, te bepaal. Sodoende kan ’n Afrikaanse kernwoordeskat bepaal word wat gevolglik op kommunikasiehulpmiddels vir kleuters met min of geen funksionele spraak gebruik kan word.

Wat sal van u skool verwag word?
Ek gaan die hulp van twee onderwyseresse benodig om twee (2) kleuters te identifiseer wat aan die studie kan deelneem. Daar sal ook van die onderwyseres verwag word om ’n vraelys te voltooi aangaande die algemene agtergrondsinligting (bv. die klasprogram, die aantal kinders in die klas, ens.). Die hulp van die onderwyseresse sal benodig word om die toestemmingsbriewe aan ouers te gee en weer na voltooiing terug te ontvang.

Indien die ouers/voogde van die kleuters toestemming gee dat hul kinders aan die studie mag deelneem, sal die kleuters se spraak met klein bandopnemers opgeneem word om te bepaal hoeveel en watter woorde die kleuters tydens allerdaagse skoolaktiwiteite gebruik.

Die onderwyseresse sal geraadpleeg word in verband met geskikte tye vir die dra van die bandopnemers. Die navorser of navorsingsassistent sal die bandopnemers pas en weer verwyder na afloop van die opnames. Onderwyseresse mag egter ook besluit om bandopnemers te verwyder vir sekere aktiwiteite. Die data-insameling sal nie die normale skooldag se roetine ontwrig of steur nie. Die opnames sal plaasvind op opeenvolgende dae om sodoende ‘n totaal van 3,500 hoë-kwaliteitwoorde per kleuter in te samel. Die data-insamelingsproses behoort nie langer as vyf dae te neem nie.

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Wat sal van die kleuters wat deelneem verwag word?

- Daar sal van die kleuters verwag word om my (of die navorsingsassistent) en hulle onderwyseres te ontmoet om sodoende hulle vrywillige instemming vir die studie te kry. Prent-gebaseerde verduidelikings sal gebruik word om die proses op ’n ouderdomstoepaslike manier aan hulle te verduidelik. Daar sal van hulle verwag word om instemming deur beide verbale en geskrewe metodes aan te dui.
- Indien die kleuters instem om deel te neem, sal daar van hulle verwag word om ’n klein bandopnemer om hul middellyf in ’n klein sakkie te dra. ’n Mikrofoon wat verbind is aan die bandopnemer sal aan die kleuter se kraag vasgemaak word.

Hulle sal die twee toebehore tydens sekere skoolaktiwiteite dra.

- Die kleuters sal gevra word om nie met die toebehore te speel of om enige veranderinge daaraan te maak nie. Hulle mag enige tyd vir hulp vra van hulle onderwyseres indien hulle ongemaklik voel of selfs nie meer aan die studie wil deelneem nie. Die volwassene sal die kleuter help om die toestel te verstel of te verwyder. Kleuters mag enige tyd kies om te onttrek sonder enige negatiewe nagevolge.

Die volgende etiese beginsels sal nagekom word tydens die studie:

- Geskrewe toestemming van die kleuters se ouers/voogde, asook geskrewe (prent-baseerde) en verbale instemming van die kleuters sal voor die afloop van die studie gekry word.
- Deelnemers en hul ouers of voogde sal bewus wees dat hulle enige tyd kan onttrek sonder enige negatiewe nagevolge.
- Die klankmonsters wat tydens die studie opgeneem word, sal deur die navorser en navorsingsassistent geasseseer en gevolglik geanaliseer word.
- Alle inligting wat tydens die studie verkry is, sal vertroulik hanteer word. Enige identifiserende inligting sal met numeriese kodes vervang word. Die deelnemers se name sal slegs vir administratiewe doeleindes aan die navorser bekend wees. Geen deelnemer se naam sal genoem word in enige gepubliseerde inligting nie.

Wie sal toegang hê tot die studie se resultate?

Die data van die navorsing sal vir ’n tydperk van 15 jaar in beide harde kopie, asook elektroniese formaat veilig geberg word by die AAK-sentrum by die Universiteit van Pretoria. Die inligting sal gebruik word vir opvoedkundige en navorsingsdoeleindes, asook om ’n navorsingsverslag en wetenskaplike artikel te skryf. Die publikasies sal uitsluitlik verslag doen oor die tipe woorde en frekwensies van woorde (as ‘n gemiddeld oor ’n hele groep kleuters). Die resultate sal nie aan spesifieke kleuters gekoppel wees nie. Die skool en kleuters se identiteite, asook enige persoonlike inligting, sal nie bekend gemaak word nie.

’n Opsomming van die resultate sal beskikbaar gemaak word aan enige ouers of skoolpersoneel wat daarin belangstel.

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Wat is die risiko's en voordele aangaande die studie?
U skool se kleuters en personeel sal op geen manier benadeel word of skade aangedoen word tydens die studie nie. Deelnemers sal ook geen skoolaktiwiteite mis as gevolg van die data-insameling nie. Deelname is te alle tye vrywillig. Kleuters of hul ouers/voogde mag kies om nie deel te neem aan die studie nie, en mag enige tyd onttrek sonder negatiewe nagevolge. Alle persoonlike inligting (insluitend name van deelnemers, asook ander inligting wat tydens die gesprekke opgeneem is) sal te alle tye vertroulik gehou word. Dit sal net bekend wees aan die navorser vir administratiewe doeleindes. Slegs die deelnemende kleuter se spraak sal vanaf die bandopnames geanaliseer word. Die studie kan potensieel bydra tot die veld van AAK, wat gevolglik Afrikaanssprekende kleuters met kommunikasieafwykings in staat kan stel om minder afhanklik in hul moedertaal te kommunikeer.

Ek sal dit baie waardeer indien u die aangehegte vorm kan invul om aan te dui of u toestemming gee om kleuters by u skool by die studie te betrek of nie. Vir enige verdere inligting, kontak my gerus by die onderstaande kontakbesonderhede.

Vriendelike groete,

_____ _____

Danél Hattingh [redacted] Datum

_____ _____

Dr Kerstin Tönsing Datum
Tesisleier
Sentrum vir Aanvullende- en Alternatiewe Kommunikasie
[redacted]

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Appendix E

Toestemmingsvorm vir deelname: Skoolhoof

Hoof se Naam: _____

Skool se Naam: _____

Projek se Titel: *Die kernwoordeskat van Suid-Afrikaanse kleuters sonder gestremdhede*

Navorser: Danél Hattingh
Meestersstudent
Sentrum vir AAK
Selfoon: [redacted]

Tesisleier: Dr. Kerstin Tönsing
[redacted]

Ek,_____
(Naam en van)

☐ gee toestemming dat Danél Hattingh kleuters van skool se naam en hul ouers/voogde nader ten opsigte van moontlike deelname aan die studie getiteld: *Die kernwoordeskat van Suid-Afrikaanse Afrikaanse kleuters sonder gestremdhede* onder leiding van Danél Hattingh en onder toesig van Dr Kerstin Tönsing. Ek verstaan dat elke kleuter se deelname te alle tye vrywillig is en dat hulle enige tyd van die studie mag onttrek sonder enige negatiewe nagevolge. Ek verstaan dat die data rakende die studie vir ’n tydperk van 15 jaar by die Sentrum van Aanvullende- en Alternatiewe Kommunikasie gestoor sal word en dat dit te alle tye met vertroulikheid hanteer sal word. Ek verstaan dat die data moontlik vir duplikasiedoeleindes gebruik kan word. Laastens verstaan ek dat alle inligting rakende die skool se naam te alle tye as vertroulik hanteer sal word en in geen omstandighede bekend gemaak sal word nie.

OF

☐ gee nie toestemming aan Danél Hattingh om kleuters en hul ouers/voogde te nader ten opsigte van moontlike deelname aan die studie getiteld: *Die kernwoordeskat van Suid-Afrikaanse Afrikaanse kleuters sonder gestremdhede* nie.

_____
Hoof se handtekening

_____
Datum

Centre for Augmentative and Alternative Communication, Room 2-36, Com path Building, Lynnwood Road
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Appendix E

PRINCIPAL INFORMATION LETTER AND PERMISSION LETTER

English translation

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

February 2018

Dear _____

Subject: Assistance required for a research study

My name is Danél Hattingh. I am currently busy with my master's degree in augmentative and alternative communication (AAC) at the University of Pretoria.

The title of my study is as follows: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities.* The study aims to determine which words an Afrikaans-speaking 5-to-6 year old child uses most often during his/her typical school activities. It would be much appreciated if you would agree that I may conduct research at your school.

What will be expected of your school?

I would require the assistance of two teachers to identify two preschoolers who can participate in the study. The teacher will also be required to complete a questionnaire regarding general background information (e.g. classroom, number of children in class, etc.), as well as to send permission letters to parents and return them to me after completion.

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If the parents/guardians of the preschoolers give permission for their children to participate in the study, the participants' speech will be recorded using a small audio recorder to determine how many and what types of words they use during typical preschool-based activities.

The teachers will be consulted with regard to suitable times for the participants to carry the audio recorders.

The researcher will fit the audio recorder beforehand and remove it after the recordings. Teachers may also decide to remove the recording devices for certain activities during the day. Data collection will not disturb the normal school day routine. The data collection will take place on consecutive days to collect a total of 3,500 high-quality words per participant. The data collection process should not take more than five days.

What will be expected of the participating children during the study?
The participating children will be expected to meet with me in order to obtain their voluntary assent to participate in the study. Picture-based explanations will be used to explain the process in an age-appropriate manner. They will be expected to indicate assent by both verbal and written methods.

If the children are willing to participate, a small audio recorder kept in a bag will be tied around each participant's waist and a small microphone will be attached to the participant's shirt or sweater. The audio recorder will only be worn during certain times of the school day (as decided by the teacher). The participants will be asked not to play with the recording devices or to adjust them in any way. They may ask for assistance from their teacher at any time if they feel uncomfortable or even want to stop participating in the study. The teacher will assist the participants with adjusting or removing the device. Participants may choose to withdraw from the study at any time without any negative consequences.

The following ethical principles will be met during the study:

• Written consent from the participant's' parents/guardians, as well as written (enhanced with picture-based explanations) and verbal assent from the participants will be obtained before the start of the study.

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Participants and their parents/guardians will be aware that they can withdraw from the study at any time without any negative consequences.
• The speech samples collected during the study will be assessed by the researcher and research assistant and, subsequently, analysed.

• All information obtained during the study will be treated confidentially. Any identifiable information will be replaced by numerical codes. The names of the participants will be known to the researcher only for administrative purposes. No participant's name will be mentioned in any published information.

Who will have access to the results of the study?
The data of the research study will be securely stored at the AAC Centre at the University of Pretoria for a period of 15 years in both hard and soft copy. The information will be used to write a research report and scientific article, as well as for educational and research purposes.

The publications mentioned above will only include the types and frequencies of words used by the participants (as an average for a group of preschoolers). The results will not be linked to specific participants. The school and participants' identities, as well as personal information, will not be disclosed.

A summary of the results will be made available to any parent or school staff member interested in it.

What are the risks and benefits of the study?
The participants and staff at your school will in no way be harmed during the study. Participants will also not miss any school activities owing to the data collection. Participation is voluntary at all times. Participants or their parents/guardians may choose not to participate in the study, and may withdraw at any time without negative consequences. All personal information (including names of participants, as well as information included in the conversations recorded) will be kept confidential at all times. It will only be known to the researcher for administrative purposes.

The study could potentially contribute to the field of AAC, and consequently enable Afrikaans-speaking individuals with communication disorders to communicate more effectively in their home language.

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I would appreciate it if you could complete the attached form to indicate whether you give permission to include participants at your school in the study. For any further information, please contact me using the contact details below.

Best regards,

Danél Hattingh [redacted] Date

Dr Kerstin Tönsing [redacted] Date
Thesis leader
Centre for Augmentative and Alternative Communication (AAC)
[redacted]

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APPENDIX F

PARENTAL INFORMATION LETTER AND CONSENT FORM

Original (Afrikaans)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

Januarie 2018

Geagte Meneer/Mevrou

Aangaande: U kind se deelname aan ’n navorsingstudie.

My naam is Danél Hattingh. Ek is tans besig om my meestersgraad in aanvullende en alternatiewe kommunikasie (AAK) te voltooi deur die Universiteit van Pretoria.

Die titel van my studie is: *Die kernwoordeskat van Suid-Afrikaanse kleuters sonder gestremdhede*. Die doelwit van die navorsingstudie is om die woorde wat 5- tot 6-jarige Afrikaanssprekende kinders die meeste tydens alledaagse skoolaktiwiteite gebruik, te bepaal.

Hoekom is die studie van belang?
Aanvullende- en alternatiewe kommunikasie bemagtig individue met min of geen funksionele spraak om beter te kommunikeer. Kleuters wat nie kan praat nie en nie geletterd is nie, maak dikwels gebruik van hulpmiddels soos prentsimbole op kommunikasieborde of elektroniese toestelle soos ’n *iPad*. ’n Toepaslike prentwoordeskat moet egter vir sulke kommunikasiehulpmiddels gekies word. Een manier om woorde vir die hulpmiddels te kies, is om te bepaal watter woorde kleuters sonder gestremdheid dikwels gebruik. Hierdie mees gebruikte woorde word ook kernwoordeskat genoem.

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Die opnames sal geanaliseer word om die hoogste frekwensie woorde, asook die verskillende woordsoorte wat 5- tot 6-jarige kleuters gebruik, te bepaal. Sodoende kan ’n Afrikaanse kernwoordeskat bepaal word wat gevolglik op kommunikasiehulpmiddels vir kleuters met min of geen funksionele spraak gebruik kan word.

Wat sal van u en u kind verwag word tydens die studie?
Indien u toestemming gee dat u kind aan die studie mag deelneem, sal die volgende van hom/haar verwag word:

- Om tydens een pouse my en sy/haar onderwyseres te ontmoet om die studie te bespreek. Ek sal tydens die sessie vra of u kind gewillig sal wees om deel te neem. U kind se keuse ten opsigte van deelname sal gerespekteer word.
  Indien u kind bereid is om deel te neem, sal ’n klein bandopnemer in ’n sak om u kind se middellyf vasgemaak word tydens sekere tye van die skooldag. ’n Klein mikrofoon sal aan u kind se hemp of trui vasgemaak word. Die onderwyseres sal besluit wanneer dit toepaslik sal wees vir u kind om die toerusting te dra. U kind se spraak sal dan opgeneem word om sodoende ’n spraakmonster van 3,500 woorde te kry. U kind sal nie op enige videomateriaal verskyn nie.
- U kind sal gevra word om nie met die toebehore te speel of om enige veranderinge daaraan te maak nie. Hy/sy mag enige tyd vir hulp vra van sy/haaronderwyseres indien hulle ongemaklik voel of selfs nie meer aan die studie wil deelneem nie. Die volwassene sal u kind help om die toestel te verstel of te verwyder. U kind mag te eniger tyd besluit om te onttrek sonder enige negatiewe nagevolge.

Wat is u en u kind se regte?
Deelname is te alle tye vrywillig. U of u kind mag enige tyd besluit om te onttrek indien u/hy/sy sou wou. Enige inligting rakende u kind sal ook onmiddellik vernietig word. U kind se naam, asook ander inligting, sal net vir administratiewe doeleindes aan die navorser bekend wees. Alle ander inligting sal te alle tye vertroulik gehou word. Ek, my toesighouer en navorsingsassistent sal na die bandopnames luister. Geen persoonlike inligting (name ens.) sal op die transkripsies verskyn nie.

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Wie sal toegang hê tot die studie se resultate?
Die data van die navorsing sal vir ’n tydperk van 15 jaar in beide harde kopie, asook elektroniese format, veilig geberg word by die AAK-sentrum by die Universiteit van Pretoria. Die inligting sal gebruik word vir opvoedkundige en navorsingsdoeleindes, asook om ’n navorsingsverslag en wetenskaplike artikel te skryf.

Die publikasies sal uitsluitlik verslag doen oor die tipe woorde en frekwensies van woorde (as ’n gemiddeld oor ’n hele groep kinders). Die resultate sal nie aan spesifieke kinders gekoppel wees nie. U kind se identiteit en persoonlike inligting sal nie bekend gemaak word nie.

’n Opsomming van die resultate sal beskikbaar gemaak word aan enige ouers of skoolpersoneel wat daarin belangstel.

Wat is die risiko’s en voordele aangaande die studie?
U kind sal op geen manier benadeel word of skade aangedoen word tydens die studie nie. Hy/sy sal ook geen skoolaktiwiteite mis nie. Deelname is te alle tye vrywillig. Kinders of hul ouers/voogte mag kies om nie deel te neem aan die studie nie, en mag enige tyd onttrek sonder negatiewe nagevolge. Alle persoonlike inligting (insluitende name van deelnemers, asook ander inligting wat tydens die gesprekke opgeneem is) sal te alle tye vertroulik gehou word. Dit sal net bekend wees aan die navorser vir administratiewe doeleindes. Slegs die deelnemende kind se spraak sal vanaf die bandopnames geanaliseer word. Die studie kan potensieel bydra tot die veld van AAK, wat gevolglik Afrikaanssprekende kinders met kommunikasie-afwykings in staat kan stel om minder afhanklik in hul moedertaal te kommunikeer.

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Ek sal dit baie waardeer indien u die aangehegde vorm sal invul om aan te dui of u gewillig is om u kind te laat deelneem of nie. Vir enige verdere inligting, kontak my gerus by die onderstaande kontakbesonderhede.

Vriendelike groete,

Danél Hattingh [redacted] Datum

Dr Kerstin Tönsing Datum
Tesisleier
Sentrum vir Aanvullende- en Alternatiewe Kommunikasie
[redacted]

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Ouers/Voogde toestemmingsvorm

Naam van Kind: _____

Naam van ouer of Voog: _____

Projek se Titel: *Die kernwoordeskat van Suid-Afrikaanse kleuters sonder gestremdhede.*

Navorser: Danél Hattingh
Meestersstudent
Sentrum vir AAK
[redacted]

Tesisleier: Dr Kerstin Tönsing
kerstin.tonsing@up.ac.za
[redacted]

Ek,_____, ouer/voog van _____
(Naam en van) (Kind se naam)

☐ gee toestemming dat my kind deelneem aan die studie getiteld: *Die kernwoordeskat van Suid-Afrikaanse Afrikaanse kleuters sonder gestremdhede* onder leiding van Danél Hattingh en onder toesig van Dr Kerstin Tönsing. My en my kind se deelname is te alle tye vrywillig en ek verstaan dat ek my kind enige tyd van die studie mag onttrek sonder enige negatiewe nagevolge. Ek verstaan dat die data rakende die studie vir ’n tydperk van 15 jaar by die Sentrum van Aanvullende- en Alternatiewe Kommunikasie geberg sal word en dat dit te alle tye met vertroulikheid hanteer sal word. Ek verstaan dat my kind se spraak tydens die studie deur middel van ’n bandopnemer opgeneem gaan word en dat die resultate van die klankmonsters vir opvoedkundige en navorsingsdoeleindes gebruik kan word. Laastens verstaan ek dat al my en my kind se inligting te alle tye as vertroulik hanteer sal word.

OF

☐ gee nie toestemming dat my kind aan die studie: *Die kernwoordeskat van Suid-Afrikaanse Afrikaanse kleuters sonder gestremdhede* deelneem nie.

_____ _____

Ouer/voog handtekening Datum

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Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Appendix F

PARENTAL INFORMATION LETTER AND CONSENT FORM

English translation

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

February 2018

Dear Sir / Madam,

RE: Your child's participation in a research study

My name is Danél Hattingh. I am currently busy with my master's degree in augmentative and alternative communication (AAC) at the University of Pretoria.

The title of my study is as follows: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities.* The study aims to determine which words an Afrikaans-speaking 5-to-6 year old child uses most often during his/her typical school activities.

Why is this study relevant?

Augmentative and alternative communication empowers individuals with little or no functional speech to communicate better. Often preschoolers who cannot speak and are not literate make use of aids such as picture symbols on communication boards or electronic devices such as an iPad. A relevant picture vocabulary must, however, be chosen for such a communication aid. One method that can be used to establish which words are most appropriate is to determine the words preschoolers without any disability use most often. These words can be described as core vocabulary.

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The study aims to determine a core vocabulary for the Afrikaans language. This involves obtaining audio recordings of Afrikaans-speaking preschoolers' language use during their typical preschool activities.

The recordings will be analysed to determine the words with the highest frequency, as well as the different parts of speech a 5-to-6-year-old uses. In doing so, a core vocabulary can be established, which can be used for communication aids for preschoolers with little-or-no-functional speech.

What will be expected from you and your child during this study?
If you grant permission for your child to participate in this study, the following may be expected from him or her:

- To meet with me and the teacher during a break to discuss the study. During this discussion I will ask your child if he/she will be willing to take part in the study. Your child's choice in terms of participation will be respected.
- If your child is willing to participate, a bag with a small audio recorder will be attached to your child's waist during certain times of the school day. A small microphone will be attached to your child's shirt or jersey. Your child's teacher will decide when it is appropriate for your child to wear the device. Your child's speech will then be recorded to determine a speech sample of 3,500 words.
- Your child will be asked not to play with or to adjust any of the equipment. He/she may ask for assistance at any time from his/her teacher if he/she experiences any discomfort or if he/she does not want to participate any longer. An adult will assist your child with removing or adjusting the device. Your child may choose to withdraw from the study at any time without any negative consequences.

What are your child's and your rights?
Participation is voluntary at all times. You or your child may withdraw from the study at any given moment if you wish to. Any information concerning your child will be destroyed immediately. Your child's name, as well as any other information, will only be made available to the researcher for administrative purposes. All other information will be kept confidential. Audio recordings will be available to me, my supervisor and my research assistant. No personal information (names etc.) will appear on the transcript that will be made of the audio recordings.

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Who will have access to the results of the study?
The data of the research will be available in both hard copy, as well as in electronic format, which will be stored for 15 years by the AAC Centre at the University of Pretoria.

The information will be used for education and research purposes and to draft a research report and scientific article. The publications will exclusively report on the types of words and the frequency of those words (as an average of a group of children). The results will not be linked to your child specifically. Your child's identity and personal information will not be made public.

A summary of the results will be made available to any parent or school personnel if they are interested.

What are the risks and benefits involved in this study?
Your child will not be disadvantaged or harmed in any way during this study. He/she will also not be absent from any school activities. Participation will be voluntary at all times. Children and their parents/guardians may choose not to participate or to withdraw without any negative consequences.

All personal information (including names of participants, as well as any other information that was recorded during conversations) will be kept confidential. It will only be made known to the researcher for administrative purposes. The study may contribute to the field of AAC, which could ultimately enable Afrikaans-speaking children with speech disabilities to communicate more independently in their home language.

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I will appreciate it if you would complete the attached form to indicate if your child is willing to participate or not. For any further information, please contact me using the contact details listed below.

Kind regards,

Danél Hattingh [redacted] Date

Dr Kerstin Tönsing Date
Supervisor

Centre for Augmentative and Alternative Communication

[redacted]

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Parents/guardian consent form

Name of child: _____

Name of parent or guardian: _____

Title of study: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities.*

Researcher: Danél Hattingh
Master's Student
[redacted]

Supervisor: Dr Kerstin Tönsing
Centre for AAC
[redacted]

I, _____, parent/guardian of_____
(Name and surname) (Child's name)

☐ give permission that my child partakes in the study titled: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities,* conducted by Danél Hattingh and done under the supervision of Dr Kerstin Tönsing. I understand that participation is voluntary and that I and/or my child can choose to withdraw at any given time. I also understand that the data will be securely stored for a period of 15 years at the Centre for AAC. I furthermore understand that my child's speech will be recorded by means of audio-recording devices, whereafter the results might be used for educational and research related purposes.

OR

☐ do not give permission that my child participates in the study titled: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities.*

_____ _____

Parent/guardian signature Date

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Appendix G

Original (Afrikaans)

Biografiese- en taalvraelys

(Vraelys aangepas vanuit Mngomezulu (2017). Determining an AAC core vocabulary for Zulu-speaking preschool children. Master's thesis submitted for examination. University of Pretoria, Pretoria, South Africa)

Voltooi asseblief die volgende vraelys. Maak asseblief gebruik van die spasies en blokkies wat voorsien is.

Identifiserende Inligting:

Naam van Kind: _____

Geboortedatum: _____

Geslag: _____

Persoon wat vorm voltooi: _____

Verwantskap met kind: _____

Algemene inligting rakende u kind

Is u kind se huistaal Afrikaans? JA ☐ NEE ☐

(Huistaal kan beskryf word as die taal waaraan 'n kind die meeste tuis blootgestel word. Dit kan ook gesien word as die taal wat 'n kind die beste ken voor hy/sy skool toe gaan).

Hoe oud was u kind toe hy/sy begin praat het? _____

Praat u kind enige ander tale behalwe Afrikaans? JA ☐ NEE ☐

Indien ja, watter ander taal/tale praat hy/sy? 1) _____

2) _____

3) _____

Het u kind enige liggaamlike of sensoriese gestremdhede?
Merk indien van toepassing

Visuele gestremdheid ☐

Gehoorgestremdheid ☐

Liggaamlike gestremdheid ☐

Is u van mening dat u kind enige spesiale leerbehoeftes het?

JA ☐ NEE ☐

Appendix G

Is u van mening dat u kind se ontwikkelingsmylpale ouderdomstoepaslik is?

JA ☐ NEE ☐

Is u kind al deur ’n spraaktaalterapeut gesien vir intervensie?

JA ☐ NEE ☐

Hoe lank is u kind al in sy/haar huidige kleuterskool? _____

Hoeveel dae ’n week is u kind teenwoordig by die skool? _____

Lys die verskillende tale wat by die huis gebruik word:

1) _____
2) _____
3) _____

Watter een van die bogenoemde tale word die meeste tuis gepraat?

_____

Luister u kind radio? JA ☐ NEE ☐

Indien ja, aan watter taal word hy/sy die meeste blootgestel op die radio?

_____

Kyk u kind televisie? JA ☐ NEE ☐

Indien ja, aan watter taal word hy/sy die meeste blootgestel op die televisie?

_____

Inligting rakende u sosio-ekonomiese omstandighede:

Hoeveel werkende volwassenes is daar tans in u huishouding? _____

**Sal u belangstel om die navorsingsverslag per epos te ontvang?*

JA ☐ NEE ☐

Indien ja, verskaf asseblief u epos-adres: _____

Baie dankie dat u die tyd geneem het om die vraelys te voltooi.

Appendix G

English translation

Biological and language questionnaire

(Questionnaire adapted from Mngomezulu (2017). Determining an AAC core vocabulary for Zulu-speaking preschool children. Master's thesis submitted for examination. University of Pretoria, Pretoria, South Africa)

Please complete the following questionnaire. Please make use of the spaces provided or tick the appropriate block.

Identifying Information:

Name of child: _____

Date of birth: _____

Sex: _____

Person responsible for completing this form: _____

Relationship to child: _____

General information about your child

Is your child's home language Afrikaans? YES ☐ NO ☐

(Home language refers to the language acquired by the child through engagement at home. It is usually the language a child knows best before entering an educational setting)

At what age did he/she start to speak?_____

Does your child speak any other languages except Afrikaans?

YES ☐ NO ☐

If yes, what languages? 1) _____

2) _____

3) _____

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Does your child have any sensory or physical disabilities?
Mark if relevant

Visual ☐

Hearing ☐

Physical ☐

Does your child have any special need requirements? YES ☐ NO ☐

Do you feel that your child is developing age-appropriately?

YES ☐ NO ☐

Has your child ever been seen for speech therapy?

YES ☐ NO ☐

How long has your child been enrolled in his/her current school? _____
How many days per week is your child present at school? _____

Please list the different languages that are used at home:

1) _____

2) _____

3) _____

Which one of the above-mentioned languages is used most often at home?

_____

Does your child listen to the radio? YES ☐ NO ☐

If yes, to which language(s) is he/she exposed most?

_____

Does your child watch television? YES ☐ NO ☐

If yes, to which language(s) is he/she exposed most on television?

_____

Appendix G

Information regarding your socio-economic circumstances::

How many adults are currently working within your household? _____

**Would you like to receive the results of the study in an email report?*

YES ☐ NO ☐

If yes, please provide a valid email address:

_____

Thank you for completing this questionnaire!

APPENDIX H

TEACHER INFORMATION LETTER

Original (Afrikaans)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

Februarie 2018

Geagte Personeellid

<u>Aangaande: U hulp met 'n navorsingstudie</u>

My naam is Danél Hattingh. Ek is tans besig om my meestersgraad in aanvullende- en alternatiewe kommunikasie (AAK) te voltooi deur die Universiteit van Pretoria.

Die titel van my studie is: *Die kernwoordeskat van Suid-Afrikaanse kleuters sonder gestremdhede*. Die doelwit van die navorsingstudie is om die woorde wat 5- tot 6-jarige Afrikaanssprekende kleuters die meeste tydens alledaagse skoolaktiwiteite gebruik, te bepaal.

Ek wil u graag vra om my met die identifisering van moontlike deelnemers aan die studie te help. Ek het reeds toestemming by u hoof ontvang om my studie by _____ te doen. Sien asseblief die toestemmingsbrief soos aangeheg.

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Appendix H

Hoekom is die studie van belang?
Aanvullende- en alternatiewe kommunikasie bemagtig individue met min of geen funksionele spraak om beter te kommunikeer. Kleuters wat nie kan praat nie en nie geletterd is nie, maak dikwels gebruik van hulpmiddels soos prentsimbole op kommunikasieborde of elektroniese toestelle soos ’n *iPad*. ’n Toepaslike prentwoordeskat moet egter vir sulke kommunikasiehulpmiddels gekies word. Een manier om woorde vir die hulpmiddels te kies, is om te bepaal watter woorde kleuters sonder gestremdheid die meeste gebruik. Hierdie mees gebruikte woorde word ook kernwoordeskat genoem.

Die doel van die studie is dus om ’n kernwoordeskat vir die Afrikaanse taal te bepaal. Dit behels die insameling van bandopnames van Afrikaanse kleuters se daaglikse taalgebruik tydens normale kleuterskoolaktiwiteite. Die opnames sal geanaliseer word om die hoogste frekwensie woorde, asook die verskillende woordsoorte wat 5- tot 6-jarige kleuters gebruik, te bepaal. Sodoende kan ’n Afrikaanse kernwoordeskat bepaal word wat op kommunikasiehulpmiddels vir kleuters met min of geen funksionele spraak gebruik kan word.

Wat sal van u en die deelnemende kleuters verwag word tydens die studie?
Ek sal dankbaar wees as u bereid sal wees om ’n kort vergadering by te woon, waartydens al die belangrike besonderhede aangaande die studie bespreek sal word. Ek sal u dan vra om ’n kort agtergrondsvraelys in te vul en om twee kleuters wat aan die deelname-kriteria voldoen, te identifiseer en toestemmingsbriewe vir die ouers/voogde huis toe te stuur.

Daar sal van die kleuters wat deelneem, verwag word om tydens een pouse my (of my navorsingsassistent) en u te ontmoet om die studie te bespreek. Ek sal tydens die sessie vra of die kleuters gewillig sal wees om deel te neem. Die kleuters se keuse ten opsigte van deelname sal gerespekteer word. Indien die kleuters bereid is om deel te neem, sal ’n klein bandopnemer in ’n sak om elke kleuter se middellyf vasgemaak word. Die bandopnemer sal slegs vir sekere tye van die skooldag gedra word. ’n Klein mikrofoon sal aan die kleuter se hemp of trui vasgemaak word. U mag self besluit wanneer dit toepaslik sal wees vir die kleuters om die toerusting te dra, en mag dit afskakel/verwyder wanneer dit nie toepaslik is nie. Die kleuter se spraak sal dan opgeneem word om sodoende ’n spraakmonster van 3,500 verstaanbare woorde te kry. Geen deelnemers sal op enige videomateriaal verskyn nie.

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Wat is die regte van die kleuters wat deelneem?
Deelname is te alle tye vrywillig. Kleuters of hul ouers/voogde mag kies om nie deel te neem aan die studie nie, en mag enige tyd onttrek sonder negatiewe nagevolge. Alle persoonlike inligting (insluitend name van deelnemers, asook ander inligting wat tydens die gesprekke opgeneem is) sal te alle tye vertroulik gehou word. Dit sal net bekend wees aan die navorser vir administratiewe doeleindes. Slegs die deelnemende kleuter se spraak sal vanaf die bandopnames geanaliseer word.

Wie sal toegang hê tot die studie se resultate?
Die data van die navorsing sal vir ’n tydperk van 15 jaar in beide harde kopie, asook elektroniese formaat veilig geberg word by die AAK-sentrum by die Universiteit van Pretoria. Die inligting sal gebruik word vir opvoedkundige en navorsingsdoeleindes, asook om ’n navorsingsverslag en wetenskaplike artikel te skryf.

Die publikasies sal uitsluitlik verslag doen oor die tipe woorde en frekwensies van woorde (as ’n gemiddeld oor ’n hele groep kleuters). Die resultate sal nie aan spesifieke kleuters gekoppel wees nie. Die skool en kleuters se identiteite en persoonlike inligting sal nie bekend gemaak word nie.

’n Opsomming van die resultate sal beskikbaar gemaak word aan enige ouers of skoolpersoneel wat daarin belangstel.

Wat is die risiko’s en voordele aangaande die studie?
Neem asseblief kennis dat die vraelys wat voorsien word, nie poog om u kennis te toets nie. Die vrae is informatief van aard. Die studie sal u op geen manier benadeel nie. Die deelnemende kleuters kan te eniger tyd vra dat die bandopnemers en mikrofone verwyder of aangepas word sodat hulle nie enige ongemak ervaar nie.

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Die studie kan potensieel bydra tot die veld van AAK en die toepaslike ontwerp van AAK-hulpmiddels vir Afrikaanssprekende kleuters met min of geen spraak.

U hulp sal besonder waardeer word. Vir enige verdere inligting, kontak my gerus deur die onderstaande kontakbesonderhede.

Vriendelike groete,

Danél Hattingh [redacted] Datum

Dr Kerstin Tönsing Datum
Tesisleier
Sentrum vir Aanvullende- en Alternatiewe Kommunikasie
[redacted]

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Appendix H

English translation

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

February 2018

Dear staff member

RE: Assistance required for a research study

By way of introduction, my name is Danél Hattingh and I am currently completing my master's degree in augmentative and alternative communication (AAC) at the University of Pretoria. The title of my study is: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities*. The purpose of the research study is to determine the words most commonly used by 5-to-6-year-old Afrikaans-speaking preschoolers during everyday school activities. Will you please assist me in identifying possible participants in the study? I have already received permission from your principal to do my studies at _____.

Why is the study important?

Augmentative and alternative communication empowers individuals with little or no functional speech to communicate more independently. Children who are not literate or cannot communicate verbally often use tools such as picture symbols on communication boards or electronic devices such as iPads to communicate. Therefore, an appropriate picture vocabulary should be chosen for these communication aids. One way to choose words for these communication aids is to determine which words are most commonly used by

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electronic devices such as iPads to communicate. Therefore, an appropriate picture vocabulary should be chosen for these communication aids. One way to choose words for these communication aids is to determine which words are most commonly used by individuals without disabilities. These most commonly and frequently used words are also known as core vocabulary words.

The purpose of the study is therefore to determine a core vocabulary for the Afrikaans language. This involves collecting audio recordings of Afrikaans preschoolers' daily language use during normal preschool activities. The recordings will be analysed to determine the highest frequency words, as well as the different word types that 5-to-6-year-old preschoolers use. In this way, an Afrikaans core vocabulary can be identified to be used in communication tools for individuals with little or no functional speech.

What will be expected of you and the participating children during the study?
I would appreciate it if you would be willing to attend a short meeting, during which all the important details regarding the study will be discussed. I will then ask you to complete a short preschool background questionnaire and to identify two potential participants who meet the eligibility criteria and send permission letters to the parents/guardians of the identified children.

The identified children will be meeting with me and you during a break to explain the details of the study. During this meeting, I will ask if the identified children will be willing to participate in the study. If the children are willing to participate, a small audio recorder kept in a bag will be tied around each child's waist and a small microphone will be attached to the child's shirt or sweater. The audio recorder will only be worn during certain times of the school day. You may decide when it would be appropriate for the children to wear the equipment, and may disable/remove it when deemed not appropriate. The child's speech will then be recorded in order to obtain a speech sample of 3,500 words. No participants will appear on any video materials.

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What are the rights of the participating children?
Participation is voluntary at all times. Participants and/or their parents/guardians may choose not to participate in the study, and may withdraw at any time without negative consequences. All personal information (including names of participants, as well as information included in the conversations recorded) will be kept confidential at all times. It will only be known to the researcher for administrative purposes. Only the speech of the child who is participating in the study will be analysed from the voice recordings.

Who will have access to the results of the study?
The data of the research study will be securely stored at the AAC Centre at the University of Pretoria for a period of 15 years in both hard and soft copy. The information will be used to write a research report and scientific article, as well as for educational and research purposes.

The publications mentioned above will only include the types and frequencies of words used by participants (as an average for a group of children). The results will not be linked to specific children. The school and participants' identities, as well as personal information, will not be disclosed.

A summary of the results will be made available to any parent or school staff member interested in it.

What are the risks and benefits of the study?
The questions in the background questionnaire are informative in nature and do not attempt to test your knowledge. The study will not harm you in any way. The participating children may request at any time that the audio recorders and microphones be removed or adjusted to ensure that they do not experience any discomfort.

The study could potentially contribute to the field of AAC and the appropriate design of AAC aids for Afrikaans-speaking preschoolers with little or no functional speech.

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Your assistance will be greatly appreciated. For any further information, please contact me using the contact details below.

Best regards

Danél Hattingh [redacted] Date

Dr Kerstin Tönsing Date
Thesis conductor
Centre for Augmentative and Alternative Communication (AAC)
[redacted]

[redacted]

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APPENDIX I

PRESCHOOL BACKGROUND QUESTIONNAIRE

Original (Afrikaans)

Kleuterskool-agtergrond en Deelnemernominasie

(Vraelys aangepas vanuit Mngomezulu, J. (2017). Determining an AAC core vocabulary for Zulu-speaking preschool children. Master's thesis submitted for examination. University of Pretoria, Pretoria, South Africa)

Voltooi asseblief die volgende vraelys. Maak asseblief gebruik van die spasies en blokkies wat voorsien is.

Kleuterskool se naam : _____

Aantal kinders in die kleuterskool: _____

Watter klas onderrig u? _____

Dui asseblief aan hoeveel seuns en dogters daar in u klas is:
Seuns: _____ Dogters: _____

Dui asseblief die ouderdomme van die kleuters in u klas aan:

Van _____(jongste), na _____ (oudste)

Hoeveel assistentpersoneellede is daar in u klas? _____

Is die assistente bevoeg in die Afrikaanse taal?

JA ☐ NEE ☐

Is Afrikaans die enigste taal van opvoeding in u klas (met ander woorde, die taal wat u as onderwyseres gebruik om die hele klas te onderrig)?

JA ☐ NEE ☐

Aan watter ander tale word die kleuters in u klas blootgestel (bv. deur assistente, ander kleuters, media)?

_____

Volg u klas 'n spesifieke rooster of program gedurende die loop van die dag?

JA ☐ NEE ☐

Indien ja, voorsien asseblief 'n kort beskrywing van tipiese aktiwiteite wat deel vorm van die dag:

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_____

_____

_____

_____

Het die kinders in u klas gereeld die geleentheid het om met ander kinders in die kleuterskool te speel/te kommunikeer?

JA ☐ NEE ☐

Indien ja, beskryf asseblief kortliks (hoe dikwels, watter tipe aktiwiteite, ouderdomme van die ander kinders):

_____

_____

_____

_____

Nominasie van potensiële leerders

Die doel van die studie is om ’n Afrikaanse spraakmonster in te samel van Afrikaanse kleuterskoolgaande kinders. Sal u asseblief twee kleuters (een seun en een dogter) identifiseer, wie se huistaal Afrikaans is, wat na u mening van ouderdomstoepaslike spraak- en taalpatrone gebruik maak? Die kleuters moet tussen 5 jaar en 6 jaar wees. Daar word ook van die kinders verwag om vir ’n tydperk van ten minste twee maande as geregistreerde kleuters by die kleuterskool te wees, asook ’n minimum van twee dae per week by die skool te wees.

Naam van kind	Geslag	Kronologiese ouderdom

Stuur asseblief die inligting- en toestemmingsbrief, asook die vraelys (soos aangeheg) aan die ouers/voogte van die kinders wat u geïdentifiseer het.

Baie dankie dat u die tyd geneem het om die vraelys te voltooi.

Appendix I

PRESCHOOL BACKGROUND QUESTIONNAIRE

English translation

Preschool background and nomination of participant

(Questionnaire adjusted from Mngomezulu, J. (2017). Determining an AAC core vocabulary for Zulu-speaking preschool children. Master's thesis submitted for examination. University of Pretoria, Pretoria, South Africa)

Kindly complete the following questionnaire. Make use of the spaces and blocks provided in the form.

Name of your preschool: _____

Number of children attending the preschool: _____

Which class are you teaching? _____

Kindly indicate the number of boys and girls:
Boys: _____ Girls: _____

Further distinguish between the different ages in the class:

From _____(youngest), to _____ (oldest)

How many assistant personnel are there in your class? _____

Are the assistant personnel competent in the Afrikaans language?

YES ☐ NO ☐

Is Afrikaans the only language spoken in the classroom (in other words the only language used to teach all the learners)?

YES ☐ NO ☐

To what other languages are the children in your class exposed (for example by assistants, other children, the media)?

_____

_____

Does your class follow a specific schedule or programme during the day?

YES ☐ NO ☐

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If yes, kindly provide a brief summary of the typical activities that take place during the day:

_____

_____

_____

_____

Is there often an opportunity for the children to play and communicate with the other children in the preschool?

YES ☐ NO ☐

If yes, kindly describe briefly (referring to how often, which type of activities, ages of the other children):

_____

_____

_____

_____

Nomination of potential learners

The goal of this study is to gather a speech sample of Afrikaans children attending preschool. Would you please identify two preschoolers (one boy and one girl), with Afrikaans as their home language, who in your opinion make use of age-appropriate speech and language skills. The preschoolers must be between 5 and 6 years old. Furthermore, the children must have been registered at the preschool for a period of at least two months and must attend school for a minimum of two days a week.

Name of child	Gender	Chronological age

Kindly send the information and consent letter, as well as the questionnaire (attached hereto) to the guardians/parents of the preschoolers who were identified.

Thank you for your time to complete this questionnaire.

APPENDIX J

CHILD ASSENT SCRIPT

Original (Afrikaans)

Foto van navorser

Goeiemôre, my naam is Tannie Danél.

Ek wil graag uitvind watter woorde kinders soos jy gebruik wanneer hulle by die skool met hulle juffrou en maatjies gesels.

Daarom wil ek by jou hoor of jy my daarmee sal help. As jy ja sê, sal ons hierdie paar goedjies doen:

Ek gaan ’n klein bandopnemer *(wys vir kind)* in ’n sakkie om jou lyfie sit wat jy met jou gaan saamdra.

Ek gaan ook ’n klein mikrofoon bo-aan jou hemp of rokkie vasmaak.

Hierdie mikrofoon en bandopnemer gaan alles wat jy vir jou maatjies en Juffrou sê, opneem. Ek gaan niemand anders na die bandjie laat luister nie. Net ek gaan daarna luister om te leer watter woorde kinders soos jy gebruik wanneer jy gesels.

As die bandopnemer of mikrofoon jou pla, moenie probeer om dit self reg te maak nie. Sê liewers dadelik vir jou juffrou. Sy sal jou

help. As jy nie meer die bandopnemer wil dra nie, kan jy ook vir jou juffrou sê en sy sal dit afhaal. Niemand sal vir jou kwaad wees as jy dit nie meer wil dra nie.

Appendix J

English translation

Photo of researcher

Good morning, my name is Danél.

I would like to find out what words children like you use when they are at school, speaking to their teachers and friends.

I would like to ask you if you would be willing to help me with this. If you agree, we will do the following:

I will place a small recorder (show recorder to the child) in a satchel around your waist, which you will carry with you.

I will also attach a small microphone to the top of your shirt or dress.

This recorder and microphone will record everything you say to your teacher and friends. I will not share the recording with anybody else. Only I will listen to the recordings, to learn which words children like you use when you speak to others.

Appendix J

If the recorder or microphone becomes a bit of an irritation, do not try to adjust it yourself. Rather ask your teacher immediately for help and she will assist you. If you do not want to carry the recorder anymore, you can ask your teacher to remove it. Nobody will be mad at you if you do.

APPENDIX K

CHILD ASSENT FORM

Original (Afrikaans)

Naam van kind: _____

	Verstaan jy alles wat ek aan jou verduidelik het?  **JA NEE**
	Verstaan jy dat jy self kan kies om deel te neem of nie?  **JA NEE**
	Verstaan jy dat ons alles wat jy sê met 'n bandopname gaan opneem?  **JA NEE**
	Verstaan jy dat jy enige tyd kan vra dat ons die bandopnemer afhaal?  **JA NEE**

Appendix K

	Het jy enige vrae?  **JA NEE**
	Is jy gelukkig met hoe jy jou vragies geantwoord het?  **JA NEE**
	Wil jy saam met my werk vandag?  **JA NEE**

Appendix K

English translation

Name of child: _____

	Do you understand everything that I explained to you? **YES** **NO**
	Do you understand that you yourself can choose not to participate? **YES** **NO**
	Do you understand that everything you say will be recorded using a recorder? **YES** **NO**
	Do you understand that you can request the recorder to be removed at any time? **YES** **NO**

Appendix K

	Do you have any questions? **YES** **NO**
	Are you happy with all the answers that you have provided? **YES** **NO**
	Do you want to work with me today? **YES** **NO**

APPENDIX L

TRANSCRIPTION RULES

Transcription conventions as suggested by the SALT (Miller & Iglesias, 2012), as well as an adapted version of the rules used by Trembath, Balandin and Togher (2007) were used as a basis for compiling the transcription rules. Additional rules were added to accommodate the Afrikaans language. The table below gives all the relevant transcription rules.

Rule	**Example (where relevant)**
At the beginning of the line, *C* indicates the child's utterance. It is a requirement of the SALT programme that was used to count words.	C *Ons is in die klas*.
Pronunciation variations and repetitions:	
- Speech errors (where applicable and intelligible) will be transcribed as if the error did not occur. This will be done as the aim is to determine the type and frequency of words and not the speech errors of the child.	If the child says *klaan* instead of *kraan* (sound error in the Afrikaans word for tap), the word will be transcribed as *kraan.*
- Syllable and sound repetitions will be transcribed as one word, therefore being transcribed as if the error did not occur.	*d-dag* will be transcribed as *dag* (day) *juf-juffrou* will be transcribed *juffrou* (teacher).
- Contractions will be transcribed as the intended words except if spelled otherwise according to the Afrikaans Dictionary.	*issie* will be transcribed as *is nie* (is not) *willie* will be transcribed as *wil nie* (do not want to). Acceptable contractions according to the *Woordeboek van die Afrikaanse Taal* (WAT)

Appendix L

Rule	Example (where relevant)
	(Botha, n.d.) include: *moenie* (do not), and *dis* (it is).
- Incomplete words will not be transcribed and will therefore be omitted from the analysis.	*Ek wil skoo- huis toe gaan.* The incomplete word *skoo-* will not be transcribed.
Vocalisations that function as interjections, fillers and utterances or indications of agreement or disagreement will be transcribed with phonetic consistency regardless of length. Therefore, no extra letters will be added if such vocalizations are prolonged (for example, *mmmmm* or *mmm* will both be transcribed as *mm*.	Interjections (words to express feelings or reactions): • *'Huh'*—expressing confusion • '*oh-o*'—expressing worry Fillers (sounds that mark pauses or hesitations in speech): • *um* Vocalisations of agreement: *mhmh* Vocalizations of disagreement: *huh_uh*
All numerical values will be transcribed as words. Numerical values consisting of more than one word will be transcribed with an underscore (_) as it remains one concept. Ranking words will be transcribed in their original form.	*sewe_en_twintig* (twenty seven) *eerste* (first), *tweede* (second) *derde* (third).
All phonemes found in isolation will be transcribed in isolation with [phoneme] behind the sound to indicate that it is a sound.	*Beer begin met 'n b[phoneme]*..
A variation of X is used to indicate unintelligible sections of an utterance. Unintelligible words will not be considered in the analysis. Unintelligible words will not be transcribed and will be represented by the	C: *Sy X mooi* (She X pretty). C: *Sy XX* (She XX). C: *XXX*

Appendix L

Rule	Example (where relevant)
code X, where XX indicates an unintelligible segment of an utterance of unspecified length. XXX indicates a complete unintelligible utterance.	
All sound imitations will be omitted, as these sound effects are difficult to transcribe.	
Character names and film, book or production titles consisting of multiple words will be transcribed with underscoring between words in order to be counted as one word. Words that are uttered as part of a chant or song or as a routine seriation (such as rehearsing the alphabet or counting) will also be transcribed in this way, and followed by the code [chant] or [sing] to be identified as such in the transcript. Word games, chants and rhymes will also be seen as part of a chant.	*Waar_is_Otto*? *Liewe_Heksie* *Wielie_wielie_walie_die_aap_sit_op_sy_bali e[sing]* *A_B_C_D[chant]*
In order to maximise confidentiality, the names of peers and any other persons, as well as proper nouns referring to specific locations, will be replaced by codes.	CN (child's name) TN (teacher's name) PN (place name) AN (adult's name)
[CS] will be used to indicate code switching to another language. These words will be counted.	'I[CS] am[CS] back[CS].' '*Ek sit op die* chair[CS].
Word combinations (words or word parts) of two different languages will be indicated by	Afrikaans prefix *ge-* in combination with an English verb such as 'try', giving *ge*try.

Appendix L

Rule	**Example (where relevant)**
means of [CC]. These words are counted.	
Replicated adverbs in the Afrikaans language are sometimes written as separate words but do represent one concept, carrying emphasis. These words will be transcribed with an underscore (_), as they cannot be separated, as it alters the semantic value of the word.	*'lag_lag'* *'gou_gou'* *'nou_nou'*

APPENDIX M

CODING RULES

Coding conventions as suggested by the SALT (Miller & Iglesias, 2012) were used as a guideline for transcriptions. Additional rules were added relevant to the Afrikaans language. The table below indicates all the relevant rules which were used for coding of obtained samples.

Coding rule	Examples
Inflectional morphemes	
The transcripts will be coded in such a way that both the root form, as well as the different inflected forms can be counted. This was done by adding a forward slash to the root word and adding the morpheme after the word. Specific inflections coded in this way included:	
Nouns:	
- Plurals	*skoen/e* (shoes), *vinger/s* (fingers)
- Diminutives	*vinger/tjies* (little fingers), *hond/jie* (little dog), *man/etjie* (little man). In the case of the last example it should be noted that the original spelling is *mannetjie*. However, in order to trace the root, the coded form is spelled as *man/etjie*.
Verbs:	
- Past tense morpheme *ge-*. Although *ge-* appears as an affix and is added at the beginning of the original verb, it will be coded as 'verb/ge', since this is a requirement of the SALT programme in counting roots and morphemes.	*skop/ge* (kicked), *koop/ge* (bought), *hardloop/ge* (ran)

Appendix M

Coding rule	**Examples**
- Irregular past and fure tense verbs will be coded in such a way that they can be traced back to their root. This will entail transcribing the root first, followed by a forward slash and adding the inflected irregular form.	*is/was* (is/was), *is/wees* (is/to be), *is/gewees*(is/was), *kan* (can)*/kon* (could)
Adjectives:	
- Attributive form	*vinnig/e* (the fast one, or used attributively before the noun)
- Degrees of comparison.	*vinnig/er* (faster) *vinnig/ste* (fastest)
Numerals	
Plural form	*vier's* (fours)
Pronouns	
Plural form	*hierdie's* (these)

APPENDIX N

LIST OF WORDS WITH MULTIPLE MEANINGS AND/OR CLASSIFIABLE AS MORE THAN ONE PART OF SPEECH

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
A		61	1,5	10		
	Code Switch	57	1,4	9	✓	
	Phoneme	4	0,1	2		✓
AAN		27	0,7	10		
	Adjective	3	0,1	2		✓
	Adverb	5	0,1	4		✓
	Preposition	19	0,5	10	✓	
AF		41	1,0	11		
	Adjective	7	0,2	5		✓
	Adverb	34	0,9	11	✓	
AL		175	4,4	12		
	Adverb	90	2,3	12	✓	
	Numeral	85	2,1	11	✓	
AN		49	1,2	9		
	Adult Name Code	48	1,2	9	✓	
	Code Switch	1	0,0	1		✓
AS		128	3,2	12		
	Conjunction	124	3,1	12	✓	
	Code Switch	4	0,1	1		✓

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
BEGIN		32	0,8	9		
	Noun	5	0,1	3		✓
	Lexical Verb	27	0,7	8	✓	
BRING		35	0,9	9		
	Lexical Verb	29	0,7	9	✓	
	Code Switch	6	0,2	1		✓
BY		116	2,9	12		
	Preposition	113	2,9	12	✓	
	Noun	3	0,1	2		✓
DRIE		35	0,9	9		
	Numeral	34	0,9	9	✓	
	Noun	1	0,0	1		✓
EEN		295	7,4	12		
	Demonstrative Pronoun	221	5,57	12	✓	
	Numeral	74	1,87	12	✓	
GAAN		530	13.4	12		
	Auxiliary Verb	366	9.2	12	✓	
	Lexical Verb	164	4.1	12	✓	
GOED		61	1,5	12		
	Adjective	12	0,3	7		✓
	Noun	48	1,21	11	✓	
	Conjunction	1	0,0	1		✓

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
GOU		41	1,0	6		
	Adverb	35	0,9	6	✓	
	Conjunction	1	0,0	1		✓
	Interjection	5	0,1	3		✓
HAAR		84	2,1	12		
	Noun	10	0,3	6		✓
	Pronoun	74	1,9	12	✓	
HAND		39	1,0	12		
	Noun	38	0,96	12	✓	
	Code Switch	1	0,0	1		✓
HET		794	20.0	12		
	Auxiliary Verb	480	12.1	12	✓	
	Lexical Verb	314	7.9	12	✓	
HOE		143	3,6	12		
	Adverb	142	3,6	12	✓	
	Lexical Verb	1	0,0	1		✓
I		95	2,4	10		
	Code Switch	84	2,1	10	✓	
	Phoneme	11	0,3	3		✓
IN		244	6,2	12		
	Adverb	9	0,2	7		✓
	Code Switch	5	0,1	2		✓
	Preposition	230	5,8	12	✓	

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
IS		1,457	36,8	12		
	Lexical Verb	1,404	35,4	12	✓	
	Code Switch	53	1,3	7	✓	
KEER		30	0,8	11		
	Noun	27	0,7	10	✓	
	Lexical Verb	3	0,1	3		✓
KEN		26	0,7	9		
	Noun	1	0,0	1		✓
	Lexical Verb	25	0,6	8	✓	
KIND		23	0,6	7		
	Noun	22	0,6	7	✓	
	Code Switch	1	0,0	1		✓
KLEUR		59	1,5	8		
	Noun	45	1,1	8	✓	
	Lexical Verb	14	0,4	4		✓
KORT		49	1,2	11		
	Lexical Verb	47	1,2	11	✓	
	Adjective	2	0,1	2		✓
LAAT		44	1,1	11		
	Adjective	12	0,3	4		✓
	Conjunction	9	0,2	4		✓
	Lexical Verb	3	0,1	2		✓
	Auxiliary Verb	20	0,5	8	✓	

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
LIG		22	0,6	10		
	Adjective [Weight]	3	0,1	1		✓
	Adjective [Light]	15	0,4	7		✓
	Lexical Verb	4	0,1	2		✓
LOS		31	0,8	9		
	Adjective	3	0,1	2		✓
	Lexical Verb	28	0,7	7	✓	
MAN		34	0,9	7		
	Noun	24	0,61	7	✓	
	Code Switch	10	0,3	2		✓
MENS		37	0,9	10		
	Noun	22	0,55	8	✓	
	Pronoun	15	0,4	7		✓
MOOI		81	2,0	11		
	Adjective	59	1,49	10	✓	
	Adverb	9	0,2	6		✓
MY		743	18,7	12		
	Pronoun	700	17,7	8	✓	
	Code Switch	43	1,1	8	✓	
MÔRE		24	0,6	8		
	Adverb	8	0,2	6		✓
	Interjection	16	0,4	2		✓

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
NIKS		34	0,9	9		
	Adverb	22	0,6	8	✓	
	Numeral	4	0,1	2		✓
	Pronoun	8	0,2	5		✓
OE		24	0,6	9		
	Interjection	23	0,6	9	✓	
	Phoneme	1	0,0	1		✓
OF		88	2,2	12		
	Conjunction	80	2,0	6	✓	
	Code Switch	8	0,2	6		✓
OM		63	1,6	12		
	Adjective	4	0,1	4		✓
	Adverb	1	0,0	1		✓
	Preposition	7	0,2	5		✓
	Conjunction	51	1,3	12	✓	
OOR		32	0,8	10		
	Noun	5	0,1	2		✓
	Adverb	10	0,3	5		✓
	Preposition	17	0,4	10		✓
OP		165	4,2	12		
	Adjective	7	0,2	4		✓
	Adverb	44	1,1	12	✓	
	Preposition	114	2,9	12	✓	

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
REGTIG		39	1,0	10		
	Adjective	3	0,1	2		✓
	Adverb	30	0,8	10	✓	
	Interjection	6	0,2	3		✓
RY		40	1,0	8		
	Lexical Verb	35	0,9	6	✓	
	Noun	5	0,1	4		✓
SO		300	7,6	12		
	Adverb	296	7,5	12	✓	
	Code Switch	4	0,1	3		✓
SY		185	4,7	12		
	Noun	1	0,0	1		✓
	Possessive Pronoun	44	1,1	11	✓	
	Personal Pronoun	140	3,5	11	✓	
TOE		259	6,5	12		
	Adjective	18	0,5	8		✓
	Adverb	241	6,1	12	✓	
TWEE		80	2,0	12		
	Numeral	77	1,94	12	✓	
	Demonstrative Pronoun	3	0,1	3		✓
UIT		34	0,9	8		
	Adverb	10	0,3	4		✓

Appendix N

Root words with variations		Total number of occurrences	Frequency per 1000 (‰)	Commonality	Include	Exclude
	Preposition	24	0,6	8	✓	
VAN		154	3,9	12		
	Noun	7	0,2	3		✓
	Preposition	147	3,7	12	✓	
WANT		155	3,9	12		
	Conjunction	154	3,9	12	✓	
	Code Switch	1	0,0	1		✓
WERK		47	1,2	8		
	Noun	27	0,68	6	✓	
	Lexical Verb	20	0,50	7	✓	
WORD		25	0,6	7		
	Auxiliary Verb	23	0,58	7	✓	
	Code Switch	2	0,1	1		✓

APPENDIX O

CORE VOCABULARY LIST

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
ek	Pronoun	Structure	1,872	47.2	12	
is	Verb (Lexical)	Content	1,649	41.6	12	was(166); wees(75); gewees(4)
nie	Adverb	Content	1,149	29.0	12	
CN	Proper Noun (Child Name)	Content	1,097	27.7	12	
jy	Pronoun	Structure	910	23.0	12	
'n	Article	Structure	812	20.5	12	
die	Article	Structure	774	19.5	12	
my	Pronoun	Structure	700	17.7	12	
en	Conjunction	Structure	658	16.6	12	
dit	Pronoun	Structure	603	15.2	12	
ja	Interjection	Content	583	14.7	12	
ons	Pronoun	Structure	535	13.5	12	
het	Verb (Auxiliary)	Structure	480	12.1	12	
kyk	Verb	Content	478	12.1	12	gekyk(3)
nee	Interjection	Content	470	11.9	12	
kan	Verb (Auxiliary)	Structure	428	10.8	12	kon(20)
vir	Preposition	Structure	421	10.6	12	
hy	Pronoun	Structure	396	10.0	12	
wat	Pronoun	Structure	395	10.0	12	
juffrou	Noun	Content	376	9.5	12	juffrouens(2)
gaan	Verb (Auxiliary)	Structure	366	9.2	12	
hierdie	Pronoun	Structure	355	9.0	12	hierdies(2)
hier	Adverb	Content	329	8.3	12	
jou	Pronoun	Structure	329	8.3	12	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
het	Verb (Lexical)	Content	314	7.9	12	gehad(18)
moet	Verb (Auxiliary)	Structure	307	7.7	12	
so	Adverb	Content	296	7.5	12	
dis	Enclitic	Structure	292	7.4	12	
julle	Pronoun	Structure	288	7.3	12	
nou	Adverb	Content	277	7.0	12	
daar	Adverb	Content	274	6.9	12	
maar	Conjunction	Structure	274	6.9	12	
net	Adverb	Content	267	6.7	12	
dan	Adverb	Content	243	6.1	12	
toe	Adverb	Content	241	6.1	12	
kom	Verb (Lexical)	Content	238	6.0	12	gekom(3)
in	Preposition	Structure	230	5.8	12	
maak	Verb (Lexical)	Content	229	5.8	12	gemaak(29)
een	Pronoun	Structure	221	5.6	12	enetjie(7); ene(18); eens(1)
oukei	Interjection	Content	218	5.5	12	
daai	Pronoun	Structure	216	5.4	12	daais(1)
met	Conjunction	Structure	195	4.9	12	
sê	Verb (Lexical)	Content	173	4.4	12	gesê(38)
ook	Adverb	Content	166	4.2	12	
hei	Interjection	Content	165	4.2	11	
nog	Adverb	Content	165	4.2	12	
gaan	Verb (Lexical)	Content	164	4.1	12	gegaan(7)
weet	Verb (Lexical)	Content	162	4.1	12	geweet(5)
wil	Verb (Auxiliary)	Structure	154	3.9	12	
want	Conjunction	Structure	154	3.9	12	
hom	Pronoun	Structure	148	3.7	12	
van	Preposition	Structure	147	3.7	12	
sien	Verb (Lexical)	Content	145	3.7	12	gesien(24)
speel	Verb (Lexical)	Content	144	3.6	12	gespeel(8)
doen	Verb (Lexical)	Content	143	3.6	12	gedoen(28)
hoe	Adverb	Content	142	3.6	12	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
sy	Pronoun (Personal)	Structure	140	3.5	11	
waar	Adverb	Content	133	3.4	12	
kry	Verb (Lexical)	Content	132	3.3	12	gekry(19)
as	Conjunction	Structure	124	3.1	12	
um	Interjection	Content	122	3.1	12	
sit	Verb (Lexical)	Content	118	3.0	12	gesit(6)
dié	Pronoun (Demonstrative)	Structure	115	2.9	12	
op	Preposition	Structure	114	2.9	12	
by	Preposition	Structure	113	2.9	12	
ah	Interjection	Content	112	2.8	9	
hulle	Pronoun	Structure	111	2.8	12	
myne	Pronoun	Structure	110	2.8	12	
oh	Interjection	Content	102	2.6	12	
wie	Pronoun	Structure	102	2.6	12	
mag	Verb (Auxiliary)	Structure	94	2.4	11	
al	Adverb	Content	90	2.3	12	
lekker	Adjective	Content	89	2.2	12	lekkerder(1); lekkerste(1)
se	Pronoun	Structure	86	2.2	12	
hierso	Adverb	Content	86	2.2	12	
te	Adverb	Content	86	2.2	12	
al	Numerals	Content	85	2.1	11	
I	Code Switch	Structure	84	2.1	10	
lyk	Verb (Lexical)	Content	83	2.1	11	
klaar	Adjective	Content	82	2.1	12	
soos	Conjunction	Structure	82	2.1	11	
hou	Verb (Lexical)	Content	81	2.0	11	gehou(3)
sal	Verb (Auxiliary)	Structure	81	2.0	12	
hoekom	Adverb	Content	81	2.0	12	
rooi	Adjective	Content	80	2.0	11	
of	Conjunction	Structure	80	2.0	12	
twee	Numerals	Content	77	1.9	12	tweetjies(2)
hallo	Interjection	Content	77	1.9	12	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
een	Numerals	Content	74	1.9	12	
blou	Adjective	Content	74	1.9	10	
haar	Pronoun	Structure	74	1.9	12	
baie	Numerals	Content	69	1.7	12	
vat	Verb (Lexical)	Content	69	1.7	12	gevat(12)
geel	Adjective	Content	68	1.7	10	geel(68)
gee	Verb (Lexical)	Content	68	1.7	12	gegee(4)
wag	Verb (Lexical)	Content	63	1.6	12	gewag(1)
you	Code Switch	Structure	62	1.6	10	
groen	Adjective	Content	60	1.5	10	
groot	Adjective	Content	60	1.5	12	groter(12); grootste(4)
dankie	Interjection	Content	60	1.5	12	
eet	Verb (Lexical)	Content	60	1.5	12	geëet(10)
bietjie	Numerals	Content	59	1.5	12	
mooi	Adjective	Content	59	1.5	10	mooier(2); mooiste(9)
né	Interjection	Content	59	1.5	11	
gooi	Verb (Lexical)	Content	58	1.5	10	gegooi(5)
a	Code Switch	Structure	57	1.4	9	
ding	Noun	Content	57	1.4	12	dingetjie(6); dingetjies(1)
eerste	Numerals	Content	57	1.4	11	
breek	Verb (Lexical)	Content	57	1.4	9	gebreek(14)
naam	Noun	Content	54	1.4	10	name(2)
is	Code Switch	Content	53	1.3	7	
almal	Pronoun	Structure	53	1.3	12	
weer	Adverb	Content	51	1.3	11	
om	Conjunction	Structure	51	1.3	12	
huh_uh	Interjection	Content	49	1.2	8	
AN	Proper Noun (Adult Name)	Content	48	1.2	9	
goed	Noun	Content	48	1.2	11	goedjies(11); goeters(20)
blok	Noun	Content	47	1.2	6	blokke(21); blokkie(4); blokkies(15)
ma	Noun	Content	47	1.2	10	ma’s(1)
bruin	Adjective	Content	47	1.2	7	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
kort	Verb (Lexical)	Content	47	1.2	11	
saam	Verb (Lexical)	Content	47	1.2	11	
ow	Interjection	Content	47	1.2	9	
huis	Noun	Content	46	1.2	10	huise(1); huisie(3); huisies(11); huisietjie(1)
koukie	Noun	Content	46	1.2	7	koukies(23)
kleur	Noun	Content	45	1.1	8	kleure(18)
moenie	Enclitic	Structure	45	1.1	9	
eers	Adverb	Content	45	1.1	11	
mamma	Noun	Content	44	1.1	8	mamma’s(1)
tannie	Noun	Content	44	1.1	8	
op	Adverb	Content	44	1.1	12	
sy	Pronoun (possessive)	Structure	44	1.1	12	
my	Code Switch	Structure	43	1.1	9	
klein	Adjective	Content	43	1.1	12	kleiner(3); kleinste(2)
teken	Verb (Lexical)	Content	43	1.1	7	teken(34); geteken(9)
ander	Adjective	Content	42	1.1	11	
the	Code Switch	Structure	40	1.0	9	
seun	Noun	Content	40	1.0	12	seuns(2); seuntjie(23); seuntjies(13)
slang	Noun	Content	39	1.0	7	slange(3); slangetjie(1); slangetjies(1)
watter	Pronoun	Structure	39	1.0	7	
hand	Noun	Content	38	1.0	12	hande(17); handjie(1)
and	Code Switch	Structure	37	0.9	9	
vinnig	Adjective	Content	37	0.9	8	vinniger(7); vinnigste(1)
mhmh	Interjection	Content	37	0.9	8	
iets	Pronoun	Structure	37	0.9	12	ietsie(9)
boek	Noun	Content	36	0.9	7	boeke(9); boekie(6); boekies(2)
sulke	Pronoun	Structure	36	0.9	10	sulkes(2)
this	Code Switch	Structure	35	0.9	8	
ry	Verb (Lexical)	Content	35	0.9	6	gery(5);
ag	Interjection	Content	35	0.9	10	agge(2)
asseblief	Adverb	Content	35	0.9	11	
gou	Adverb	Content	35	0.9	6	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
go	Code Switch	Content	34	0.9	7	
now	Code Switch	Structure	34	0.9	7	
maat	Noun	Content	34	0.9	10	maatjie(18); maatjies(10); maats(6)
drie	Numerals	Content	34	0.9	9	
staan	Verb (Lexical)	Content	34	0.9	9	gestaan(2)
af	Adverb	Content	34	0.9	11	
hmm	Interjection	Content	33	0.8	10	
help	Verb (Lexical)	Content	33	0.8	9	gehelp(3)
TN	Proper Noun (Teacher Name)	Content	33	0.8	8	
ouma	Noun	Content	32	0.8	8	ouma’s(1)
huh	Interjection	Content	32	0.8	8	
bou	Verb (Lexical)	Content	32	0.8	7	gebou(3)
wys	Verb (Lexical)	Content	32	0.8	10	gewys(3)
kos	Noun	Content	31	0.8	7	kossies(2)
mmh	Interjection	Content	31	0.8	9	
hoor	Verb (Lexical)	Content	31	0.8	10	gehoor(3)
s'n	Pronoun	Structure	31	0.8	10	
cool	Code Switch	Content	30	0.8	8	
regtig	Adverb	Content	30	0.8	10	
swart	Adjective	Content	29	0.7	6	
to	Code Switch	Structure	29	0.7	7	
bring	Verb (Lexical)	Content	29	0.7	9	gebring(18)
agter	Preposition	Structure	29	0.7	8	
dogter	Noun	Content	28	0.7	10	dogtertjie(20); dogtertjies(7)
lelik	Adjective	Content	28	0.7	9	lelike(5); lelikste(2)
pers	Adjective	Content	28	0.7	9	
wit	Adjective	Content	28	0.7	8	
los	Verb (Lexical)	Content	28	0.7	7	
keer	Noun	Content	27	0.7	10	kere(1)
werk	Noun	Content	27	0.7	6	werkie(13); werkies(8)
vandag	Adverb	Content	27	0.7	10	
begin	Verb (Auxiliary)	Structure	27	0.7	8	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
dink	Verb (Lexical)	Content	27	0.7	12	gedink(1)
inkleur	Verb (Lexical)	Content	27	0.7	8	ingekleur(6)
iemand	Pronoun	Structure	27	0.7	9	
dat	Conjunction	Structure	26	0.7	8	
on	Code Switch	Structure	26	0.7	9	
yay	Interjection	Content	26	0.7	6	
oranje	Adjective	Content	26	0.7	10	
prent	Noun	Content	25	0.6	9	prentjie(19); prentjies(3)
ken	Verb (Lexical)	Content	25	0.6	8	
mmm	Interjection	Content	24	0.6	9	
man	Noun	Content	24	0.6	7	manne(1); mannetjie(3); mannetjies(1)
altyd	Adverb	Content	24	0.6	9	
it	Code Switch	Structure	24	0.6	6	
yes	Code Switch	Structure	24	0.6	7	
weg	Adverb	Content	24	0.6	7	
uit	Preposition	Structure	24	0.6	8	
val	Verb (Lexical)	Content	24	0.6	10	geval(4)
oe	Interjection	Content	23	0.6	9	
meer	Numerals	Content	23	0.6	9	
amper	Adverb	Content	23	0.6	9	
kies	Verb (Lexical)	Content	23	0.6	7	gekies(2)
loop	Verb (Lexical)	Content	23	0.6	7	geloop(5)
word	Verb (Auxiliary)	Structure	23	0.6	7	geword(5)
een_twee_drie	Miscellaneous	Content	22	0.6	10	
kind	Noun	Content	22	0.6	7	kinders(11)
mens	Noun	Content	22	0.6	8	mense(10)
sirkel	Noun	Content	22	0.6	9	sirkels(4); sirkeltjies(1)
come	Code Switch	Content	22	0.6	8	
niks	Adverb	Content	22	0.6	8	
seer	Adverb	Content	22	0.6	8	
voel	Verb (Lexical)	Content	22	0.6	6	
water	Noun	Content	21	0.5	10	

Appendix O

Word	Part of speech	Content/ Structure	Total number Of occurrences	Frequency (‰)	Commonality	Inflected forms (and number of occurrence)
tot	Preposition	Structure	21	0.5	8	
vier	Numerals	Content	21	0.5	8	viers(2)
wanneer	Adverb	Content	21	0.5	8	
gebruik	Verb (Lexical)	Content	21	0.5	6	
soek	Verb (Lexical)	Content	21	0.5	10	
be	Code Switch	Content	21	0.5	6	
dieselfde	Adjective	Content	20	0.5	8	
hele	Adjective	Content	20	0.5	8	
askuus	Interjection	Content	20	0.5	6	
hoog	Adjective	Content	20	0.5	6	hoër(6); hoogste(3)
voor	Preposition	Structure	20	0.5	8	
klas	Noun	Content	20	0.5	9	klasse(1)
alles	Pronoun	Structure	20	0.5	9	
sommer	Adverb	Content	20	0.5	10	
sussie	Noun	Content	20	0.5	7	sussies(2)
niemand	Pronoun	Structure	20	0.5	7	
laat	Verb (Auxiliary)	Structure	20	0.5	8	
reg	Adjective	Content	20	0.5	8	
tel	Verb (Lexical)	Content	20	0.5	8	getel(2)
werk	Verb (Lexical)	Content	20	0.5	7	gewerk(2)
pasop	Interjection	Content	20	0.5	6	
I'm	Code Switch	Structure	20	0.5	6	
aan	Preposition	Structure	19	0.5	10	

APPENDIX P

EQUIVALENCE BETWEEN TOP 100 AFRIKAANS CORE VOCABULARY WORDS AND TOP 100 WORDS OF FIVE ENGLISH CORE VOCABULARY LISTS

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
ah	ah			✔			1
al	all, every	✔	✔	✔	✔		4
al	already						0
as	if, than		✔		✔		2
baie	many, much, very						0
blou	blue						0
by	at, by, near, with	✔	✔	✔	✔	✔	5
CN	CN						0
daai	that, those	✔	✔	✔	✔	✔	5
daar	there, to that place	✔	✔	✔	✔	✔	5
dan	then		✔		✔	✔	3
dankie	gratitude, thanks, thank you,						0
die	the	✔	✔	✔	✔	✔	5
die	these, this	✔	✔	✔	✔	✔	5
dis	it is	✔	✔	✔	✔	✔	5
dit	it, this	✔	✔	✔	✔	✔	5
doen	do, effect, make perform	✔	✔	✔	✔	✔	5

Appendix P

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
een	one	✔	✔	✔	✔	✔	5
een	a certain, someone						0
ek	I, me	✔	✔	✔	✔	✔	5
en	and	✔	✔	✔	✔	✔	5
gaan	go, move, walk	✔	✔	✔	✔	✔	5
gee	confer, give, present with						0
geel	yellow						0
groen	green						0
groot	big, great, large, tall	✔		✔			2
haar	her		✔			✔	2
hallo	hallo						0
hei	hey	✔		✔	✔	✔	4
het	has, have	✔	✔	✔	✔	✔	5
hier	here	✔	✔	✔	✔	✔	5
hierdie	these, this	✔	✔	✔	✔	✔	5
hierso	at this place, here	✔	✔	✔	✔	✔	5
hoe	how, what	✔	✔	✔	✔	✔	5
hoekom	for what reason, why				✔	✔	2
hom	him, it	✔	✔	✔	✔	✔	5
hou	contain, hold, keep						0

Appendix P

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
hulle	their, them, they	✔	✔	✔	✔	✔	5
hy	he, it	✔	✔	✔	✔	✔	5
I	I	✔	✔	✔	✔	✔	5
in	during, in, into, within	✔	✔	✔	✔	✔	5
is	is	✔	✔	✔			3
ja	yes	✔		✔	✔	✔	4
jou	you	✔	✔	✔	✔	✔	5
juffrou	miss, teacher, young lady					✔	1
julle	you, your (plural)	✔	✔	✔	✔	✔	5
jy	you	✔	✔	✔	✔	✔	5
kan	be able, can	✔	✔	✔	✔	✔	5
klaar	clear, finish, ready						0
kom	arrive, come	✔	✔	✔	✔	✔	5
kry	acquire, get, obtain, receive	✔	✔	✔	✔	✔	5
kyk	look, pry, see, view,	✔	✔	✔	✔	✔	5
lekker	dainty, nice, sweet, palatable, savoury, tipsy						0
lyk	appear to be, look, resemble, seem to be	✔		✔	✔	✔	4
maak	make, do, shape	✔	✔	✔	✔	✔	5
maar	but, just, merely, only, yet	✔	✔	✔	✔	✔	5

Appendix P

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
mag	may						0
met	with	✔	✔	✔	✔	✔	5
moet	be obliged, have to, must, ought	✔	✔	✔	✔	✔	5
my	me	✔	✔	✔	✔	✔	5
myne	mine	✔		✔		✔	3
'n	a, an	✔	✔	✔	✔	✔	5
nee	no	✔	✔	✔	✔	✔	5
net	just, only	✔	✔	✔	✔	✔	5
nie	not	✔	✔	✔	✔	✔	5
nog	again, also, besides, still, yet						0
nou	now	✔	✔	✔	✔	✔	5
of	but, if, whether		✔	✔	✔	✔	4
oh	oh	✔	✔	✔	✔	✔	5
ons	us, we	✔	✔	✔	✔	✔	5
ook	also, too	✔	✔	✔	✔	✔	5
op	at, on, upon	✔	✔	✔	✔	✔	5
oukei	okay	✔		✔			2
rooi	red						0
sal	shall, will	✔	✔		✔	✔	4
se	of	✔	✔	✔	✔	✔	5

Appendix P

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
sê	say		✔		✔	✔	3
sien	interview, look, observe, see, view	✔		✔	✔	✔	4
sit	sit	✔					1
so	like this, so, thus	✔	✔	✔	✔	✔	5
soos	as, like	✔	✔	✔	✔	✔	5
speel	act, perform, play	✔		✔	✔	✔	4
sy	she	✔	✔		✔	✔	4
te	too	✔	✔	✔	✔	✔	5
toe	in those days, then, to, towards	✔	✔	✔	✔	✔	5
twee	two	✔		✔	✔	✔	4
um	um		✔	✔			2
van	by, for, from, of, with	✔	✔	✔	✔	✔	5
vat	grip, take, catch, seize	✔	✔		✔	✔	4
vir	for, to	✔	✔	✔	✔	✔	5
waar	where	✔	✔	✔	✔	✔	5
wag	stay, wait				✔	✔	2
want	because, for	✔	✔	✔	✔	✔	5
was	was, were		✔	✔			2
wat	what	✔	✔	✔	✔	✔	5

Appendix P

Top 100 Afrikaans words	Translation(s)	Beukelman, Jones & Rowan (1989)	Stuart et al. (1993)	Trembath, Balandin and Togher (2007)	Boenisch and Soto (2015)		Number of English lists in which an equivalent word could be found among the top 100 most frequently used words
					Native	ESL	
wees	is, was, to be	✔	✔	✔	✔	✔	5
weet	know, be conscious of, have knowledge of	✔	✔	✔	✔	✔	5
wie	who, whom	✔			✔		2
wil	want, wish	✔	✔	✔	✔	✔	5
you	you	✔	✔	✔	✔	✔	5

APPENDIX Q

DECLERATION OF LANGUAGE EDITING

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DECLARATION ON EDITING

Student: D. Hattingh	**Date:** 2018/10/11

Document submitted for editing
Dissertation titled: *The core vocabulary of South African Afrikaans-speaking preschoolers without disabilities*
The above dissertation was submitted to me for language editing, which was completed on 1 October 2018.  M.B. BRADLEY (MA) - Language editor