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The development of discourse coherence devices of different language typologies: South African English and isiZulu

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Dissertation submitted to the Department of Linguistics in fulfilment of the requirement for Master of Art's Degree in Humanities

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Declaration

This thesis is my own work and all primary and secondary sources have been appropriately acknowledged. This thesis has not been submitted to any other institution as part of an academic qualification.

This thesis is prepared in fulfilment of the requirement of the degree of Masters in Linguistics, at the University of Witwatersrand, Johannesburg, South Africa.

Date _____

Signed _____

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Abstract

Title: The development of discourse coherence devices of different language typologies: South African English and isiZulu

The current South African linguistic context is focusing on building formal knowledge of preciously understudied South African indigenous languages. This research adopts a multi-lingual stance by conducting a cross-linguistic study of the development of discourse coherece devices in the acquisition of isiZulu and South African English.

Although successful communication is founded on pragmatic principles, such as discourse coherence, most research leans towards focusing on the early acquisition of formal linguistic structures, often at the expense of addressing pragmatic and discursive development. This research will use an oral narrative in order to observe the development of discourse coherence.

This study will adopt a multi-modal stance as research has shown that language is a multi-modal system whereby gesture assists both communication and language production. Furthermore, research has also shown that typological constraints affect language processing. Thus, a typological approach will be adopted in order to observe typological constraints on the development of discourse coherence strategies.

The research seeks to address three aims: what strategies are used by each language to communicate discourse coherence; how these strategies develop across age groups; and what are the typological effects on this development.

The study seeks to address these aims by using archival data of previously elicited narratives. A cartoon stimulus was used to elicit narratives from the three age groups of English and isiZulu participants: 5-6 years, 9-10, and adults (control group). Discourse coherence strategies will be assessed on the following levels: narrative level, linguistic level, and gesture. The cross-linguistic comparison of these three age groups will provide insight into the relationship between structural language, pragmatics, and cognition.

Keywords: discourse coherence; oral narrative; pragmatics; typology; gesture; South African English; isiZulu; language development

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Chapter 1: Introduction

1.1. Background to the Study

Multilingualism is a term that aptly describes the South African linguistic context. Unfortunately, due to historic and political reasons, not all indigenous languages have enjoyed equal academic representation. The current political climate is facing a rising demand for the inclusion of knowledge from previously under-represented cultures (Ministry of Education, 2002).

The study of indigenous languages far extends meeting the aims of developing and preserving understudied languages. Language has far reaching implications in the health sector and adequate knowledge of our indigenous languages can contribute towards more effective diagnosis and intervention methods of speakers of indigenous languages suffering from psychiatric or developmental disorders.

Cognitive theorists have demonstrated that language serves as a medium for observing cognitive processes (Dhillon, 2010; Talmy, 2000). For this reason, language is used as one of the assessment tools in diagnosing developmental and psychiatric disorders (Bliss, McGabe & Miranda, 1989; Reilly et al, 2004; De Kock et al, 2014; Reilly, Losh, Bellugi & Wulfeck, 2004). Cognitive theorists have further demonstrated that not only does language reflect cognitive processes, but language structures are influential in shaping the processing and communication of mental information (Dhillon, 2010; Kita &Özyürek, 2003; Slobin, 1987; Talmy, 2000). Language constraints are crucial to cognitive functioning as they play a role in the shaping of mental processes. In order to have an accurate insight into the cognitive state of a language speaker, on must have a clear understanding of the structure of their language. It is vital to understand the linguistic structures and constraints of indigenous languages.

Although there is a growing, amount of research on indigenous languages (namely linguistically classified Bantu languages), most of the focus of this research is skewed towards formal linguistics. Researchers such as Buell et al (2011) and Van der Spuy, 1993) have contributed information about the structural aspects of indigenous languages, such as morphology, lexicon and syntax. Other researchers, such as Demouth, (2002) and Kunene Nicolas et al, (2015) have demonstrated how children acquire these formal aspects of the language. However, there are major gaps in our understanding of Bantu language acquisition

in other areas, mainly pragmatics and non-verbal communication (Colletta, Nicolas & Guidetti, 2018; Kunene Nicolas, 2015).

Poulos and Msimang (1998) caution that the interpretation of various linguistic structures in isiZulu are context dependent. Therefore, a pure structural analysis of isiZulu does not account for the pragmatic understanding implicated in these structures. In order to understand discourse in isiZulu, one must accurately account for the pragmatic influences. This finding is affirmed by cognitive theorists who explain that discourse comprehension involves a higher order processing in comparison to processing information at a sentinel level. Discourse comprehension involves different processing than the processing of information at a sentential level (Cummings, 2009; Van Dijk, 1985). For this reason, one needs to acknowledge that there is a psycholinguistic difference in processing sentences and processing discourse.

This argument is echoed by Colletta et al (2014) and Kunene Nicolas (2015) who have demonstrated that our knowledge of language cannot be limited to a formal linguistic analysis of language. One must also observe the interactive-communicative function of language within a social setting (Colletta et al, 2014; Kunene Nicolas, 2015). Kunene Nicolas (2015) highlights the importance of contributing research that focuses on discourse as discourse encompasses the formal, pragmatic, and communicative properties of language. Currently, there is very little knowledge about the discursive development of our indigenous languages.

Although discourse studies allows one to observe the functional and pragmatic aspects of language, one has to take into consideration that language is not restricted to one modality. Researchers such as Kendon (2004) and McNeill (1992) have demonstrated that information is expressed through both verbal and non-verbal modalities. Gesture researchers have shown the importance of taking into consideration non-verbal behaviour as, in addition to having a communicative value, gesture is also implicit in language production, comprehension, and acquisition (Goldin-Meadow & Alibali, 2013; Kita & Özyürek, 2003; Rauscher, Krauss & Chen, 1996; Chu, Meyer, Foulkes & Kita, 2014; Cassel, 1988; Kendon, 2004). Researchers have also provided substantial evidence to show that gesture is shaped by language constraints as cross-linguistic studies have revealed that gesture demonstrates sensitivity towards typological differences (Slobin, 2005; Kita & Özyürek, 2003). For this purpose, it is essential to

account for both the verbal and non-verbal aspects of language when conducting a linguistic analysis.

Overall, one can see that in the current linguistic context, there is a demand for information contributing towards the knowledge of the multi-modal development of discourse in indigenous languages. It is the aim of this research to address this demand.

1.2. The Current Study

The researcher acknowledges that in the current linguistic context, there is a demand for research on discourse development in indigenous languages. Additionally, the researcher acknowledges the importance of approaching this topic from a multimodal perspective.

The current seeks to contribute to the knowledge of indigenous languages by focusing a South African indigenous language, isiZulu. As discussed previously, typological studies have proven that language constraints are influential in shaping the processing and communication of mental information, as well as the development of mental processes (Dhillon, 2010; Kita &Özyürek, 2003; Slobin, 1987; Talmy, 2000). Therefore, since language constraints are crucial to cognitive functioning, it is vital to understand how the constraints of South African indigenous languages could influence the cognitive processes of its speakers.

This research seeks to contribute to the knowledge of indigenous languages by focusing on isiZulu. Additionally, it will seek to observe the typological nature of isiZulu by comparing it with South African English. Thus this study will conduct a cross-linguistic comparison of two typologically dissimilar languages.

As discussed, there is a large need for research in discourse development. This research seeks to contribute to discourse research by conducting a study that observes the development of discourse abilities across three developmental ages. Although there is a vast array of topics to study in discourse, one of the central themes in discourse is the concept of coherence. As mentioned before, the cognitive processes involved in processing discourse is different to the processes involved in processing unrelated sentences. Higher order processing is required to process discourse. Research would suggest that this higher order processing is directly involved with the processing of coherence (Cummings, 2009; Reilly et al, 2004). Reilly et al (2004) has shown that children with cognitive vulnerabilities display inaccuracies with coherence, whereas their language production seems to remain unaffected. Cummings

(2009) also shows that children with that measure of pragmatic vulnerability — such as in the case of autism — also reflect vulnerabilities with coherence. Thus, the use of coherence is an invaluable index in psychological assessment. Thus we can see that studying discourse coherence is important as it gives us insight into the cognitive and pragmatic processes involved in discourse coherence.

Cummings (2009) explains that coherence is a central requirement for discourse. Without coherence, language loses its communicative meaning. Coherence essentially observes how little independent units of information act together in order to present a meaningful message (Thorndyke, 1977). Without coherence, a sentence would contain independent units of meaning that are not semantically related to each other at all (Halliday & Hasan, 1976).

A popular and accessible method of observing discourse coherence (and discourse coherence) is through narrative studies. Narratives require narrators to display various linguistic, cognitive, pragmatic, and social skills in order to produce a coherent narrative (Reilly et al, 2004; Wilkinson, Silliman, Nitzberg, & Aurilio, 1993). Narrative theorists have shown that discourse coherence is evident in narratives on three levels (Van Dijk, 1985; Fraser, 1999; Glenn & Stein, 1977; Halliday & Hassan, 1976; McNeill, 1992; Kendon, 2004):

1. The overall thematic structure of the narrative,
2. The linguistic devices used to communicate coherence in the narrative, and
3. The non-verbal behaviour accompanying the verbal input.

The aim of this research is to address what devices are employed on each level by speakers of both languages in order to create discourse coherence. The study will observe how these devices develop over time.

As mentioned before, there is already quite a lot of research focusing on coherence in the thematic structure of the narrative (Van Dijk, 1985; Thorndyke,1977), or on the linguistic devices used to create coherency (see Halliday & Hassan, 1976; Fraser, 1999; Buell et al, 2011; Demouth, 2002; Kunene Nicolas et al, 2015; Van der Spuy, 1993). In comparison, there is little information pertaining to the pragmatic aspects of discourse coherence, or the multi-modal construction of coherence (De Vos, 2007; Fraser, 1999). This research aims to contribute to research by focusing how narrative structure, linguistic devices, and non-verbal behaviour all function together to create coherency strategies. The research also aims to observe how

these coherency strategies develop over time, and if typological constraints might have an influence on the nature and development of these strategies.

1.3. Aims and Objectives

The main aim of this research is to conduct a cross-linguistic comparison of the mulit-modal strategies used by speakers of different ages in creating coherence within an oral narrative.

The research will compare two typologically dissimilar languages, isiZulu and South African English. The former being the most widely spoken first language in South Africa and the latter being used in the educational and socio-economic environment (Statistics South Africa, 2011).

The research will identify what strategies speakers employ to communicate coherence in an oral narrative. The researcher will observe how speakers use coherency strategies relating to the narrative structure, linguistic devices, and non-verbal behaviour. The study acknowledges that language is a multimodal process. Non-verbal behaviour assists in the communication and production of language, in addition to providing insight into the mental representation of language (Kendon, 2004; McNeill, 1992). This study aims to observe how non-verbal behaviour acts as a coherence strategy that accompanies verbal discourse.

The research seeks to observe what these strategies reveal about the interaction between language and cognition. At certain ages, certain abilities are more salient while others are still developing. Currently, most studies focus on the acquisition of formal language during early childhood; by comparison, little information is available regarding late childhood discourse coherence (Kunene Nicolas, 2015). This study will therefore observe various developmental ages to see the different strategies utilised to express discourse coherence. With this objective, the study seeks to contribute to the late childhood acquisition theory by observing the discourse coherence development across various age groups: 5-6 year olds, 9-10 year olds, and adults as a control group.

In English studies, it has already been shown how various strategies used to communicate discursive coherence in narratives change and development across ages (Berman & Slobin, 1994; Bliss et al, 1989; Stein & Glenn, 1979). This study seeks to observe how this translates into a South African context. Little is known about how the language typology of Bantu languages functions in a discursive environment (Kunene Nicolas, 2015). Even less is known

regarding the specific strategies used to create coherence. It is the intention of this study to observe the coherence strategies employed in isiZulu.

Comparing the development of the two dissimilar languages of speakers of the same age groups, will allow the researcher to observe the typological influences exerted by linguistic constrains. The research aims to identify how language constraints could shape the development of the coherency strategies employed by the speakers. This study roots itself in language typology. Through identifying the various coherence strategies of typologically dissimilar languages, and through tracing its development, it hopes to make observations about language constraints on discourse development, specifically coherence. It will observe whether there are differences and similarities across the development of the languages. Similarities might provide insight about universal processes, whereas differences might provide an indication about language constraints that act upon a discursive process. These findings will be invaluable in using language as an assessment.

Although this study draws from formal linguistics, namely syntax and morphology, the focus of this study is to provide a psycholinguistic account of coherence. It is not the aim of the study to conduct a syntactic analysis, but rather to adopt a psycholinguistic approach to observe differences in the development of coherence strategies in typologically dissimilar languages.

1.4. Research Questions

The study seeks to address the following research questions from a psycholinguistic perspective.

1. What strategies are utilised to achieve discourse coherence within an oral narrative amongst children and adults?
2. How do these strategies develop across age?
3. What is the typological influence on the nature and development of these strategies?

All of the above mentioned points will be explored as follows:

Chapter 1: Introduction

This chapter will discuss the scope of the study, as well as the rationale behind the study and the possible contribution that this study can make.

Chapter 2: Literature Review

The chapter will provide a review of research and information present in current literature that is relevant to this study.

Chapter 3: Methodology

The methodology and design relevant to the current study will be discussed in this chapter.

Chapter 4: Findings

This chapter will provide a quantitative summary of the data as well as an analysis of the data. Furthermore, it will provide an in depth qualitative analysis of some of the results found in the previous chapter.

Chapter 5: Discussion and Conclusion

This chapter will discuss the findings in light of current research, as well as provide a conclusion regarding future recommendations of further study.

Chapter 2: Literature Review

In this section, the researcher will present literature related discourse development in oral narratives with the focus on the multi-modal development of discourse coherence strategies. Additionally, the literature review will discuss how language typology is at play in shaping the development of these strategies.

2.1. Discourse

As mentioned in the introductory section, the cognitive processes involved in processing discourse differ to the processes involved in processing smaller sections of information (Cummings, 2009).

Discourse coherence is not a linguistic phenomenon that can be viewed in isolation from general language development. Instead, discourse coherence is something that is integrated in general language acquisition. Discourse coherence draws on various linguistic structures, most notably syntax and the lexicon (Fraser, 1999; Zarei, 2015). Essentially, language acquisition looks at the various stages infants progress through in order to acquire formal linguistic structures such as syntax, phonology, lexicon, and certain semantic aspects, and to use these structures in a fully complex discursive setting (Field, 2006; Carrol, 2008).

And although there is a large body or research focusing the acquisition of formal linguistics, there is a small body of research that focuses specifically on the acquisition and development of higher language processes that allow for conversational, and other pragmatic-discursive abilities (Kunene Nicolas, 2015).

Oral Narratives

There are various types of examples of language situations which can be considered as discourse. However, as mentioned in *Chapter 1: Introduction*, the oral narrative is a proven, effective method of eliciting and assessing discourse. Not only is it a discourse style present in all cultures, it is also accessible to all ages (Reilly et al, 2004).

Although they are a form of spontaneous discourse, they are different from turn-by-turn conversations. The comprehension processes used in narratives are different than those employed in sentence-by-sentence processing (Stein & Glenn, 1979). Understandably, the discourse coherence strategies employed in narratives are somewhat different to those present in normal, daily conversation (Norrick, 2001).

Due to the particular structure of a narrative, the cognitive processes involved in narrative production and comprehension differ to the cognitive processes used in normal conversation (Stein & Glenn, 1979). Underlying mental processes, such as planning and sequencing, are responsible for constructing, organising, and comprehending narrative sequences (Reilly et al, 2004). The structuring and ordering of narrative components are also dependent on pragmatic abilities (Fraser, 1999). Thus, narrative tasks incorporate linguistic, pragmatic, and cognitive abilities (Reilly et al, 2004). We have seen from various researchers that narratives increase in syntactic complexity, thematic complexity, and pragmatic diversity with age (Bliss et al1989; Colletta et al, 2014, 2018; Slobin & Berman, 1994; Stein & Glenn, 1979; Trabasso & Rodkin, 1994).

One of the criteria for a narrative, is that it presents a coherent account of the unfolding of events. This makes narratives and ideal discourse genre to assess discourse coherence and the pragmatic-discursive abilities associated with it.

2.2. Discourse Coherence

According to Cummings (2009), discourse coherence is a critical requirement for successful communication. It is one of the components that successfully allow meaning to be conveyed between speakers and listeners when using languages as a medium of communication. Cummings (2009) explains that various pragmatic functions facilitate the comprehension and production of discourse coherence.

Various linguistic approaches have been used to discuss discourse coherence from a variety of perspectives. The *functional approach* to discourse coherence addresses the formal linguistic structures used to create discourse coherence (Fraser, 1999; Halliday & Hasan, 1976; Wang & Guo, 2014). The *pragmatic approach* observes discourse coherence in terms of a network facilitated by thematic, semantic, and pragmatic links (Wang & Guo, 2014). The *cognitive approach* observes discourse coherence as the ability to integrate information presented in the discursive setting to prior world knowledge (Wang & Guo, 2014). Van Dijk (1985) has provided an approach to discourse coherence that not only finds consensus with most researchers, but it is of high pertinence to the current study.

Van Dijk (1985, p 107) explains that “discourse usually consist of sequences of sentences that express sequences of propositions.” Essentially, discourse is individual units of information,

or propositions, expressed in a sequence of sentences. These sentences have to be related to each other in a way that the propositions form a collective meaning as a whole. Propositions in individual sentences must link up with each other to form a unified, complex, whole meaning. Discourse coherence not only looks at the meaningful relationships between sentences, but also at the overall integration of the sentences into the overall combined meaning expressed by the sentences (Van Dijk, 1985). Thus, discourse coherence can be summarised by two key words: *relation* and *integration*.

Van Dijk (1985) further explains that discourse is a linear representation of propositions that are organised according to a hierarchical structure. The speaker is tasked with the cognitive task of using linguistic means to structure the linear representation in a manner that the listener can understand the hierarchical relationship between the segments. Although propositions are arranged according to a semantic network, the surface expression of these propositions is done through linguistic means, such as morpho-syntactic and lexical structures. The manner in which these surface expressions relate to each other is referred to as *cohesion*. Van Dijk (1985) explains that cohesion is not a necessary condition for coherence, but it is rather a surface expression of coherence.

The relationship between the underlying semantic network and the surface level expressions indicates that coherence occurs on two levels: at a macro-level and a micro-level. The macro-level observes how propositions integrate with each other across the whole discourse unit. This finds a lot of resonance to the pragmatic approach to discourse coherence. Macro-coherence looks at the underlying hierarchical and propositional structure that supports the central theme of the discourse unit. Macro-coherence deals with elements such as *topics* and *themes*. Thus, it looks at the macro-structure of a discourse unit. The macro-coherence level is more concerned with the thematic integration of propositions (Van Dijk, 1985).

Micro-coherence observes how ideas are related to each other on the surface level. Micro-coherence is concerned with how the structural linguistic markers are used to connect sequences (Van Dijk, 1985). The micro-coherence level is more concerned with the cohesive relationship that exists between propositions (Halliday & Hasan, 1976). For example, micro-coherence looks particularly at what has been classified as those structures making discourse ‘cohesive’. This includes various grammatical structures that provide semantic links between propositions. Van Dijk (1985) lists, amongst other things, word-order, sentence order, and

connectives as cohesive devices. Halliday and Hasan (1976) produced an extensive list of cohesive devices found in English, which include, amongst others, conjunctions, ellipsis, repetition, and reference.

Halliday and Hasan (1976) provide the following example:

(1) Three blind mice, three blind mice.
See how they run. [Halliday & Hasan, 1976, p.47]

In this instance, the cohesive device is the referential device 'they'. In this instance, it serves to link the subject in sentence 1 (the three blind mice) to the object in sentence 2 (they). Thus, the pronoun 'they' forms a link between the information presented in sentence 1 and the information presented in sentence 2.

Wang and Guo (2015) explain that discourse coherence is very dependent on the participant's own competency. Coherence is influenced by the individual's ability to interpret information presented in the discursive setting and the information presented in the real world. Coherence is thus influenced by an individual's interpretation and perspective of the real world. Often enough, meaningful connections between information offered in the communicative setting and the real world are not explicitly provided. It is up to the individual to use experience and prior knowledge to formulate the meaningful connections.

Discourse Coherence in Oral Narratives

Narrative researchers, Wilkinson et al (1985) conducted narrative work and in their analysis of narratives, they observed that narratives contained coherence at two levels: at a macro-level, and at a micro-level. Additionally, narrative specialists focusing on non-verbal communication have acknowledged how gesture plays a role in communicating coherence within an oral narrative setting (Colletta et al, 2009).

Story grammarians such as Thorndyke (1977) demonstrated how all narratives must contain certain components and these components must be arranged according to a particular structure. This structure is determined by semantic links between the various components. The arrangement of story components determine the macro-coherence of the narrative.

On the micro-level, formal theorists have observed how linguistic devices are employed in general discourse in order to create meaningful links between units of information (Halliday

and Hassan, 1977). Micro-coherence is concerned with how linguistic devices are used to establish links between various components (such as characters, locations, etc.).

Narrative researchers have also observed that narrators often employ non-verbal methods as cues to signal discourse coherence (Colletta et al, 2009). Thus, non-verbal behaviour also contributes to the representation of coherence within an oral narrative.

The following sections will discuss how coherence is created in a narrative on each of the following levels: macro-coherence, micro-coherence, non-verbal coherence.

2.2.1. Macro-Coherence

Macro-coherence is concerned with the structure of the narrative. Essentially, a narrative is a unit of discourse that follows a particular internal structure (Kupersmitt, Yifat, & Blum-Kulka, 2014; Stein & Glenn, 1979; Thorndyke, 1977).

Narratives contain information that can be assigned to specific categories. These categories are called story components. Story components include settings, characters, unfolding of events, the attempts made to resolve the events, the resolution of the events, and the overall outcome of the story (Gordon & Braun, 1985; Stein & Glenn, 1979; Trabasso & Rodkin, 1994). Essentially, a narrative is an account of the actions that a particular character undertakes in order to solve a particular task.

Theorists agree that narratives are introduced with the social, temporal, and locational information (referred to as *setting*). An event (the *initiating event*) occurs and sets up a specific situation. The main character has to evaluate the situation and present a response to the situation (an *internal response*). This internal response determines how the character will behaviourally respond to the situation created by the initiating event. This is referred to as the *goal* (Trabasso & Rodkin, 1994). The remainder of the narrative illustrates the various actions (*attempts*) undertaken by the character to achieve this goal (Stein & Glenn, 1979). Various *outcomes* come as a result of these attempts. Satisfactory outcomes can result in the *resolution* of the narrative (Stein & Glenn, 1979). Unsatisfactory outcomes can lead to the character offering an internal response to the unsatisfactory situation and once again establishing and executing a goal (Trabasso & Rodkin, 1994).

These various story components are arranged according to a particular blueprint. This organisation of story components is referred to as the *story grammar*. Events are organised

according to how one event leads to another (causal relationships), which components co-occur in the same physical environment (spatial relations), and which time the components occur in relation to each other (temporal relations). Various theorists show that story components are linked to each other, and the thematic structure, through spatial, temporal, and causal relations (Colletta et al, 2014; Gordon & Braun, 1984; Polyani, 1982; Reilly et al, 2004; Slobin & Berman, 2004; Stein & Glenn, 1979; Trabasso & Rodkin, 1994).

A narrative is considered coherent if the narrator can communicate spatial and temporal relations. In other words, the listener must be told when and where events are unfolding. Additionally, another critical requirement for coherence is causal relations. The narrator must show the audience how one event leads to the unfolding of another event. A narrative is not a collection of unrelated events that happen in the same place or time. Instead, a narrative is a sequence of events that are directly responsible for the unfolding of other events.

2.2.1.1. Spatial and Temporal Relations

It is critical in a narrative that the listener is aware of how characters transition through space and time. These transitions are communicated through spatial and temporal information. Spatial information concerns where characters and events are located within the narrative setting. It can provide background information, or it can describe the locations of characters as they move from setting to setting (Thorndyke, 1977). Colletta (2009) asserted that spatial cohesion can be created through the use of descriptive markers. These are any types of markers that locate an object in space, or show the transition of an object through space.

Polayni (1982) explains that temporality is important in a narrative. She describes a narrative as a sequence of events that are arranged on a temporal time-line. This time-line is established through the sequencing of events. Departure and return to this narrative time-line has to be explicitly marked in order to maintain temporal coherence. Polyani (1982) explains that particular grammatical strategies, such as tense and chronological connectives, assist in establishing a consistent timeline. These specific strategies will be looked at in greater detail in section *2.2.2. Micro-coherence.*

One of the most well documented and researched (and probably most cognitively complex) measure of coherence is causality. Although causality is a topic of research in itself, causal

factors will only be briefly touched on in this study. However, due to its considerable contribution to coherence, it warrants a brief discussion.

2.2.1.2. Causal Relations

One of the most fundamental story components in story grammar is causality (Sah, 2015; Trabasso & Rodkin, 1994). Essentially, causality is the link that relates the various events that characters are involved with to the overall thematic structure of the narrative. Causality, simply said, is observed when one action sets into motion another action. Thus, one action necessitates the outcome of another action. This can be illustrated in the *Frog, where are you?* story. Sah (2015) presents the example:

(2) a) 'the dog smashed the jar'
b) 'the boy was angry with the dog' [Sah 2015, p 32]

In this case, the condition of (a) is directly responsible for the outcome of (b).

As a result, causality shows an awareness of the reasons behind why characters undertake certain actions. This awareness of one event causing another is critical for coherence. Narratives are only considered coherent if the listener is made explicitly aware of the reason why certain actions were undertaken by characters (Stein & Glenn, 1979).

Gordon and Braun (1985) explain that incoherent narratives often omit causality. If causality is omitted, the events show no reason behind their unfolding. In other words, there is no reason to see that one event is responsible for the unfolding of another event. As a result, events can appear disconnected and unrelated. The narrative seems to be a list of isolated, unrelated events that happen one after another. There is no central theme to link the individual events together (Gordon & Braun, 1985). In the previously mentioned example, if one did not understand the causal relation between events, one would not understand that it was the action of the dog smashing the jar that caused the boy to be angry. Instead, one would view the smashing of the jar and the anger of the boy as two independent, unrelated events that hold no relation to each other. Although both events are mentioned, there is no link or connection between the events. This can be seen in narratives as well.

Although incoherent narratives could contain all necessary story components to be considered a narrative, they do not explain the causal relationships that exist between the events. These narratives are regarded as incoherent because the events are disconnected and

are not related to each other, or integrated into the underlying thematic structure (Gordon & Braun, 1985). In contrast, a coherence narrative will contain individual story components that are linked together through causal relations in a way that the listener is made aware of the hierarchically arranged thematic structure that underlies the narrative (Sah, 2015; Trabasso & Rodkin, 1994).

Trabasso and Rodkin (1994) presented how discourse coherence develops with age. They looked specifically at the causal relations exhibited in the narratives. The researchers' elicited narratives from participants aged 3, 4, 5, 9, and adults as control. Each narrative event was described as a proposition. Propositions were coded based on the information they contained. They were coded as being either an episode (should they contain any information relating to one event causing the outcome of another event), or a stand-alone unit of information. Episodes are considered indicators of causal links because they explicitly mark 1) what the event was, 2) why it was necessary, and 3) what the result of the event was. These sequences tie individual units of information to the underlying thematic structure.

Their results revealed that 3 year olds were not able to identify why characters did certain actions. In other words, although they were able to identify events, they were unable to identify why these events occurred. Their narratives showed that they focused more on identifying objects instead of explaining the causal relationship between story components. As a result, their narratives were riddled with statements describing states and actions that are totally unrelated to the central theme of the narrative (Trabasso & Rodkin, 1994). This showed that although narratives at this age included relevant story components, it lacked coherence based on the fact that there was not a satisfactory explanation regarding the relationship between the components.

At age 4 it becomes evident that children have knowledge regarding how events are integrated in terms of cause and effect. We noticed this as narratives transition from describing isolated states, actions unrelated to plan, and neutral outcomes, to taking the perspective of a main protagonist, encoding events that cause other events to occur, and encoding the ending of narratives. However, the stories were still marked with instances of incoherence as the 4 year olds tended to not orientate the listener to new information. They often forgot to give the listener cues that the scene has shifted and the following events should have been interpreted as unfolding in a different setting (Trabasso & Rodkin, 1994).

At age 5, children started producing sentences of events which reflected an awareness of why these events were taking place. Children were able to show why characters had to do certain actions, and how (when the actions failed), they were able to undertake different actions to fulfil the purpose of the story. This showed that they used planning knowledge to integrate information more fully into episodes. The episodes were not only causally and temporally related, but they were hierarchically organised into overall underlying thematic structure (Trabasso & Rodkin, 1994). From age 9 to adulthood, we saw a steady maturity in the organisation of the narratives into a hierarchical plan (Trabasso & Rodkin, 1994).

This study provided sufficient evidence that narratives become increasingly coherent with age because a greater understanding of how causal relationship between story components develop with age.

2.4.2.1. Memory and recall

In addition to causality influencing coherence, causality and coherence assist in the processes of comprehending and recalling narratives. Trabasso, Secco and Van Den Broek (1984), have shown how causality aids not only coherence, but also assists cognitive tasks such as memory and comprehension.

Causality aids comprehension in the sense that the comprehension of events is depended on causes (events producing events) and consequences (the events that are the result of other events). Comprehension involves interpreting these events as a related and integrated sequence, rather than interpreting them as individual disconnected series of events (Trabasso et al, 1984).

The researchers mentioned above used an oral narrative elicitation task (involving a time delay) in order to assess the impact of causality on memory and recall. They presented children with an oral elicitation task that involved a time-delay. They presented two groups of 12 first and fifth graders with four stories and then asked them to recall them. After a time delay of a week, the children were asked to recall the stories again. The resulting narratives where analysed according the causal network presented in each narrative. The researchers assigned the information units presented in the story as either belonging to a causal chain or a dead-end pathway. The causal chains refer to events that lead to other events. These events allowed the character to achieve the purpose of the narrative. Dead-end pathways refer to

events that did not lead to other events. The recall of causal events and dead-end events were analysed before and after delay (Trabasso et al, 1984).

The results showed that both groups displayed similar results in terms of recalling information. Before delay, both groups were able to recall more causal chains than dead-end pathways. After a week's delay, both groups were able to recall the same amount of causal chains. However, they were not able to recall as many dead-end chains as before the delay (Trabasso et al, 1984).

The results show that memory and recall, regardless of time-delay, favoured information that contained causal relations. The evidence suggests that causal chains are a critical factor in the recall of a narrative. Furthermore, the research affirms that causal cohesion is achieved through events being connected through causal relations. One can say that memorability of the story depends on causal cohesion.

2.2.1.3. Discursive Implications

As mentioned before, story grammar indicates how story components are arranged. The narrative must contain information that corresponds to various story components. However, not all information presented in the narrative will correspond to story components. Some information presented in the narrative is relevant to the plot of the narrative, but it might still be relevant to the structuring and organising of the narrative. This information is referred to as meta-narrative (Cassel, 1988).

Colletta and colleagues (see Colletta et al, 2009; 2014; 2018) differentiate between the pragmatic quality of information that relates to the unfolding of the narrative, and information that relates to the structuring of the narrative. This pragmatic differentiation refers to information as belonging to either the narrative level of the narrative, or to the meta-narrative level of the narrative. In a coherent narrative, the narrator is able to signal what information is part of the narrative level, and what information is part of the meta-narrative level. Coherence is dependent on the fact that narrators can signal a departure from, and a return to, the narrative level (Polyani, 1982).

A cohort of studies of cross-linguistic developmental studies observed the development of pragmatic acts displayed in oral narratives (Colletta et al, 2014; 2018; Kunene Nicolas, 2015).

The cohort of studies compared English, French, isiZulu, and Italian children (5 year olds and 10 year olds) to adults of the same languages. They found that regardless of language, pragmatic development became more complex with age. The researchers found that children produced the highest amount of utterances that had a narrative pragmatic value. The adults, on the other hand, produced a significant larger amount of non-narrative utterances, which held meta-narrative pragmatic value. They were willing to produce utterances that offered comments, explanations, or interpretations of the situations unfolding in the narrative (Colletta et al, 2014; 2018; Kunene Nicolas, 2015). Adult story-tellers were also able to effortlessly alternate and navigate between narrating narrative components and non-narrative components. The navigation between narrative and meta-narrative levels allows for discourse complexity (Kunene Nicolas, 2015).

In summary, discourse coherence at a macro-level observes that there is an underlying structure that dictates what information needs to be included in a narrative, and how this information is organised. Narratives contain information that corresponds to story components, and these story components are connected to each other (and the thematic structure) through spatial, temporal, and causal links. Micro-coherence looks primarily at how these relations are realised through the use of linguistic strategies.

2.2.2. Micro-Coherence

Where macro-coherence looks at how individual units of information integrate into the structure of the narrative, micro-coherence looks specifically at how individual segments relate to one another. In a sense, micro-coherence is concerned with the overall cohesion of a narrative. Micro-coherence looks at the linguistic coherence devices that are used to establish relations between story components. The establishment of relationships between components is referred to as cohesion.

One of the foremost authoritative resources regarding coherence is the seminal work, *Cohesion in English*, produced by Halliday and Hassan (1976). They identified that cohesion relates to how various segments relate to each other semantically. They identified various cohesive devices used in English based on their syntactical nature and function. They identified various strategies that the English language employs to create cohesion: conveying coherences, reference, ellipsis, substitution, lexical cohesion, and conjunction (Halliday & Hassan, 1976). This functional approach offers a valuable criterion for identifying cohesive

devices based on their grammatical classification. This offers a syntactic analysis on the use of various coherence strategies.

Other researchers have opted to observe discourse coherence strategies based on their function rather than their grammatical classification (see Fraser, 1998, 1999; Norrick, 2001; Schiffron, 2008; Zarei, 2012). They have come to the agreement that various utterances found in discourse perform various pragmatic functions. Although these utterances draw from specific grammatical categories, they cannot be limited to, or defined by, their syntactic nature. Instead, they have observed the various pragmatic functions of these utterances. They refer to these utterances as discourse markers.

Fraser (1998; 1999), similar to Halliday and Hassan (1976), have demonstrated that discourse markers such as conjunctions, assist in structuring discourse. Conjunctions describe the nature of the relationship between information contained in various utterances (Martin, 2008). Various phrases, such as 'on the other hand' or 'in conclusion' guides the listener as to how they must interpret the following information presented to them. Thus, it assists in structuring the flow of information presented to the listener. Colletta et al (2009) have identified that in oral narratives, certain conjuntions function as *logical discourse markers* because these discourse markers communicate the logical/causal relationships between components of a narrative. These logical discourse markers will be observed in the study.

Apart from assisting in structuring discourse, discourse markers offer locutionary value such as signalling turn-taking, or self-repair (Schiffron, 2008; Zarei, 2012). Additionally, Fraser (1998, 1999) showed that discourse markers also perform pragmatic functions such as orientating focus. Discourse markers can focuses information on a new topic through signalling *topic change* (Fraser, 1998). Other discourse markers hold enunciative value in the sense that they signify changes in pragmatic acts, i.e. they signal to the listener that an explanation, summary, commentary, or clarification follows (Colletta et al, 2009; Fraser, 1998). Colletta et al (2009) classified these markers as *enunciative* markers in an oral narrative because they marked the contribution of pragmatic information.

2.2.2.1. Cross-Linguistic Implications

One can see that there exists a large body of research on the classification and function of various strategies employed in creating cohesion. However, most of this research is available

predominantly on strategies applicable to the English language. Strong caution is advised against extrapolating cohesion strategies observed in one language and applying them to various languages. Ndlovu (2013) presented an article whereby he pointed out how certain cohesion strategies are different in English and in isiZulu. He was able to make these conclusions by comparing the translations and back-translations of health texts into English and isiZulu.

Ndlovu (2013) asserted that different cohesion strategies are employed in isiZulu and in English. These differences are understandable as isiZulu is a structurally different language than English. English creates cohesion through using reference strategies such as lexical repetition, pronoun, and distinguishing between the use of 'a' or 'the'. IsiZulu employs strategies such as morpho-syntactic agreement to indicate reference. They also presented with cases of using long circumventions instead of lexical repetition. Furthermore, isiZulu does not have an equivalent definite and indefinite article. Thus, various other strategies (such as using demonstrative pronouns) were used to distinguish between information marked with the 'the' or 'a' in the English source texts (Ndlovu, 2013).

Furthermore, Poulos and Msimang (1998) identified the particular word class of ideophones in isiZulu that does not have parallel equivalent in English. Thus, isiZulu contains a particular linguistic strategy of encoding information. A single equivalent strategy is not available in English.

De Schryver (2009) discussed the relation of ideophones to similar word classes in English. Although he agrees, that often ideophones can be translated, or transposed, by omnomatopoeic expressions, it is not always the case. Take into consideration the following examples presented by De Schryver:

(3) *qhu* ideophone - (of exploding/bursting sound) 'bang'

(4) *nci* ideophone - (of happiness, of surprise) 'Nci, nci, nci …!' 'Yippee, yippee, yippee'

(5) *qu* ideophone - (of brief period of time), 'briefly'

[De Schryver, 2009, p.42]

De Schcryver (2009) explains that often ideophones contain express onomatopoeic content, and can be equivalently translated by English onomatopoeia. This is seen in (a) where 'ghu' has the similar meaning as 'bang'. However, De Schryver explains that simple parallel

translation is not always possible. Instead, ideophones belong to their own separate word category which cannot be readily equated to a word category available in English. Often ideophones are used for the emotive expression of emotions, impressions, feelings, and actions (as seen in (b) and (c)). Often various noun phrases or adverbial phrases are used in English to translate the intended meaning expressed by these ideophones. It is evident that the language packaging resources available in each language influences how semantic information will be expressed on a surface level. It is critical to include the typological considerations when conducting cross-linguistic studies.

2.2.2.2. Discursive Considerations

We have seen in many studies that the aspect of pragmatic function keeps emerging when discussing coherence. Kunene Nicolas (2015) explains that narrative tasks rely heavily on pragmatic ability. Pragmatic skills underpin the communicative function of language (Cummings, 2009).

Pragmatic ability is what allows a listener to infer the communicative meaning of a linguistic utterance through taking into consideration both linguistic information and the contextual situation (Cummings, 2009). As we have already seen, linguistic information includes information presented both verbally and gesturally (Kendon, 2004). Pragmatic abilities include aspects such as Speech Acts, Implicature, Presuppositions, Deixis, Context, Non-literal Language, and Relevance (Cummings, 2009). The pragmatic ability to understand context is particularly important to narrative production.

We have already seen, in terms of story grammar, that a necessary component to a narrative is the particular setting wherein a narrative occurs. This takes into consideration the physical setting that unfolds in the narrative (Thorndyke, 1977). However, the ability to talk about a particular setting is dependent on the pragmatic principle of context. Cummings (2009) explains that context involves physical, linguistic, and epistemic-social information.

The physical elements relating to context refers to notions such as space and time. The narrator uses various indexical expressions to refer to these notions. The listener infers a spatial and temporal representation of the context based on the information represented by these indexical expressions. The context not only refers to the physical setting, but it also refers to the setting created in the discourse. Often information is presented early in the

dialogue. Listeners must be able to backtrack through the discourse to recall information presented earlier on, in order to help them understand the information that is presented to them at the current point (Cummings, 2009).

Epistemically, context is often based on shared knowledge and beliefs, as well as judgements about listener's mental state. The speaker must be able to assess how much information they assume the listener has available that informs their mental representation. The speaker must then decide to provide additional information should they decide that the listener does not have sufficient information to make an accurate inference about the context. This is on the assumption that the mental state of the listener assists speakers in tailoring the conversation in a manner that provides additional information in order to appropriately assist the listener's understanding. This ability to assume the listener's mental state and to adapt information accordingly is explicitly seen in the use of reference (Cummings, 2009).

Orsolini, Rossi and Pontecorvo (1996) conducted a study whereby they assessed how Italian pre-schoolers and elementary scholars reintroduce referents in the narrative of *Frog, Where Are You?* They found that context played a crucial role in introducing new referents. Essentially, the speaker's understanding of the shared context between the speaker and listener determines how the speaker will introduce referents. For example, they found that the first introduction of a referent was done through the use of salient linguistic expressions. This allowed the creation of a shared context as well as directing the listener's attention to the new referent.

Typologically, Italian is a pro-drop subject as information regarding the subject is expressed through subject markings on the verb. Thus, if the subject is the same in consecutive clauses, it is permitted to exclude the subject from the sentence. However, should a new topic of focus be introduced, this shift in focus (or reference) needs to be overtly marked (Orsolini, et al, 1996). The researchers found that local shifts in topic (i.e. from the main clause to subordinating clauses) where often marked through the use of personal pronouns. However, topic changes that took place across larger clause boundaries were introduced using full nouns. They found that children as young as 4 years old are already able to differentiate between topic maintenance (i.e. local shifts) and re-introduction of referents (i.e. topic changes). This was reflected in their reference strategies. They found that from 4 years old,

children favour using pronouns to communicate topic maintenance, whereas they prefer the use of full nouns to communicate topic change (Orsolini, et al, 1996).

It is interesting to note that the use of pronouns corresponds to the grammatical structure of a language whereas the use of full nouns correlates to the lexical structure of language. Children as young as 4 are able to differentiate between grammatical and lexical structures and can appropriately use a structure that fits the communicative requirement.

Narrative theorists such as Colletta et al (2014; 2018) and Slobin (1994) have identified that non-verbal behaviour also contributes towards communicating coherence in an oral narrative.

2.2.3. Non-Verbal Coherence

Various researchers have suggested in their research that it is not sufficient to only account for verbal behaviour, but that non-verbal behaviour also adds communicative function (McNeill, 1992, Poulos & Msimang, 1998; Wang & Guo, 2015; Zarei, 2012).

Zarei (2012) suggests that discourse coherence markers are often isolated from a sentence through phonological bracketing. This is a form of para-linguistic feature that does not fall part of verbal communication. Wang and Guo (2015) suggest that non-verbal behaviour (gesture in particular) needs to be taken into account when discussing discourse coherence, as gesture plays a feature in marking it. Furthermore, Poulos and Msimang (1998) propose that the interpretation of a particular syntactic category (the interjection) is dependent on information presented by the accompanying co-speech gestural context.

2.2.3.1. Multi-modality of Language

Over the last few decades, efforts by the likes of Kendon (2004) and McNeill (1992) have shown that language is a multi-modal system. They have presented sufficient theories and evidence to suggest that language and accompanying gesture serve as an interactive system. They presented various studies whereby they observed the semantic quality of information presented verbally, and the semantic information contained in accompanying co-speech gestures. They observed that communicative information is presented through both modalities.

Various gesture theorists define gesture as non-verbal communication that co-accompanies verbal communication. One of influential theorists, McNeill (1992), produced a large body of

evidence to show that gesture is the visual accompaniment to verbal information. His validation for this assertion is described in his Growth-Point Hypothesis. This Hypothesis states that gesture and speech offer two modalities of expressing semantic content. McNeill (1992) argues that various evidence points to the fact that gestures and speech share the same underlying process. He observed that in his study that

1) gestures only occur during speech
2) gestures and speech both refer to the same semantic and pragmatic content.

Thus, language must be viewed from the perspective that it is expressed through two, integrated systems (McNeill, 1992; McNeill & Duncan, 2000).

2.2.3.2. Function of Gesture

Various researchers (see Kendon, 2004; McNeil, 1992) have identified that not all gestures perform the same function. Some gestures provide information about the visual properties of a topic, others assist in pragmatically structuring discourse, and other gestures purely assist the speaker with language production.

a) Communicative Function

Certain gestures are communicative in nature. Examples of these gestures include iconic or representational gestures (Colletta et al, 2009; McNeill, 1992).

Certain gestures represent physical information regarding the topic (McNeill, 1992). These gestures communicate spatial information that may or may not be conveyed in the accompanying speech. These gestures are used to indicate shape, location, trajectory, direction, etc. of a particular concept. Slobin (1987) presented a series of studies whereby participants had to recount objects in motion. The studies showed that certain spatial information was not expressed verbally, but was expressed visually through accompanying gesture.

These gestures reveal physical information regarding the mental image that the speaker has of the topic. Some physical information is communicated in the gesture, while other physical information is communicated in the speech, thus observing only gesture or speech would provide incomplete information regarding the topic because both gesture and speech work together to produce an accurate representation of the topic. An example of this is verbally

saying: ‘and she chases him out again’, and then gesturing the use of a weapon to chase the person (McNeill, 1992, p. 14).

b) Discursive-Pragmatic Function

Gesture greatly assists in providing a discursive-pragmatic component to discourse through using various types of gestures in different ways (McNeill, 1992). Certain small repetitive gestures, referred to as beats, assist in focusing attention on specific characters or parts (McNeil, 1992; So, Kita, & Goldin-Meadow, 2013). Beats refer to gestures that symbolise the rhythm of speech. Beats draw attention to certain aspects through emphasising certain words. They also assists in managing or arranging discourse as they indicate the start of a narrative, change of character, etc. (McNeill, 1992).

Certain gestures fulfil the function of creating coherence between thematically related, yet temporally separated topics. Often the same type of gesture is used to refer to different, yet related, information. The similarity in the gesture unintentionally communicates a link between the utterances that accompany this gesture. Cohesion between these gestures is indicated through replication of gesture shape, locus, and movement, or gesture space (McNeill, 1992). Additionally, gesture is used to indicate various pragmatic concepts, such as signalling changes in speech turns, indicating interactions, indicating various emotions etc. (McNeill, 1992). Often a change in speech turn or the expression of emotions will be accompanied or expressed through gesture.

c) Language Production Function

Gesture not only has a communicative function, but it also serves a productive purpose. Gestures have been proven to assist with language production tasks, such as lexical retrieval. Gestures serve a cross-modal priming function (Colletta et al, 2009; Rauscher et al, 1996).

Gesture and speech both draw from conceptual and preverbal information. Spatial information is mentally represented before it is linguistically encoded and produced using verbal language (Özyürek& Kita, 20013; McNeill, 1992; McNeill & Duncan, 2000). Thus, visual aspects of spatial information are mentally represented before it is verbally produced. Rauscher et al (1996) has shown that often, when a speaker cannot lexically access a word, they use gesture to visually portray some of the visual semantic information present in the word. The gesture draws on semantic information presented in the mental representation of

the information. Thus, gesture draws from mental representations and not from the linguistic encoding of the information. For this reason, gesture can draw from and represent information that the verbal modality might have difficulty producing. Gesture is said to prime language production as it allows the speaker to communicate information visually before they are able to do so verbally. Thus, gesture serves as a cross-modal primer for lexical retrieval.

2.2.3.3. Gesture and Language Development

We have seen from the above mentioned study that gesture assists language production. We can also see the influence that gesture has on language development through assisting language production. Various studies attest to the fact that gesture assists the development of language and language production.

Alibali, Evans, Hostetter, Ryan, and Mainela-Arnold (2009) tested this assertion that gesture assists language production processes. Alibali et al (2009) observed the rate at which redundant and non-redundant gestures where produced. Redundant gestures refers to gestures which expressed information already encoded in the verbal modality. Non-redundant gestures encoded additional information that was not expressed in the non-verbal modality.

The study showed that adults produced a much higher rate of redundant gestures than children. Adults have already mastered the complexities required for verbally encoding. Therefore, all information expressed in gesture is already verbally encoded. Children, on the other hand, are still mastering the ability to verbally encode information. As a result, they are not yet able to express all of the intended information through the verbal modality. Some information that is not expressed verbally is expressed in through the non-verbal modality. This illustrates that the ability to express information bi-modally is an ability that children develop throughout maturation. Initially, gesture offers a modality to express information that they are not yet able to express verbally.

It is of paramount importance to include an observation of gesture in order to assess the conceptual comprehension and production of discourse coherence in oral narratives. This view is supported by the results of Colletta et al (2014; 2018).

In oral narrative studies presented by Colletta et al (2014; 2018) and Kunene Nicolas (2015), it was found that children used gesture to assist with particular discourse functions that they

have not yet been able to express verbally. For example, Colletta et al (2014) found that when tasked with producing a narrative task, young children struggled in producing an extended monologue account. They were more accustomed to interactive dialogue. As a result, they struggled with the language production requirements. This difficulty was reflected in their use of gesture. Young children showed a high proportion of gesture associated with language production. These gestures often replaced words or utterances. Thus, the gesture provided a preferred modality for expressing information (Colletta et al, 2014).

However, as children developed, their abilities to express information bi-modally also matured. As a result, older children, however, showed a preference for producing co-speech gesture. This means that their gesture did not replace verbal information, instead it reinforced what was being expressed verbally (Colletta et al, 2014). This indicates that older children have mastered the pragmatic requirements of producing a monologue account of a narrative. Additionally, the specific use of gesture shows that they are able to communicate information in both the verbal and non-verbal modality. Their gesture revealed this competency and also testified to a bi-modal expression of language productions (Colletta et al, 2014).

These findings are supported by Kunene Nicolas (2015) and further studies of Colletta et al, (2018). They observed gesture and discourse development during the period of late language acquisition. They observed various gestures produced when telling an oral narrative in a sample of amaZulu children between the ages of 5-6, 9-10, 11-12, and adults. The results indicated a developmental trend between the particular semantic relationship and function of gesture. The age ranges of 5-6, 9-10 and 11-12 year old children all predominantly produced gestures that communicated physical information about the topic. Thus, their gesture referred directly to the topic at hand. The adults produced much higher amounts of gesture that assisted in the structuring of the narrative (Kunene Nicolas, 2015).

This shows that gesture performs different functions at different stages of language acquisition. Initially, gesture provides a non-verbal modality for expressing semantic information. At a later stage of language acquisition, gesture performs the task of conveying information directly related to the topic. During adulthood, gesture plays a pragmatic-discursive function where it seeks to assist in structuring discourse rather than communicating information about the topic.

Thus far, it is evident that narrative ability develops with age. The selection and employment of particular discourse coherence devices within oral narratives change with age. Furthermore, narrators of all ages express information through both verbal and non-verbal communication.

2.3. Typology

In this study, we are observing the typological differences in constructing multi-modal coherence in an oral narrative. For this reason, it's important to visit typological theory.

Cognitive theorists such as Talmy (2000) and Slobin (1987) have shown that language influences our cognition and the structure of our mental processes. Languages, in themselves, differ from each other in a number of domains and these differences might display certain effects on cognition (Hickmann et al, 2013; Dhillon, 2010). Before we can make observations about language typology, it is important to first present a review of how language typology is used to define language structure.

Talmy (1985, 2000) explains that language is an interacting binary system of grammatical expressions and conceptual information. Conceptual information refers to the information contained in semantic, abstract form. Only certain parts of this information is coded and expressed through certain grammatical expressions. Languages differ in terms of what parts of the conceptual information is selected for coding and expression using grammatical expressions. Languages also differ from each other in the sense that they each have their own unique structure of grammatical expressions (Talmy, 1985, 2000). Essentially, language differs in the surface level configuration of semantic information. Simply said, languages differ in the way they use linguistic resources to package semantic information.

Languages are grouped into typologies based on the linguistic structures they use to encode motion, their syntactic word order, or their particular morphological structure involved in their word formation (Barber, 2000; Greenberg, 1974; Song, 2001; Talmy, 2000).

2.2.4.1. Typological Classification

The following section will briefly discuss how the two languages under observation (South African English and isiZulu) are typologically dissimilar from each other based on how they encode motion, as well as differences in the morpho-syntactic organisation of the particular language.

a) Encoding of Motion

Talmy (1985, 2000) classified languages according to similarities and differences in the manner of how they encode motion. Languages are aligned according to the type of information they express in motion verbs, and the structure in which they express it. Talmy (1985, 2000) suggests that motion verbs either contain information about the motion of a particular object and information about either 1) what caused the motion (Cause); 2) the trajectory of the motion (Path), or 3) the location of the motion (Figure).

Talmy (1985, 2000) uses these patterning of motion information to differentiate between verb-framed and satellite-framed languages. English is a Satellite framed language. This means that it encodes information about the Motion in the verb stem. Any additional information such as Path or Location, is encoded in adjacent grammatical expressions. These grammatical expressions are referred to as satellites. English adverbs and prepositional phrases function as satellites and they indicate information about the Path of the verb. Talmy (1985) illustrates his classification in the examples below. We can see that Motion is encoded in the verb 'lay' and the Location is encoded in the satellite 'on'.

(6) The pencil lay on the table. [Talmy, 1985, p. 61]

One can see from this example, that Motion and Path of the object is encoded in two distinct units. We see that information about Motion is encoded in the verb. From the verb 'lay', we see that the object is in a stationary state. The information about the Path (the location or trajectory of the motion) is encoded in the peripheral satellites. We see that the location of the pencil is 'on the table'. There is no information expressed about the Path of the object in the verb, likewise, there is no information expressed about the Motion of the object in the satellite.

IsiZulu is a verb-framed language (Kunene-Nicolas, 2015). Although Talmy does not provide any isiZulu examples, he does illustrate the nature of the verb-framed language using Spanish, another verb-framed language. Verb-framed languages conflate information about the Motion and the Manner or Path into the verb stem (Kunene Nicolas, 2015; Talmy, 1985).In these language, it is possible to encode information about both the Motion and Manner/Path in a single verb. In the example below, we can see that both Motion and Manner is expressed in the verb 'entró'.

(7) La botella entró a la cueva (flotando)
The bottle moved-in to the cave (floating)

'The bottle floated into the cave' [Talmy, 1985, p. 69]

It is important to understand that the encoding of motion is one of the ways in which languages differ from each other in terms of their structure. It provides evidence that different coding structures are used to express similar semantic content. Thus, although the underlying semantic content is identical, the grammatical coding patterns used to express this content differ vastly in its arrangement. Thus, it is critical to understand what semantic information is expressed in which grammatical structures. Furthermore, one can already see from these examples that languages, such as isiZulu, can express semantic content of Motion and Manner/Path in single lexical words, whereas English requires both lexical words, and grammatical structures (such as prepositions and adverbs) to express the same semantic content. This already indicates a difference on the micro-coherence level that one should be aware of going forward.

Typological differences can also be observed in the in the morphological construction of their word formation (Song, 2001; Campbell, 2008).

b) Morpho-syntactic Classification

Languages can also be classified according the morphological constructions of their words. A classical approach to language typology classifies languages as belonging to one of four morphological typologies: isolating, agglutinative, inflectional, and polysynthetic (Barber, 2000; Campbell, 2008; Greenberg, 1974; Song, 2001). Barber (2000) simplifies this classification system by stating that the morphological formation falls somewhere on a continuum between two extremes: analytic or synthetic. English and isiZulu both fall on the extremities of this continuum.

English is an Indo-European language and falls on the analytical side of the spectrum (Campbell, 2008). Although English does make more liberal use of bound morphemes than other analytical languages, it is still falls closer to the analytical typology when viewed on a continuum. Some examples that use bound morphemes include past tense markers.

For example:

(8) talk*ed*

We see that the meaning is contained in the root ‘talk’ and the past tense marker ‘-ed’ indicates tense.

IsiZulu is part of the Bantu language family and is an agglutinative language (Buell et al, 2011). It falls closer to the synthetic side of the typological continuum. This means that isiZulu makes use of a rich morphological system which uses various bound morphemes (Colletta, Kunene Nicolas & Guidetti, 2018; Kunene Nicolas, 2015). IsiZulu, as other Bantu languages, are marked by their rich morphological inflectional agreement system (Poulos & Msimang, 1998; Van der Spuy, 1993).

This inflectional system is made possible through the use of a noun class system. Noun prefixes correspond to the noun class markings. These prefixes allow for a rich morphological agreement system (Buell et al, 2011; Poulos & Msimang, 1998). This allows for agreement to be established through the use of concord. We can see this agreement morphology reflected in the example below.

(9) Abangane b-ami b-o-ba-bili ba-thand-a le ngoma.
2friends 2-my 2-o-2-two SM2-like-FS 9this 9song

‘Both of my friends like this song.’ [Buell et al, 2011, p. 690]

The word order employed in English and isiZulu also differ from each other. English has a fairly fixed Subject-Verb-Object (SVO) word order that is governed by syntactic constraints. IsiZulu, on the other hand, makes use of a default SVO word order, although the strong morphological markings allows for various dislocations and movements to occur within this word order (Buell et al, 2011; Van der Spuy, 1993). This freer variation of word order has pragmatic and discursive implications (Buell et al, 2011).

Language typology is important because not only does it determine the structural organisation of a language itself, it also influences the organisation on mental processes involved in language processing and comprehension. Evidence for the effect of language typology on cognition can be seen in cross-linguistic research of language acquisition.

2.2.4.2. Typology and Non-verbal Communication

Apart from the apparent functional and structural typological differences amongst languages, we have also seen from literature that typological differences are evident in language production processes. Various cross-linguistic gesture studies have showed that typological differences in gesture provides insight in how language constraints influences the nature of language processing processes.

Through the research of Özyürek et al (2005), and Kita and Özyürek (2003), we know that although gesture draws from the preverbal stage of language production, its expression is still influenced by typological constraints of the speaker's language. Kita and Özyürek (2003) have shown that gesture reflects the constraints of the information, packaging patterns present in the speaker's language.

As mentioned before, gesture draws on information stored in the mental representation. Slobin (2005) makes the case that language typology influences how these mental representations are formed. In his cross-linguistic study, he observed how speakers of typologically different languages, English and Spanish, mentally represent motion verbs. English and Spanish differ typologically in how they encode motion. Both populations were asked to read a description of a man's journey and to describe what they 'saw' happen in the story. He found that the English speaker's report focused predominantly on them 'seeing' details in the movement of the man. They readily elaborated detail regarding to the manner of movement, whereas the Spanish speakers reported their mental imagery consisted more of individual, photographic-like stills of events. Their reports focused more on physical details of the setting described in the narrative. Slobin (2005) makes the case that the typological structure of a language influences the mental representation of information.

Kita and Özyürek (2003) presented a study which shows that these differences in mental representations are reflected in gesture. Their study observes gestural differences displayed by typologically different languages when encoding motion. They found that gestural patterns closely assimilated linguistic encoding patterns (Kita & Özyürek, 2003). They observed that Japanese, English, and Turkish speakers encoded motion events differently. Verbally, English speakers encoded the Manner of the motion and Trajectory of the motion in a single clause (Manner encoded in verb root and Trajectory encoded in the satellite). However, Turkish and Japanese required individual clauses for Manner and Trajectory as each component was

encoded by an individual verb (Kita & Özyürek, 2003). This encoding pattern was replicated in the accompanying co-speech gesture as English speakers used one gesture to represent Manner and Trajectory, whereas Turkish and Japanese utilised separate gestures in expressing Manner and Trajectory (Kita & Özyürek, 2003). Thus, language specific linguistic packaging was represented verbally and non-verbally.

The purpose of this study is to observe the effect that language typology has on the selection and implementation of discourse coherence devices. This also allows one more insight into how language constraints influence cognitive development. Cross-linguistic studies in language acquisition observed the implications that language typology has on various aspects of language acquisition and overall cognitive development.

Overall, we have seen from reviewing previous literature, that discourse coherence is a critical requirement for successful communication. Oral narratives provide a useful tool to adequately assess discourse coherence development across different ages and cultures. We have seen from literature that theorists have differentiated oral narratives from other types of discourse based on constraints that determine the internal structure of the narrative. This internal structure is pertinent to coherence as it provides an underlying thematic framework. Discourse coherence is achieved when speakers can use linguistic devices to both 1) relate individual components to one another, and 2) to integrate individual components to the overall thematic framework. Thus, coherence is achieved at both a macro and a micro-level.

At a macro-level, we have seen that coherence is achieved when story components are related and integrated through the use of spatial, temporal, and clausal relations. We have also seen that various pragmatic levels exist within a narrative that serves to contribute to the narrative structure. Various theorists have presented linguistic strategies used to establish coherence at a micro-level. We have also seen that coherence strategies are not employed the same at all ages. Language acquisition studies have shown that language is not a unimodal phenomenon and that non-verbal communication is influential in the development of language production and comprehension. In addition to that, the literature has shown that language typological factors are influential in language development.

The aim of this research is to observe how discourse coherence strategies develop across age in two typologically dissimilar languages, while taking non-verbal communication into

consideration. The purpose of the research is to see the relationship between verbal and non-verbal discourse coherence strategies and language typology across age groups. The following chapter, *Chapter 3: Methodology*, will present the methodology used in this study to observe the development of discourse coherence within a narrative.

2.2.4.3. Typology and Language Development

We have already discussed that there is a close association between typological constrains and cognitive processes. It is important to understand the nature of the typological constraints exerted on a particular language as they are influential in shaping cognitive processes. Dhillon (2010) presented a study whereby he demonstrated that factors are influential in even early language acquisition. He challenged the N-bias claim by observing the acquisition of nouns in various typologically dissimilar languages. N-bias claims that universally, languages lexically acquire nouns before they acquire verbs. In his cross-linguistic study, he found sufficient evidence to suggest the influence of structural parameters on language acquisition. Dhillon (2010) asserted that the emergence of N-bias is not due to a developmental universal. Instead, N-bias emerges only in languages where the structural parameters facilitate an N-bias.

Dhillon (2010) observed the acquisition of nouns and verbs in three dissimilar languages: Spanish, Mandarin, and English. The results indicated that only Spanish and English showed N-bias. The linguistic structure of Spanish and English allows for nouns to be marked with a greater saliency than verbs, thus allowing for an initial acquisition of nouns before verbs. English requires a subject noun and an optional object noun in each sentence. Spanish, however, is a pro-drop language and allows for the omission of the noun. However, the structure of Spanish allows for rich morphological agreement. Thus, irrespective of the omission of the subject, there are various morphological cues that clarify the reference of the noun. Dhillon (2010) argues that these morphological cues serve as salient markers of the noun. However, the morphological transparency of Mandarin did not provide an environment for marking nouns as more salient than verbs. Mandarin, like Spanish, is a pro-drop and a topic-drop language. However, unlike Spanish, it is a morphologically transparent language. There are very few morphological markings to saliently mark the noun. Therefore, the structural parameters of the particular languages set up an environment that influenced the acquisition patterns.

The influence that typological parameters have on acquisition is also evident in multi-modal studies of language acquisition. Hickmann, Hendricks, and Gullberg (2013) conducted a developmental study whereby they observed the cross-linguistic expression of motion in typologically dissimilar languages. Their study compared English (a satellite-framed language), and French (a verb-framed language). They observed how L1 English and L1 French children and adults encoded motion using both speech and gesture.

Their results indicated that typological differences could be observed both in the verbal encoding of the motion verbs, as well as in the information expressed in co-speech gesture. Their study revealed that typological different languages did demonstrate developmental differences in how information was packaged and expressed in verbs. The researchers termed these differences 'Manner Modulation'. In English, information concerning motion is expressed in the verb, whereas additional information (such as Path or Manner) is expressed in satellites. For example:

(10)*The cat just ran* [Manner] *up* [Path] *the post.* (10 years)

[Hickmann et al, 2013, p.140]

Initially, English children used separate gestures to encode Manner and Motion. In other words, they used a separate gesture to reflect Manner, and a separate gesture to reflect Motion. The English adults however, conflated information about both the Manner and Motion into a single gesture. In other words, they gesturally expressed Manner and Motion simultaneously. This transition from using separate gestures to conflated gestures is referred to as Manner Modulation. The authors asserted that this particular gestural pattern is consistently found in satellite-framed languages.

The French results revealed opposite results. French is a verb-framed language, which means that information about Motion and Manner or the Path is conflated into a single verb.

For example:

(11)*Un écureuil qui grimpait* [Manner+Path] *dans un chêne rouge.*

'A squirrel who climbed.ed.up in a red chestnut tree.'

[Hickmann et al, 2013, p.140]

The French population presented interesting conflation patterns which were observed in the gesture accompanying speech. Initially, the children conflated manner and motion in a single gesture. The adults, however, presented separate gestures reflecting Manner and Motion respectively (Hickmann et al, 2013).

This not only supports the argument that typological differences are observed multi-modally, but it also affirms that language typology does influence language acquisition. The difference in gesture development trends can be linked to the particular language typology.

The purpose of this study was to observe what the typological constraints are on the development of discourse coherence within an oral narrative. The following section will discuss the methodology used by the study to observe the typological differences in discourse coherence strategies.

Chapter 3: Methodology

The methodology stems from an international project originally incepted by "ANR Multimodality" research project (Colletta, Guidetti, Capirci, Cristilli, Demir, Kunene & Levine, 2014; Colletta et al, 2009; 2010) which studied French, Italian and American English. A further data collection was conducted by Kunene Nicolas (2010-2015) under the NRF Grant 84343 of IsiZulu, L2 English, and L1 English. Different aspects of the data have been used in other dissertations (Ahmed, 2015; Ntuli, 2016; Coertze, 2015).

3.1. Research Methodology

The purpose of this study was to answer the research questions. The research questions were:

1. What strategies are employed to create discourse coherence within an oral narrative?
2. How do these strategies develop across age?
3. Are there typological differences or similarities in terms of how strategies develop across age?

The archival data used for this study focused primarily on the narrative itself. The data contained various examples of discourse coherence strategies. These were not looked at thoroughly in the previous studies. This study aims to contribute to the archival data by identifying and analysing various discourse coherence strategies used within an oral narrative. It aims to observe the various discourse coherence cues employed to create coherence within an oral narrative.

3.1.1. Sampling and Population

The study used available secondary data relating to a study conducted by Kunene Nicolas (2015) and Colletta et al (2018). The sample population is South African English and isiZulu speakers. In this study, the focus is on looking at discourse coherence devices produced by speakers of South African English and isiZulu when producing oral narratives.

3.3.1.1. Population

The target population for this study was monolingual speakers of SA English and L1 speakers of isiZulu.

In order to make the study relevant to the South African context, the researcher selected two languages widely spoken in South Africa: South African English and isiZulu. The population used in this study represented L1 SA English and L1 isiZulu speakers.

3.3.1.2. Sampling

English and isiZulu sampling was determined through probability sampling. Collins et al (2000) explains that probability sampling is when any person belonging to a particular population has a probability to be sampled. Thus any person belonging to the L1 SA English or L1 isiZulu population had an equal opportunity to be selected as part of the sample size. Participants were drawn by random selection.

The sampling was further determined by disproportional stratified random sampling. In the current study, each stratum contained 6 representatives, irrespective of the proportion of the population.

The study utilised various characteristics in order to establish the strata. The study observed sex, education level, linguistic background, and age. All data was collected from mainstream educational institutions in order to control for level of education. The study aimed at looking at three developmental ages within each language. The study observed young children (age 5-6 years); older children (9-12 years); and adults (as a control).

The researcher selected 6 participants for each age for each language (6 young children, 6 older children, and 6 adults for each language). Each age contained an equal distribution of males and females (3 males; 3 females).

The sample group constitutes as seen in Table 1:

Table 1

Data Samples

	English			isiZulu		
	Male	Female	Total	Male	Female	Total
5-6 Years	3	3	6	3	3	6
9-10 Years	3	3	6	3	3	6
18-24 Years	3	3	6	3	3	6
			18			**18**
Total # Participants				**36**		

These ages were specifically chosen because they represented different developmental milestones. As mentioned in the *1.1. Background to the Study* section, there is a comparative shortage of language acquisition studies that focus on the acquisition of discourse during late language acquisition (Kunene Nicolas, 2015). This study aimed to observe how discourse is acquired during the late language acquisition years. In order to observe the development of discourse coherence, it is important to observe how discourse coherence develops across ages. For this reason, the study chose to observe young children (5-6 year olds) and older children (9-10 year olds). The adults (18-24 year olds) served as a control group. Additionally, these ages overlap with important milestones in development.

Additionally, the study also included participants of typologically dissimilar languages. English is a satellite-framed languages whereas isiZulu is a verb-framed language. Observing how discourse coherence strategies develop in each language will give us insight into whether typological factors might influence language development.

3.1.2. Research Design

This study aimed to identify various discourse coherence strategies. The Research then aimed to observe how 1) age and 2) typology influences discourse coherence strategies.

In order to address the research questions, it was decided to use both a quantitative and qualitative method. The aim of this study is to 1) identify discourse coherence strategies, 2)

observe their development throughout age, and 3) to observe the typological influence on these strategies. For this reason, the aims of the study requires both a quantitative and a qualitative method.

A quantitative method was applied in order to describe the data. Through the use of a coding manual, it is possible to systematically identify various tokens in the data. Consistent with a quantitative study, these tokens were assigned value using a nominal scale. The mean for each amount of tokens was calculated.

A qualitative method was applied in order to look at the context in which these tokens occurred. This qualitative analysis discusses the context by discussing relevant examples. The qualitative analysis attempts to contextualise some of the changes reflected between groups. The qualitative analysis seeks to elaborate on the interpretation of the data.

The specific samples used for this study were drawn at random from a larger sample group of the archived data. Please see Kunene (2015) and Colletta et al (2018) for more information on the larger data sample.

Data Collection Instruments

The researcher chose to use archival data as it held various benefits. Namely, due to availability and accuracy. The linguistics department of the University of the Witwatersrand has a large store of archival data containing oral narratives elicited by participants of various ages and languages. Archival data was randomly selected data from this larger cohort of data. The current study obtained data through random selection from the data base

Data Collection of Archival Data

Process of data collection process is reported in Colletta et al (2014; 2018), Kunene Nicolas (2015), Ahmed (2015), and Ntuli (2016). The archived data stems from a developmental study that studied the narrative development of young children and adults. The process involved eliciting oral narratives in a spontaneous and interactive discursive setting.

The participants were shown a wordless cartoon stimulus. The cartoon was a short *Tom and Jerry* story (around 2 minutes) about a mouse and a woodpecker. The story followed the events of a woodpecker egg unknowingly ending up in a mouse's hole, and the interactions of the two characters as the mouse attempts to return the woodpecker to its nest. The

participants were asked to tell the interviewer a story about what happened during the cartoon. Their responses were video-recorded for later analysis.

3.2. Validity and Reliability

This study maintains a high internal validity. The coded data was valid and reliable, as reported in previous research (see Colletta et al, 2010, 2014, and 2018; Kunene Nicolas, 2015).

From the archived data, this study conducted additional coding (in terms of the discourse coherence cues and isiZulu translations) and this was verified by a syntax specialist. Additionally, all gestures were re-coded by an independent coder and there was an 80% agreement. Any disputes were settled through discussion between the researcher and the independent coder.

3.3. Description and Analysis of Data

The following section presents the data used in this specific study.

3.3.1. Description of Data

The data was analysed using Elan Annotation software. Data was annotated in accordance with a coding manual, *Coding Manual ANR Multimodality Research Project 2005*-2009[1], compiled by Colletta et al (2009). The coding manual allows for a multi-tier annotation and comparison of various indices of both verbal and non-verbal information presented through a narrative.

The coding manual allowed for the coding of information relating to the linguistic, narrative, and gestural components of the narrative. This annotation allows for a very detailed account of information contained in the narrative. This study will also use this coding manual and develop from it.

The coding manual allows for the annotation of verbal and non-verbal information on various tiers. See Appendix A for a more information regarding the various tiers available to be coded.

This current study, only observed information located on 3 tiers and their branches: the Linguistic Tier, the Narrative Tier, and the Gesture Tier.

[1] link http://w3.u-grenoble3.fr/lidilem/labo/file/ANRMultimodalityresearch-codingmanual.pdf

3.3.1.1. The Linguistic Tier

The Linguistic tier allowed for the transcription and segmentation of the verbal utterance into clauses.

All isiZulu data contained an additional tier which in turn contained an English translation of each clause (which was done by previous researchers). The researcher included an additional tier which contained a glossary for each individual isiZulu word. The researcher consulted various online dictionaries and isiZulu source books such as isiZulu.net (2018), Oxford online dictionary (2018), and Poulos and Msimang (1998).

The clauses were tokenised into words for further analysis. This tier was coded by previous researchers.

The researcher realised that tokenising clauses into words did not accurately reflect the morphological complexity of the isiZulu words. The researcher created an additional tier where each isiZulu word was tokenised in order to reflect its morphological complexity. This tier allowed for the annotation of the root, and its various affixes. A secondary tier annotated the grammatical function of each word, as well as the dictionary definition of the root.

The coding manual made provision for the identification of various discourse coherence cues. These were markers that contributed towards creating coherence within a narrative. The researcher realised that discourse coherence cues had not been annotated in the data. The coding of discourse coherence cues were completed by the researcher.

The coding manual describes a discourse coherence cue as being either a connective, or an anaphora. Connectives were further classified according to their function. The table below explains how connectives where classified as stipulated by the coding manual. Please see Appendix B for more information.

Table 2

Discourse Coherence Cues

Discourse Structure Markers	they announce the opening or the end of a conversational unit and organize the discursive progression
Logical Markers	they mark inter-clause relationships within explanatory sequences
Chronological Markers	they mark inter-clause relationships with chronological markers
Spatial Markers	they mark the transition and location of objects in space
Enunciative Connectives	they mark inter-clause relationships with spatial descriptions

Adapted from Colletta et al (2009, p. 11)

The coding manual explains that an anaphora is any construct that indicates reference to a previous referent. Please see Appendix B for more information.

The researcher created additional tiers in order to annotate connectives and anaphors. Each connective was classified according to its function.

3.3.1.2. The Narrative Tier

The Narrative tier allowed for an assessment of the narrative elements contained in the data. Please see Appendix C for a detailed description of the narrative analysis.

The Narrative tier allowed for the annotation of the clauses presented in the narrative. The transcription and segmentation of clauses was done by previous researchers. Each clause is assessed for its pragmatic value. The coding manual allows for the observation and annotation of four types of pragmatic acts. The Table below describes the classification of the pragmatic acts. For more information, see Appendix D.

Table 3

Pragmatic Acts

Narrates	Events mentioned in clause relate directly to the narrative plot.
Comments	Information in clause relates information about aspects of the story rather than contributing events to the plot.
Interprets	Narrator makes assumptions based on the interpretation of a character's behaviour.
Explains	Additional information that assists in clarifying or explaining events.

Adapted from Colletta et al (2009, pp. 19-20)

The researcher annotated and coded the pragmatic acts for the English data. The coding of pragmatic acts for the isiZulu data had been previously done by other researchers.

3.3.1.3. The Gesture Tier

The Gesture tier allowed for the annotation and classification of various gestures. Gesture coding for the isiZulu data was done by previous researchers (see Kunene Nicolas, 2015). The researcher completed all the gesture coding for the English data.

The coding manual provides a category for correctly identifying and segmenting gesture into various phases. Each gesture was annotated in order to assess its function. Please see Appendix E for more information about the various gesture functions. The table below outlines the various functions of gesture.

Table 4

Gesture Function

Deictic	These gestures point specifically to an object or person present in the communication setting.
Representational	Gestures represent an object, or property of an object, place, trajectory etc.
Performative	Gestures allow for the gestural assertion of a non-verbal speech act.
Framing	Gestures which expresses the mental state of the locutor.
Discursive	Gestures which aid in structuring speech and discourse through placing emphasis, or linking discourse units through the use of gesture.
Interactive	Gestures which verifies attention of interlocutor, or assists in indicating the end of narrative or speech turn.
Word-searching	Gestures which assists with lexical retrieval.

(Adapted from Colletta et al, 2009, pp. 25-26)

Appendix F contains an excerpt of the transcription and annotation of a file.

The study further observed specifically the use of discursive gesture as this contributed to discourse coherence.

3.3.2. Analysis of Data

The data was analysed according to a cross-sectional method as the same coding grid was applied to each video and audio. All data from Elan was transported to Excel for further analysis.

As mentioned in the Research Design section, it is not possible to quantify all data. The quantification of variables has to be treated with caution. Often it is not possible to find true parallel variables in the two languages. For this reason, each language was analysed individually.

Through observation of the data, the researcher was able to assign nominal token values to already predetermined categories. The average mean was found for each of these categories (per age group). The purpose of this research was not to conduct an in depth observation of the relationship between these categories, but rather to briefly observe how these categories

developed across age. In other words, did the tokens in each category become more or less with age.

The researcher ascertains that the aim of the research was not to conduct an in depth empirical observation of various categories within a language, but rather to briefly observe basic developmental trends. The research aimed to observe how cues used to indicate discourse coherence in narratives changed across time. The research also aimed to observe if these changes were similar or different in typologically different languages. Although the study aimed to make general observations about developmental trends, the study did not aim to test for how these cues are acquired. As the focus was rather on identifying discourse coherence cues rather than testing for the acquisition of discourse coherence cues. As the study is more focused on the holistic use of discourse coherence cues, it was not necessary to use a statistical analysis.

A qualitative observation was included in order to more clearly describe the use of discourse coherence within the oral narrative. The qualitative analysis included describing examples and observing how they functioned in order to create discourse coherence.

3.4. Limitations

As mentioned in the Methodology chapter, the researcher found that the coding of the archival data presented limitations to conducting a thorough analysis of the data. The archival data did not include a thorough analysis of discourse coherence cues. This study contributed to the analysis of the archival data by including a more in-depth analysis of the discourse coherence cues. This study contributed an extensive annotation and analysis of various discourse coherence cues. The researcher found that many of the discourse coherence cues could not be accounted for in isiZulu due to two reasons: the coding manual did not account for a morphological analysis of the isiZulu data; and the English translations did not accurately reflect all the discursive information contained in the isiZulu data.

A lot of the information contained in isiZulu is context dependent. The original coders, translated the isiZulu data in a manner where the English translators accurately reflected the pragmatic meaning of the isiZulu data. However, the researcher found that the English translations did not accurately communicate the grammatical aspects of the original isiZulu. Thus, although the English translations were pragmatically accurate, they could not be used

to assist with a linguistic analysis of isiZulu. The researcher realised that a lot of discourse coherence information was located not only in the semantic meaning of the isiZulu words, but also in the morphological structure of the words. Unfortunately, the coding template did not make provision to annotate the semantic quality of each word, or the morphological structure of isiZulu words.

The researcher overcame this problem by adapting the coding template. She introduced additional tiers that allowed to annotate the semantic value, as well as the morphological structures of each word. The researcher consulted various online dictionaries and resource materials to annotate the semantic and morphological properties of every isiZulu word found in the narratives. The researcher acknowledges that not all grammatical structures present in isiZulu have been annotated. For future research, the researcher would recommend including additional morphological and grammatical aspects that this research did not take into consideration, especially in isiZulu. Future research should account for instances of topic focus and zero-pronoun.

3.5. Ethical considerations

As mentioned before, this study used archival data collected from previous studies and followed the required ethical considerations. However, as some aspects of gesture in relation to discourse coherence clues are part of this study, the researcher included the ethical clearance obtained from archived data with respect to isiZulu and English data. Ethical clearance was obtained from University of the Witwatersrand (protocol numbers H14/06/16, H14/06/32, and H13/08/29), see Appendix G.

The following chapter presents the key findings that address the research questions the study set out to investigate.

Chapter 4: Findings

This chapter reports on the findings on the discourse coherence cues used in two typologically different languages: South African English and isiZulu. The research sought to address the following research questions:

1. What strategies are used by two typologically dissimilar languages in order to communicate coherence?
2. How do these strategies develop across age?
3. Are there typological influences on the development of these strategies?

Oral narrative production was observed at different ages in order to observe how coherence devices develop within a language across age. Finally, these observations where compared to each other in order to observe what effect language specific constraints might exhibit on the development of coherence devices. Literature has shown us that coherence can be observed at two levels: the macro-structure and the micro-structure. This section will present the results by firstly addressing coherence devices that contribute to coherence in a macro-structure, and then secondly, coherence devices that contribute to coherence on a micro-structure. Additionally, a section will be included which observes the use of non-verbal cues in creating coherence. The following will be taken into consideration: narrative length, pragmatic acts, reference strategies, discourse coherence cues, and gesture.

The current study used data of oral narratives produced by 36 participants: i.e. 18 South African English participants and 18 isiZulu participants. All sample data was randomly selected from a larger corpus of data (see Methodology chapter). Table 4 presents the data sample according to the various age groups: young children (5-6 year olds), older children (9-12 year olds) and adults (18-24 year olds). Males and females were distributed evenly in each age group. All participants selected were able to successfully complete the narrative task.

Table 5

Data Samples

	English			isiZulu		
	Male	Female	Total	Male	Female	Total
5-6 Years	3	3	6	3	3	6
9-10 Years	3	3	6	3	3	6
Adults	3	3	6	3	3	6
			18			**18**
Total	36					

The following section will present the findings in the following manner:

4.1. Macro-coherence

4.1.1. Narrative Length

4.1.2. Pragmatic Acts

4.2. Micro-coherence

4.2.1. Reference Strategies

4.2.1. Discourse Coherence Cues

4.3. Non-verbal Information

1.3. Gesture

This study will provide a quantitative account of the various tokens. It will subsequently provide a qualitative analysis in order to elaborate on these tokens after every quantitative finding.

4.1. Macro-coherence

As discussed in the literature review section, macro-coherence looks at the overall story structure of the narrative. Narratives are essentially a series of linked events. The coding manual used for this study allowed for the narrative to be divided into macro-episodes that correspond to a particular event. All utterances produced by the narrator are segmented into clauses that correspond to a particular macro-episode. The number of clauses indicates the narrative length. In addition, each clause contributes a certain pragmatic value to the narrative. The following sections will analyse the narrative length and pragmatic contribution of the clauses.

4.1.1. Narrative Length

As mentioned above, all utterances were segmented into clauses. Each clause corresponded to a particular event or action in the narrative. For example:

(12) A mother bird had laid her egg … [9ME001]

(13) Ngibone umama wedada ethunga…

(I see a mother bird sewing) [9FZ001]

We can see that each clause corresponded to a particular event in the story.

We could use the average amount of clauses in order to observe the length of the narrative. Table 5 illustrates the overall average length of narratives for the two languages.

Table 6

Overview of Narrative Length

	English	isiZulu
Average # clauses	19.1	28.6

We can already see from just analysing the narrative length, that there is a difference in narrative production between the two languages. Overall, isiZulu speakers produced narratives that were almost 30% longer than the English narratives. Table 6 allows us to observe the overall development of narrative length in each age-group.

Table 7

Narrative Length

Language	Age	Average # Clauses
English	5-6 Years	23
	9-10 Years	17.5
	Adults	16.8
	Total average # clauses	19.1
IsiZulu	5-6 Years	23.3
	9-10 Years	33
	Adults	29.5
	Total average # clauses	28.6

In terms of narrative length, we noticed a stark difference for each language. For the English speakers, we noted that the distribution of clauses was not the same as with isiZulu. Regarding English, we observed that there was an average of 19.1 clauses, whereas in isiZulu, there was as an average of 28.6 clauses across all ages. We could see that the isiZulu speakers produced a higher number of clauses than the English speakers in this task.

In terms of development, we noted that the younger English-speaking children produced the most amounts of clauses, an average of 23 clauses per narrative. This decreased steadily throughout the age groups with older children producing 17.5 clauses per narrative and the adults producing 16.8 clauses per narrative. We saw that there was a decrease in the narrative length as the age progressed.

When looking at the isiZulu narratives, we noticed that there was an increase in the narrative length. The younger children produced the shortest narratives — only an average of 23.3 clauses per narrative — whereas the older children and adults produced significantly longer narratives, an average of 33 clauses per narrative and 29.5 clauses per narrative respectively. We could see that with isiZulu, as the age progressed, the length of the narratives tended to increase as well.

Looking at a cross-linguistic comparison of the results, we saw that the isiZulu-speakers produced much longer narratives than the English-speakers. Although initially, both language populations produced similar narrative lengths — young English-speaking children about 23 and young isiZulu-speaking children 23.3 — the isiZulu narratives were considerably longer than the English narratives. One possible explanation to account for the difference in narrative length is to look at the cultural influence.

The following section will present an informational analysis of the pragmatic content of each clause.

4.1.2. Pragmatic Acts

As discussed in the literature review section, macro-coherence looks at the overall story structure of the narrative which looks at the inclusion of certain structural elements, story components, and the arrangement of these elements, the story grammar (Van Dijk, 1977). Additionally, certain information presented in the narrative served the purpose of structuring the narrative. This information was identified as non-narrative clauses. Irrespective of their narrative value, all utterances can be evaluated based on their pragmatic function.

When looking at pragmatic acts, we looked at the various pragmatic functions of the clause uttered during the narratives. Each clause presented by the narrator was evaluated in terms of the pragmatic function of the clause. Clauses served to construct the story (narrates), or to offer information that was not relevant to the narrative, but presented pragmatic value (non-narrative). These clauses served to offer explanatory remarks (explains), to offer commentary (comments), or to offer personal interpretations of events (interprets).

Quantitative Analysis of Pragmatic Acts

Table 8 represents the average percentage of pragmatic acts per narrative for each language population.

Table 8

Overview of Clauses and Pragmatic Acts

Language	English		isiZulu	
	#C	%	#C	%
Narrates	16.7	87%	25.1	88%
Explains	0.5	3%	1.3	5%
Comments	0.5	3%	0.5	2%
Interprets	0.9	5%	1	3%
Total	19.1		28.6	

We can see from the table that the narrative pragmatic act enjoys the highest frequency. This is not surprising as the task was to elicit the genre of a narrative and this is the type of clause that produces the narrative. This was also seen in several studies done by Kunene Nicolas (2016) and Ahmed (2016). As mentioned previously there are various pragmatic acts at play in a narrative. However, these can be broadly observed as pragmatic acts that contribute to the unfolding of the plot (narrative), or pragmatic acts that assist in structuring the narrative (through comments, explanations, or interpretations). For this analysis, we have conflated all pragmatic acts that offer commentary, interpretation, or explanations, into 'meta-narrative'. This has also been done in several studies (Colletta et al, 2014, 2018; Kunene Nicolas, 2016). It is interesting to note that both presented languages showed a very similar percentage of narrative clauses: English with 87% and isiZulu with 88% on average.

The table below represents, for each language, the overall average length of the narrative, as well as the percentages of pragmatic acts produced within the narrative. The narrative length was determined by measuring the average of the clauses presented in each narrative. Each clause corresponded to a pragmatic act (narrative, interpretation, comment, and explanation) and Table 9 shows the percentage of clauses that corresponded to each pragmatic act for each age group.

Table 9

Clauses and Pragmatic Acts

Language	Age	#C	Narrates		Explains		Comments		Interprets	
			#	%	#	%	#	%	#	%
English	5-6 Years	23	21.7	94%	0.3	1%	0.5	2%	0.33	1%
	9-10 Years	17.5	15.2	87%	0.7	4%	0.5	3%	1	6%
	Adults	16.8	13.3	79%	0.5	3%	0.5	3%	1.33	8%
	Total average # clauses	19.1	16.7	87%	0.5	3%	0.5	3%	0.9	5%
IsiZulu	5-6 Years	23.3	21.5	92%	0.7	3%	0.3	1%	0.5	2%
	9-10 Years	33	30.2	92%	1.8	5%	0.5	2%	0.2	1%
	Adults	29.5	23.5	80%	1.5	5%	0.8	3%	2.2	7%
	Total average # clauses	28.6	25.1	88%	1.3	5%	0.5	2%	1	3%

We can note from the Table 9 that there is a developmental trend in how certain pragmatic acts are distributed within the narrative.

For the English data, we see that the young children presented 95% of pragmatic acts relating to narrative and 5% for meta-narrative. The older children presented 87% for narrative and 13% for meta-narrative, and the adults presented 79% for narrative and 21% for meta-narrative. The isiZulu data revealed very similar results. Their results indicated that both younger children and older children presented 92% for narrative and 8% for meta-narrative, where the adults presented 80% for narrative and 20% for meta-narrative.

We can see that the two language populations perform almost identically in terms of pragmatic development. Meta-narrative pragmatic acts increased steadily throughout the age groups. Thus, irrespective of the length of the narrative, there was a very similar display of pragmatic complexity within the narrative.

Qualitative Analysis of Pragmatic Acts

The results indicated that, irrespective of language, younger children produce stories that are dominated by narrative pragmatic acts. Most of the utterances in the stories were related

specifically to the plot of stories. Younger children primarily recounted the events that they have seen unfold in the narrative. For example, younger children would provide narrative pragmatic acts such as:

(14) (English) and she looked at her clock [5ME001]

(15) (isiZulu) yase igxumela into epink

(*and then it bounced onto that pink thing)* [5FZ001]

The older children, on the other hand, offer more pragmatically integrated stories. In addition to providing a substantial amount of pragmatic acts related to the narrative, they also provided more pragmatic acts that offered a meta-narrative value. They were willing to offer interpretations, or explanations about the narrative. For example:

(16) (English) and then she (the mouse) got irritated **because he (woodpecker) kept pecking at everything** [9FE002]

(17) (isiZulu) walimboza elilalisa

(*covering it (woodpecker) to sleep)* [9FZ003]

One can see that in example (16), the speaker qualifies the reason for the mouse's irritation. Thus, the participants produce an explanatory pragmatic act in order to explain the reason for the mouse's mental state. In (17), the cartoon shows the mouse covering the woodpecker with a blanket, however, it does not show that the woodpecker was about to fall asleep. This means that the participant implied that the consequence of the mouse tucking the woodpecker in would be so that the woodpecker would fall asleep. Thus, the participant implied a consequence from the information presented to them, thus they offered an interpretation of the context.

The adults provided a model narrative whereby they produced a substantial amount of clauses that related to personal evaluations or interpretations of the events unfolding in the narrative. Not only did they recount the events that unfolded in the narrative, they also offered their own opinions and comments on the events, or explained how various events related to each other, or interpreted the specific outcome of particular events. For example:

(18) (English) I think birds have a bonding thing… [18FE002]

(19) (isiZulu) ngathi yingane yedada

(*it seems like it's a duck's egg)* [18MZ003]

Essentially, the younger children presented narratives that remained fairly structured around the narrative line with minimal departures from the plot. The older children showed more fluid narratives in the sense that they departed from the central plot line to add comments and interpretations. However, their narratives were more centred on the plot than the adults. The adults produced the most fluid narratives were they liberally departed from the plot to add additional comments, interpretations, and other pragmatic acts.

The following section will introduce an analysis of variables contributing towards micro-coherence, namely reference and connectives.

4.2. Micro-Coherence

As stated in the literature review, coherence looks at how a central theme is communicated across discourse. Coherence in a narrative looks at how individual elements (such as characters and events) are connected both to each other, and to the overall theme or structure of the narrative. The macro-coherence section addressed the construction of the overall theme and structure of the narrative, but the micro-coherence structure addresses the devices used to link individual elements. This study will observe how characters are linked across the narrative through the use of reference markers, and how other elements such as settings, events, evaluations, etc., are linked throughout the narrative through the use of discourse coherence cues. The study will first present an analysis on reference markers, and then on discourse coherence cues.

4.2.1. Reference Strategies

As outlined in *Organisation of Data* in the method section, reference is crucial for coherence, in both macro- and micro-coherence. A successful narrative is measured by the fact that the narrator can communicate how the main, and sub-characters, navigate through events. The narrator must explicitly mark characters so that the listener can clearly track which characters are acting out certain events. As mentioned previously, narrators must be able to introduce characters, as well as indicate when new characters arrive in a scene. Furthermore, narrators must be able to refer back to previously mentioned characters throughout the whole narrative. This form of coherence is achieved through employing various reference strategies. For this study, various reference markers were taken into consideration for both the

languages. Reference markers in English included various pronouns and lexical markers. Reference markers in isiZulu included the use of lexical markers, pronouns, and agreement.

Quantitative Analysis of Reference Strategies

Reference markers are fewer in number, and for that reason, percentages do not present a clear indication of their production. The following section will present the results in ratios. Reference markers have been presented similarly in various other studies (see Colletta et al, 2014; Kunene Nicolas et al, 2016). Table 9 indicates the amount of reference markers presented per clause in each language.

Table 10

Overview of Reference Markers per Clause

	English	isiZulu
5-6 Years	1.53	2.1
9-10 Years	1.44	1.89
Adults	1.44	1.92
Total Average	1.47	1.97

We can see that, in general, the two presented languages produced different amounts of reference markers per clause. The English speakers produced, on average, less reference markers (1.47 markers) than the isiZulu speakers (1.97). Overall, the isiZulu speakers produced an average of 0.5 more reference markers per clause than the English speakers.

When observing the development, we can note that with both languages, the younger children produced, on average, the most amounts of reference markers per clause. The English-speaking children produced an average of 1.53 reference markers per clause, and the isiZulu-speaking young children produced an average of 2.1 reference markers per clause. We can also notice for both languages, the older children performed closer to the adults than to the younger children. Regarding English, the older children and adults both produced an average of 1.44 reference markers per clause. Regarding isiZulu, the older children performed similar to the adults by producing on average 1.89 reference markers per clause (in comparison to the average of 1.92 reference markers per clause produced by the adults).

Due to the linguistic typology of the two languages under study, it is not possible to minutely compare an agglutinative language and a synthetic language as the cohesive devices are not employed similarly. We will first present the English data and then the isiZulu data.

Reference Strategies in English

In English, the researcher identified that lexical markers, pronouns, and complex syntax was used to indicate reference. Lexical markers are nouns or adjectives that refer back to a previous referent. Pronouns are grammatical markers that substitute a noun. Complex syntax includes connectives that introduce relative or complement clauses (Diessel, 2004).

Our second research question was aimed at observing how these strategies developed across the age groups where we could see that certain strategies were favoured by certain ages. Table 10 indicates the average ratio of the specific type of reference marker used per clause for each age group. It indicates the average ratio of the marker per clause, as well as the percentage of markers per clause.

Table 11

Reference Markers in English

	Pronoun		Complex		Lexical		Total
	#	%	#	%	#	%	#
5-6 Years	1.22	80%	0.04	18%	0.27	2%	1.53
9-10 Years	1.07	75%	0.06	21%	0.31	4%	1.44
Adults	0.97	68%	0.08	27%	0.39	6%	1.44

As mentioned before, the results revealed that the rate of reference decreases across age groups. The younger children have the highest rate of reference (1.53), whereas the older children and adults perform similarly (both producing an average of 1.44 reference markers per clause). We see that the rate of reference declines drastically and then plateaus.

We see that the different strategies of reference develop at different rates. Through using the ratios of reference markers produced per clause, we were able to observe the percentage of reference markers dedicated to particular strategies. In terms of the use of pronouns, we saw that the younger children used the highest rate of pronouns. About 80% of their reference

markers were pronouns. This decreased gradually towards adulthood. The pronouns formed only 75% of the older children's reference markers, and 68% of the adults' reference markers.

We see that complex markers increased with age as well. Complex markers formed only 2% of the younger children's reference repertoire, while it steadily increased to 4% of the older children's repertoire and almost 6% of the adults'.

We saw a similar trend for the use of lexical markers. Lexical markers formed almost 18% of the younger children's references, 21% of the older children's references, and 27% of the adults'.

Qualitative Analysis of Reference Strategies

Our first research question was to identify which strategies are used within a language to communicate coherence. With English, we identified that various referential strategies were used to communicate referential coherence. The researcher noticed that the English speakers used pronouns, complex constructions, and lexical words to communicate coherence. Pronouns were used to replace proper or common nouns, for example:

(20) So there was like a **woodpecker parent** and **it** had an egg… [18FE003]

Complex constructs were often in the form of a word that allows for the introduction of a clause that provides referential information. For example:

(21) and then she had a baby egg **that** she was sitting on [9FE002]

In the above example, we can see that the second clause 'she was sitting on' provides additional information about the object in the first clause 'a baby egg'. Thus, all clauses that contained any information that contributed towards the interpretation of the referents in the first clause were taken into account. Because the study looked particular at coherence devices, it annotated the markers that introduced these clauses. These types of markers included markers that introduced complement clauses (e.g. that), and markers that introduce relevant clauses (e.g. which) (Diessel, 2004).

Lexical markers are previously used words that refer directly back to previously established referents. Lexical markers are only considered reference markers should they serve an anaphoric function. This means that the object under consideration has already previously been mentioned (using the same lexical words).

(22) and it had **an egg**…and **the egg** kind of woke up [18ME003]

One can see that complex constructs and lexical markers serve as more accurate and specific reference markers than pronouns. It was observed overall that the rate of reference markers per clause decreased with age. However, despite the overall decrease, we could see that the use of more specific and complex reference markers increased with age. We saw that the adults and older children more liberally applied reference strategies that were more specific and informational. We can thus remark that, although there is a steady age wise decrease in the average amount of reference markers used per clause, there is a development towards using increasingly complex reference markers.

Reference Strategies in isiZulu

In isiZulu, it was observed that pronouns, lexical constructs, and concord were used as reference strategies. Concord allows the use of morphological inflection to link referents with verbs.

Quantitative Analysis of Reference Strategies

Table 12 indicates the average ratio of the specific type of reference marker used per clause for each age group.

Table 12

Reference Markers in isiZulu

	Pronoun		Concord		Lexical		Total
	#	%	#	%	#	%	#
5-6 Years	0.19	73%	1.54	9%	0.37	17%	2.1
9-10 Years	0.12	81%	1.54	6%	0.23	12%	1.89
Adults	0.14	74%	1.41	7%	0.37	19%	1.92

As mentioned before, we can observe that the average amount of reference markers per clause decreases with age. The younger children presented with the highest rate of reference (2.1). The older children presented and average of 1.89 reference markers per clause, and the adults presented an average of 1.92 reference markers per clause.

The types of reference strategies were also influenced by age factors. When looking at the use of pronouns, we saw that younger children use the highest proportion of pronouns (almost 9%), and the older children use the least proportion of pronouns (6%). The adults dedicated 7% of their reference to pronouns.

It is interesting that concordial agreement formed the same amount of proportion in both the younger children and adults (75%). The older children produced the most amount of concordial agreement (81%). However, these results should be interpreted with caution. The various factors that are not accounted for in this study influence their concordial agreement. For example, the amount of verbs per clause, and the agreement of certain connectives (such as 'yase') can influence or skew the rate of agreement.

In looking at lexical anaphora, we see that the younger children dedicated almost 18% of their reference to lexical expressions, whereas the older children's use of lexical anaphora only comprised 12% of their reference. The adults showed 19% of lexical anaphora.

Qualitative Analysis of Reference Strategies

We can already observe a typological difference in the types of reference strategies used by isiZulu speakers. The agglutinative nature of isiZulu allows for the use of free standing reference markers such as pronouns and lexical markers, as well as morphemic agreement markers that are affixed to various roots like concordial agreement. In the example below, we can observe how pronouns and lexical markers are used respectively. Certain morphological information has been marked in the examples below.

(23) wathukuthela lomama **lo** (dem. pro.)
(this mother got angry) [9FE003]

(24) ibine **qanda** … lase lela **qanda** liyasuka
*(it had an **egg** … then this **egg** moved)* [18FZ001]

IsiZulu is a pro-drop language. Due to the complex agreement system, isiZulu clauses do not need a pronoun to mark the subject. Instead, the subject and objects are marked through concord (agreement markers on the verb). Below is an example of concordial agreement.

(25) **wa**thi (sj. cl. 1, 1a, 3) **wayi**donsa (sj. cl. 1, 1a, 3; oj. cl. 4, 9.)
(***he** tried to pull **it**)* [9MZ003]

We can see that the reference systems used in English and isiZulu reflect various differences based on their structure.

When looking at the two language populations together, we see interesting cross-linguistic features arise, namely the rate of reference markers and the use of lexical anaphora. As we have already observed, the rate of reference used per clause, per age group, develops similarly across both languages. We have seen that for both languages, the younger children showed the highest amount of reference markers per clause. The older children and adults produced similar amounts of reference markers to each other, for both languages. They produced less reference markers than the younger children. Although the results suggest that the reference used in both languages develop similarly, regardless of language, we have noticed that there are typological differences that arise.

We have also noticed an interesting difference in the type of strategies employed by the two languages. In isiZulu, narratives contain an overall higher percentage of reference markers than the English reference markers. For English, we observed a clear development of the strategies employed in reference. There was clear evidence to suggest that more specific and accurate reference strategies were increasingly favoured by older groups. This was seen in the increased proportions of lexical and complex reference markers. Similar trends could not be observed in isiZulu. We could not establish an age-correlated effect on the complexity of reference strategies used. This begs us to ask important questions related to the effect of language specific constraints on development. These questions and implications will be discussed in the *Discussion* section.

The next part of the analysis will address the use of discourse coherence cues.

4.2.2. Discourse Coherence Cues

As presented in Method, *Organisation of Data*, Connectives serve the following functions: to structure discourse (discourse structure markers), indicate temporal/chronological sequences within the narrative (chronological markers), and establish logical consequences, results, or relationships (logical markers), to indicate the movements of objects through space (spatial markers), and to indicate the transition between narrative levels (enunciative markers).

Quantitative Analysis of Discourse Coherence Cues

Table 13 below summarises the results from the two languages. All discourse coherence cues (as with the case of reference markers) are indicative of the average rate of markers per clause.

Table 13

Overview of Discourse Coherence Cues

	English		isiZulu	
	#	%	#	%
DSM	0.11	7%	0.07	7%
Chronological	0.78	52%	0.33	40%
Spatial	0.44	29%	0.37	44%
Logical	0.12	8%	0.05	6%
Enunciative	0.04	3%	0.04	3%

We can see from the Table 13 that some discourse coherence markers share the same percentages for both languages. Both English and isiZulu produced the same amount of discourse structure markers (DSM) (7%), and enunciative markers (3%). They also produced similar amounts of logical markers (English indicating 8% and isiZulu indicating 6%). We observed that there were major differences in the distribution of chronological and spatial markers. English produced more chronological markers (52%) than spatial markers (29%), whereas IsiZulu showed a more even distribution between the spatial and chronological markers (40% and 44% respectively). These differences in distribution of markers can be indicative of typological differences.

We have also analysed how these markers developed across age groups in each of the two languages. Table 14 presents the rate of markers per age group which represents the average of markers presented per clause. Additionally, it represents the percentage of markers dedicated to a particular coherence strategy.

Table 14

Discourse Coherence Cues

	Age	DSM		Chronological Markers		Spatial Markers		Logical Markers		Enunciative		Total
		#	%	#	%	#	%	#	%	#	%	
English	5-6	0.04	2%	0.83	54%	0.57	36%	0.11	7%	0	0%	1.55
	9-10	0.08	5%	0.81	57%	0.38	27%	0.12	9%	0.03	2%	1.42
	Adults	0.21	14%	0.69	45%	0.37	25%	0.14	9%	0.09	6%	1.5
	Total mean	0.11	7%	0.78	52%	0.44	29%	0.12	8%	0.04	3%	1.49
isiZulu	5-6	0.04	5%	0.34	45%	0.34	44%	0.04	5%	0.01	1%	0.77
	9-10	0.06	8%	0.29	41%	0.3	43%	0.05	6%	0.01	1%	0.71
	Adults	0.1	8%	0.36	33%	0.47	44%	0.07	7%	0.09	8%	1.09
	Total mean	0.07	7%	0.33	40%	0.37	44%	0.05	6%	0.04	3%	0.86

We can see from Table 14, that there are observable developmental trends. Both languages, display a U-shape development in the total number of utilised discourse coherence cues. This means that in both languages the younger children and the adults performed similar to each other. In both populations, the older children produced the least amount of markers per clause.

Regarding English, we observed that the younger children produce an average of 1.55 markers per clause and the adults produced an average of 1.5 markers per clause. The older children had the least amount of markers, producing only 1.42 markers per clause. With isiZulu, the younger children and the adults also performed close to each other. The younger children produced 0.77 markers per clause, and the adults produced 1.09 markers per clause. Overall, the older children produced the least amount of markers per clause with only 0.71 markers per clause.

It is important to note that different coherence markers function differently in the two languages. For this reason, it is crucial to look at each discourse coherence cue markers on its own in each language. Therefore, due to the typological differences of the languages, each

language will be presented separately. Additionally, not all markers could be accounted for satisfactorily through quantitative measures.

4.2.2.1. Discourse Structure Markers

Colletta et al (2009) defined discourse structure markers as any markers that assist the speaker in structuring the story. They also explain that these markers indicate the opening and closing of a conversation, as well as guiding the listener into understanding what information is about to follow. In our analysis, we took into consideration any marker that indicated the opening or closing of a conversational unit, or any marker that related to the information structuring of the story.

These markers served a pragmatic rather than syntactic function. As a result, these markers did not constitute from a particular word or syntactic class. This section will present the amount of discourse structure markers offered in both languages. It will then separately provide examples of how these markers functioned within each language.

Quantitative Analysis of Discourse Structure Markers

Table 15 indicates the total average of discourse structure markers provided per clause. We can see that the two languages performed very similarly.

Table 15

Overview Discourse Structure Markers

	English		isiZulu	
	#	%	#	%
DSM	0.11	7%	0.07	7%

As seen in the above table, the discourse structure markers constituted about 7% of the overall discourse cues for both languages. The English speakers used about 0.11 discourse structure markers per clause. The isiZulu speakers produced about 0.07 discourse structure markers per clause. We can see that discourse structure markers develop across different ages. Table 16 represents the average amount of discourse structure markers per clause as well as the percentage of discourse structure markers presented per age.

Table 16

Discourse Structure Markers

	Age	DSM	
		#	%
English	5-6 Years	0.04	2%
	9-10 Years	0.08	5%
	Adults	0.21	14%
	Total Average	0.11	7%
isiZulu	5-6 Years	0.04	5%
	9-10 Years	0.06	8%
	Adults	0.1	8%
	Total Average	0.07	7%

We can see from Table 16 that discourse structure markers develop across age groups. In the English data the table shows that the younger children produced 0.04 discourse structure markers per clause, the older children produced 0.08 discourse structure markers per clause, and the adults produced 0.21 discourse structure markers per clause. Similar results are shown for the isiZulu data. The younger children produced 0.04 discourse structure markers per clause, the older children produced 0.06 discourse structure markers per clause, and the adults produced about 0.1 discourse structure markers per clause. We can see that with both languages, there was an increase in the amount of discourse markers produced per clause.

As mentioned before, discourse structure markers do not form part of a single grammatical or word class. Rather, various constructions are used to communicate a specific function. The following analysis will look at a few examples from the data of how markers are used to structure discourse and create coherence. We will present an analysis of the discourse structure markers utilised by each age group for each language.

Qualitative Analysis of Discourse Structure Markers

Discourse Structure Markers in English

We have noticed that there is a difference in how each age group introduces the start of the narrative.

Younger Children

We see that for the younger children, half of them failed to use any markers to introduce the start of the narrative. They simply started the narrative by explaining an action undertaken by a character. For example

(26) The mommy egg was knitting another egg… [5FE001]

The other 3 of the 6 participants first explicitly introduced the characters before they related the activity that the characters were completing. They all used the expression 'there was' to introduce the character. For example:

(27) **There was** a little bird in the tree… [5FE001]

Half of the younger children used the expression 'there was' as discourse structure markers to introduce the start of the narrative. We also noticed that the young children were able to use discourse structure markers to explicitly signal the conclusion of the narrative. For example:

(28) …then that's **the end of the story**. [5FE002]

Older Children

The results indicated that most of the older children used discourse structure markers to explicitly introduce the narrative. They used either the expression 'there was', or the expression 'I saw' to introduce the narrative. For example:

(29) **There was** a mommy bird… [9FE001]

(30) **I saw** a mother woodpecker busy knitting in its nest… [9FE003]

We also noted that one participant introduced the narrative using a turn-taking conversational marker 'so'.

(31) **So,** a mommy bird she laid an egg… [9ME002]

Zarei (2015) indicated in her research that 'so' was a common turn-taking marker that is often used to announce the speaker taking the start of the conversation unit.

Adults

We see that the adults used discourse structure markers slightly differently than the other age groups.

With the exception of one participant, all other participants introduced the narrative with discourse structure markers. Three adults used the existential markers 'there was'. For example:

(32) So **there was** a mother woodpecker… [18ME002]

One participant initiated the narrative by indicating the sequence of events.

(33) Ok, so **it begins** with the woodpecker… [18FE002]

With the older children, we saw one participant use a discourse marker that marked the beginning of a speech turn. Among the adults, 5 out of the 6 adults used discourse markers to mark the opening of the speech turn. They used the words 'basically', 'okay', and 'so' to initiate a speech turn.

(34) **So** the egg like dropped out of the nest… [18FE001]

(35) **Basically**, there was a mommy bird… [18FE002]

We saw the adults make use of discourse structure markers in a much more complex manner than the children age groups. The children used discourse markers to primarily mark the start of the narrative. The adults used discourse structure markers to indicate the start of the narrative through establishing the narrative in a space and time. In addition, discourse structure markers were used to signify the start of a conversational unit.

Discourse Structure Markers in isiZulu

When looking at the isiZulu data, there were very similar results as with the English data. We noticed that the use of discourse structure markers as explicit markers for the start of the narrative, increased throughout age groups.

Younger Children

We see that for the younger children, half of them started the narrative through simply relating events. For example:

(36) Inkukhu ifihle kulapha iqanda…

(*The chicken hid the egg…)* [5FZ001]

The remaining three made use of existential markers and expressions to mark the opening of the narrative.

We observed that the existential introduction was communicated through the use of adverbs and of concord. One child used the adverb 'khona le' (there) to introduce the narrative.

(37) **Khona le** ugundwane yena uphuli nyoni…

(***There is this*** *mouse broke the bird…)* [5FZ002]

Additionally, another child used the past tense subject concord from class 15/17. Agreement with Class 15/17 indicates the location of the subject. Thus, this agreement equates to the English equivalent of 'there was'. For example:

(38) **Beku**noma

(cl.15, 17. rec. past cont.)

(There *was a mother…)* [5MZ003]

Additionally, a child introduced the narrative with the expression 'ngibone…' this translates to the English equivalent 'I saw'.

(39) **Ngibone** iqanda…

(I saw *a bird…)* [5FZ001]

In terms of concluding the narrative, we saw that young children were able to conclude the narrative using discourse structure markers, although these instances were very rare. For example:

(40) …**kwaphela**.

(…it ***finished****.)* [5MZ001]

Older children

Amongst the isiZulu population, we saw that each participant used a marker to introduce the opening of the narrative. They used 'ngibone' (perception) expressions, 'khona' and (existential) and temporal expressions to introduce and locate the narrative in a narrative time. Most isiZulu speaking children used the expression 'ngibona' to introduce the narrative. For example:

(41) **Ngibon**e umama athunga…

*(**I saw** a mother knitting…)* [5FM003]

Often this expression was combined with temporal markers. For example:

(42) **Ngiqale** ngabona inkukhu…

*(I **first** saw the chicken…)* [5FZ002]

Once again, there was the use of 'khona' and class 15/17 concord to locate the narrative in a particular narrative setting.

(43) Cala **beku**kadhe **khona** nyoni…

(*First **there** was a bird…)* [5MZ001]

Adults

We saw that the adults used discourse structure markers in a different manner than the children. Some adults introduced the narrative by using discourse structure markers to indicate the opening of the narrative. For example:

(44) **Ngibone** inyoni ihlezi…

(***I saw** a bird sitting…)* [18FZ002]

Similar to the English data, we see that some adults used discourse markers to not only mark the opening of the narrative, but to also mark the opening of the conversational unit. For example:

(45) **Ok,** I like i **ikhona** into esihlahleni…

*(**Ok,** like **there is** something in the tree…)* [18MZ003]

As with the English data, it was found that the use of discourse markers increased in complexity and frequency with age. The adults not only used discourse markers more frequently, but they also used discourse structure markers for a larger variety of purposes such as introducing the narrative, introduction of a conversational unit, and structuring the flow of information.

4.2.2.2. Chronological Markers

As mentioned in *3.2.1.Organisation of Data,* in the method section, chronological markers inform the listener of certain events that happened. These markers are crucial to coherence as they integrate individual elements into the overall narrative plot by explaining to the

listener how events are temporally linked. English and isiZulu used different strategies to communicate chronological coherence. Each language will be presented separately.

Chronological Markers in English

We observed how these various strategies were distributed across the age groups.

We observed that participants employed the use of 'and then' connectives, some aspectual verbs (i.e. started), and other constructs.

Quantitative Analysis of Chronological Markers

Table 17 indicates the average amount of markers per clause for every strategy.

Table 17

Chronological Markers in English

	and then		Other		Verbs		Total
	#	%	#	%	#	%	
5-6 years	0.81	98%	0.01	1%	0.01	1%	0.83
9-10 years	0.7	86%	0.06	7%	0.05	7%	0.81
Adults	0.54	78%	0.12	17%	0.03	5%	0.69

We noticed that the rate of chronological connectives decreased consistently with age. The younger children had the highest rate of chronological markers (0.83), the older children and the adults had significantly less, about 0.81 and 0.69 respectively.

We also saw the distribution of the type of chronological marker changes with age. The younger children made considerable use of the 'and then' expression (98% of their markers), the older children decreased to only 86% of their markers, and the adults only used it for 78% of their chronological connectives. By comparison, the use of more complex chronological markers increases with age. The younger children's markers contain only 1% of complex markers, the older children had about 7% of complex markers, and the adults contained a significant 17% complex of markers. We can conclude from these results that the children favour 'and then' expressions, whereas the older children showed an increase interest in

incorporating more complex chronological markers into their repertoire. The adults utilised complex chronological markers significantly more than the younger children.

Qualitative Analysis of Chronological Markers

In English, we identified the following strategies for communicating chronological coherence: 'and'/'and then' expressions, verbs, and other expressions. The primary method for communicating chronological information was through the use of 'and then'. We found that narrators used 'and'; 'and then', and 'then' interchangeably. In English, the word 'and' serves various purposes. It was only coded as a chronological connective if it related events in a chronological manner. For example:

(46) …**and** Jerry eventually got tired of it **and** took it back to its nest. [9FE003]

Although it is not the scope of this study, we have to acknowledge that some verbs contain and communicate temporal information. For example:

(47) ...then the egg **started** rolling into a house... [9ME003]

Although certain verbs do contribute to chronological coherence, it demands in-depth investigation that is beyond the scope of this study. Assessing the aspectual information contained in verbs is beyond the scope of this study. Thus, although these verbs were included as chronological markers, we will not be discussing them further.

We found that often a combination of other chronological markers, such as relative pronouns and adverbial conjunctions, were used to indicate chronological coherence. For example:

(48) …but **before that** she wrapped the egg up in a little blanket… [9FE003]

These strategies occurred very seldom. Most often, these strategies were indicative of complex syntax. They were often followed by adverbial or relative clauses. Both relative pronouns and the adverbial constructs allowed events to be embedded within each other.

We can observe from the results that the younger children showed a higher dependency on using 'and then' expressions, whereas the older children and adults were more liberal in their use of more complex and creative chronological strategies.

The following section will present the isiZulu results for chronological markers.

Chronological Markers in isiZulu

The first part of the research question wanted to observe which strategies were used to communicate coherence in oral narratives. In the isiZulu data, we found numerous strategies used for communicating chronological coherence. These included strategies like conjunctions, 'yase' expressions, conjunctions, repetition, adverbs, morphological markings, and code-switching, amongst others.

Quantitative Analysis of Chronological Markers

Table 18 indicates the average amount of chronological markers per clause, as well as the percentage of markers dedicated to that particular strategy.

Table 18

Chronological Markers in isiZulu

The results showed that chronological connectives in isiZulu follow a U-shape development. This means that the older children produce a less amount of connectives out of all of the ages.

	Conjunction		Other		Yase		Repetition		Adverb		code-switching		Total
	#	%	#	%	#	%	#	%	#	%	#	%	
5-6 years	0.04	0.13	0.01	0.04	0.2	0.58	0.04	0.1	0.04	0.13	0.01	0.02	0.34
9-10 years	0.1	0.33	0.02	0.06	0.11	0.39	0.01	0.04	0.05	0.18	0.01	0.02	0.29
adult	0.08	0.24	0.04	0.12	0.12	0.35	0.03	0.1	0.01	0.02	0.06	0.18	0.36

The younger children and adults produced very similar amounts of chronological connectives per clause (0.34 and 0.36 respectively) whereas the older children produced the least amount of chronological connectives per clause (0.29).

Although the data identified various strategies to communicate chronological coherence, we will focus only on a select few. We will focus specifically on the use of '*yase'*, conjunctions, and code-switching. In light of these results, we can draw a few conclusions. Firstly, we see that there is a U-shape development whereby the younger children and adults perform very similar to each other and the older children produced significantly more tokens than the other groups

We found that there were interesting developmental trends that we could observe in the choice of chronological connectives. We observed that the use of 'yase' decreased considerably with age. The younger children dedicated 58% of their connectives to 'yase'; the older children dedicated 39% of their connectives to 'yase' and the adults dedicated only 36% of their connectives to 'yase'. It is interesting to note that by age 9, the older children used 'yase' in a similar fashion to the adults.

When looking at the conjunctions, we saw that the younger children used conjunctions almost 13% of the time, older children used conjunctions 33% of the time, and adults, interestingly enough, used conjunctions 24% of the time. We say that the adults favoured using code-switching. Adults code-switched 18% of the time, whereas the younger children code-switched 2% of the time and the older children also code-switched almost 2% of the time. Thus, although the use of conjunctions increased from early-childhood, we noted that the adults used code-switching quite often.

Qualitative Analysis of Chronological Markers

In isiZulu we found various strategies used for indicating chronological coherence. In the results, we found that two participants used only auxiliary verbs to communicate chronological coherence. However, this strategy was only employed sporadically by two participants and further analysis is necessary to determine satisfactorily how, and if, chronological coherence is marked by these verbs. For this reason, auxiliary verbs were excluded from the study.

'Yase' is a connective usually restricted to narrative discourse. 'yase' translates to 'and then'. It is a temporal-chronological marker because it indicates to the listener that there is more information to come. For example:

(49) **yase** ifika ke kuleyento epinki **yase** igxumela into epink *(it then arrived to that pink thing **and then** it bounced onto the pink thing)* [5FZ001]

Sometimes participants used the repetition of the same clause as used to indicate the ongoing action of the verb. For example:

(50) lase la **jumpajumpa**
(and then it jumped and jumped) [5FZ001]

Conjunctions are constituted from a word class that places clauses in relation to one another.

(51) **bese** liphuma i think ingane ye dada
(and then I think a baby duck came out) [18MZ003]

Adverbs form a word class that functions to add more information, such as temporal information, to a verb. For example:

(52) mayisuka **lapho** yahamba
(from there it left) [5FZ001]

Although it seems that 'lapho' might refer to a specific place, the context in which the adverbs were used, was to rather show a transition from one scene to another. The purpose of these adverbs was to mark the transition in time, and not the transition in space. For this reason they were considered chronological rather than spatial markers.

We also observed that a few participants used the agreement 'ma-'to indicate chronological relevance. For example:

(53) u**ma**lifika kuleyandlu
(when it got to that house) [18FZ001]

Although this token occurred enough to include in the results, it will not be discussed.

We observed that there were certain instances of code-switching that took place.

(54) **and then** iqanda lahamba hamba isikhathi
(and then the egg goes and goes time) [18MZ003]

Certain strategies, although mentioned in the results, were excluded from further analysis. For example, some words were considered to communicate chronological information; however, they did not fall under one of the word class or strategies that this research aims to discuss. Therefore, they were taken into account as marking chronological relations, but were not analysed further.

We have also seen that the complexity of chronological markers increased with age. Initially, the younger children favoured 'yase' and its variations. It is interesting that 'yase' is used in concordial agreement with the subject of the sentence. This allows for the following variations of 'yase' to occur: 'lase', 'kwase', and 'wase'. 'Yase' performs a similar function to

'and then' expressions in English in the sense that it does not evaluate the relationship between two propositions in relation to each other, but rather it instructs the listener that there is more information to follow. It serves to build a sequential chain of events, but it does not integrate the events in relation to each other. Conjunctions are used to relate clauses to each other.

(55) bekukade kukhona umeme kadhe e thunga
(here was a mom and she was sewing) [9FZ001]

Conjunctions differ from 'yase' expressions in the sense that they not only introduce additional information, but they place the information in relation to each other. You would not be able to fully interpret the intended meaning in the clause introduced by the conjunction without having first interpreted the meaning in the first clause.

For example:

(56) isithi mama umase kusuka lapho yashona le
(it said mama after that it went there) [18FZ003]

We can see that the events in sentence 1 are integrated into the events of sentence 2. Sentence 1 form the context that creates a chronological reference point that the events in sentence 2 are related to. If the listener did not have the context of sentence 1, the listener would not be able to chronologically orientate the events of sentence 2. Thus, sentence 2 does not refer to isolated events. The conjunction allows the events in sentence 2 to be interpreted in relation to the events occurring in sentence 1.

We can see that there is a development from linking events in a linear fashion, to integrating events in a complex structure. With the 'yase' connectives, each event is isolated and can be removed from the narrative without influencing the interpretation of the other events. However, events introduced by conjunctions cannot be removed without influencing the interpretation of the events they are placed in relation to. Thus, the increased use of conjunctions allows for a more integrated and complex system of coherence.

We have also remarked an increase in trans-languaging. The younger children and older children consistently use 0.2% of English words to communicate chronological markers. However, the adults use up to 0.18% of English words. One possible explanation for this is to

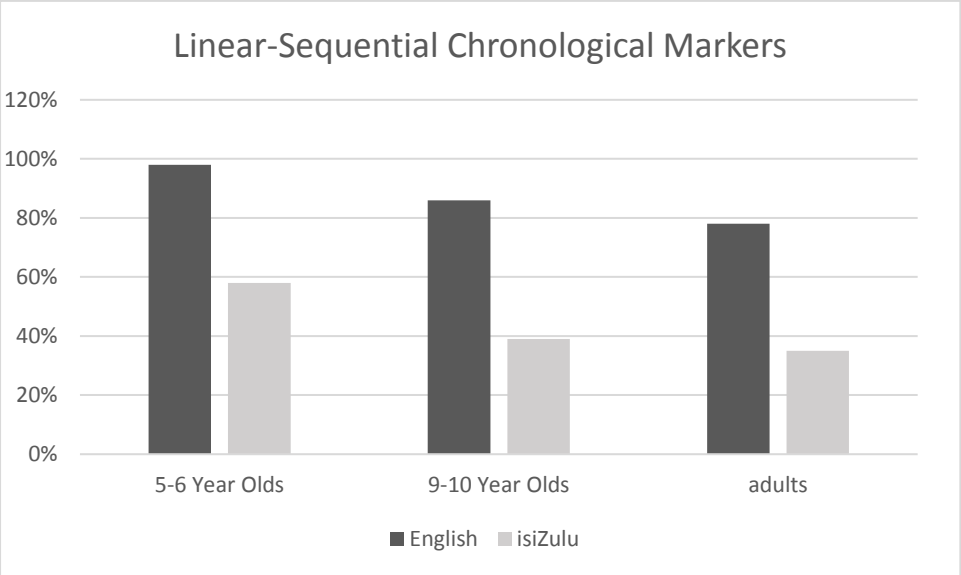
take into consideration the social context of this sample. Both cohorts of children received education in their isiZulu mother tongue. Thus, they received predominantly isiZulu input. However, the adults were attending a university where some of the course material was presented in English. This means that they are receiving a higher input of English, as well as using English in an academic context. This could explain why they were more prone to use English expressions.

Cross-linguistic Comparison

We notice a similar developmental trend in both languages. We have noted that younger children show a preference to using linear sequential-temporal chronological markers. For English we note the reliance on 'and then' expressions, and for isiZulu we have seen the reliance on 'yase' ('and then') expressions. Throughout childhood and toward adulthood, we see an emerging preference for utilising more and more complex syntax structures. The graph below shows the development of 'and then' and 'yase' expressions across the age groups.

Figure 1

Linear-Sequential Chronological Markers



For English, there was a steady decrease in the use of 'and then' and a steady increase in the use of complex markers, such as relative pronouns or adverbial constructs. With isiZulu, there was a significant decline in the use of 'yase' expressions and an increase in the use of conjunctions amongst the older children and adults. In table 18, it was shown that the younger children only use 0.04 conjunctions per clause. However, the older children and

adults use 0.1 and 0.08 conjunctions per clause respectively. We found it significant, that regardless of the chosen chronological strategy, there was a growth towards favouring complexity. We can see that in both language groups, the younger narratives are structured like a list where all the individual elements are linked through linear expressions. The older narratives showed a greater use of conjunctions and other complex markers to relate events.

The following part of the discussion will address spatial markers.

4.2.2.3. Spatial Markers

Spatial markers serve to position objects in space. This is done through explaining their location, or the direction and trajectory in which they travel. As mentioned by Talmy (2000), languages are influenced by typological constraints which determine how they encode motion in the verb. We have seen these typological differences at play in terms of the type of markers used to encode spatial information (such as trajectory, or location). Each language will be presented differently.

Spatial Markers in English

In English, we identified that prepositions and adverbs are indicators of spatial information.

Quantitative Analysis of Spatial Markers

The following results were obtained from the English data. Table 19 indicates the average rate of spatial markers per clause for each age group, as well as the distribution of the percentage of spatial markers.

Table 19

Spatial Markers in English

	Adverbs		PP		Total
5-6 Years	0.18	38%	0.29	62%	0.47
9-10 Years	0.19	51%	0.18	49%	0.37
Adults	0.16	35%	0.29	64%	0.45
Average	0.18	42%	0.25	58%	0.43

The adults and younger children produced a very similar amount of spatial markers (0.47 and 0.45 respectively). The older children, on the other hand, produced the least amount of spatial connectives. They only produced 0.37 of spatial connectives.

Both the adults and the younger children produced more prepositional phrases than adverbs. The adults produced 64% prepositional phrases, whereas the younger children produced 62% prepositional phrases. The older children produced more adverbs than prepositions, about 51% adverbs and 49% prepositional phrases.

Qualitative Analysis of Spatial Markers

English is a satellite-framed language. This means that information regarding motion is encoded in satellites adjacent to the verb. This can be clearly observed in the spatial coherence strategies employed by the English speakers. We observed that the English speakers primarily encoded spatial information through adverbs and prepositional phrases.

One can argue that some verbs such as 'fall' or 'descend' contain spatial information as it communicates direction. However, the focus of this particular study is specifically on the functioning of the satellites as coherence devices. For this reason, although some verbs do contribute spatial information, it was disregarded for this study. The study identified that adverbs and prepositional phrases were the main spatial strategies employed by English speakers. Both adverbs and prepositional phrases function as satellites.

Adverbs are words adjacent to the verb that communicate information about the verb. For example:

(57) so he went **back**… [9FE002]

Prepositional phrases constitute of a preposition and a noun phrase. Prepositions specifically convey information about the relationship between two objects. For example:

(58) the egg fell **off into** the spider web… [5ME002]

The following section will present the results from the isiZulu data.

Spatial Strategies in isiZulu Data

In isiZulu, we identified that locatives and agreement, as well as adverbs, were indicators of spatial coherence.

Quantitative Analysis of Spatial Markers

Table 20 indicates the average rate of spatial markers presented in each clause per age group.

Table 20

Spatial Markers in isiZulu

	agreement		Locatives		Adverb		Total
5-6 Years	0.08	23%	0.09	26%	0.17	51%	0.33
9-10 Years	0.06	20%	0.14	44%	0.11	36%	0.32
Adults	0.07	16%	0.18	39%	0.21	45%	0.47
Average	0.07	20%	0.14	36%	0.16	44%	0.37

The older children produced the least amount of spatial connectives (0.32) and the adults produced the most (0.47). The younger children produced 0.33 spatial connectives per clause. We can see that the younger children performed very similar to the older children. The adults produced a much higher amount of spatial markers per clause.

The results were inconclusive in finding any definite developmental trends which suggest that there was a growth towards preferring a specific type of connective.

Qualitative Analysis of Spatial Markers

For isiZulu, we observed that spatial coherence is either communicated lexically through adverbs, or grammatically through locatives and agreement. IsiZulu is a verb framed language. This means that various verbs are used to mark the path and motion of the verb (Kunene 2010). The results indicate that one spatial strategy used in isiZulu is the use of adverbs. As in English, adverbs provide additional information to the verb. For example:

(59) bese kuba yinyoni **phezu** kweqanda

(and then there is this bird on top of the egg) [18FZ003]

Additionally, isiZulu, as mentioned before, is an agglutinative language. This allows for complex morphemes to be attached to root-words, in order to mark information such as

agreement and location. We identified that various morphemes, such as locatives, were used to indicate spatial coherence. For example:

(60) andene yase yahamba yaya **e**madrawe**ni**
*(and then it left and went **into** the drawers)* [5FZ001]

When looking at the development of the two languages, we did not see anything conclusive. We identified the various strategies used by each language to indicate spatial coherence. We also observed whether there were any trends in terms of the development of particular strategies.

The results showed that there were strong typological differences at play. With English, we observed that the use of satellites in the form of adverbs and prepositional phrases where used to communicate coherence. Regarding isiZulu, the agglutinative structure allowed for the use of morphological markers, such as agreement and locatives, as well as free standing words (adverbs) to communicate coherence.

We could not find evidence in either language that there was developmental influence in terms of which strategies were given preference at particular ages.

The following section will present the results for logical markers.

4.2.2.4. Logical Markers

As stated before, logical markers establish the logical relationship between two clauses. These relationships generally indicate a causal relationship, i.e. action-outcome. This is important for coherence because it integrates individual actions to the overall thematic structure of the narrative. Both languages used conjunctions and adverbs to indicate logical relationships.

Since logical markers functioned similarly in both languages, we have decided to compare the languages together.

Quantitative Analysis of Logical Markers

Table 21 below shows the average amount of logical markers produced per clause in both languages.

Table 21

Overview of Logical Markers

	English		isiZulu	
	#	%	#	%
Logical Markers	0.12	8%	0.05	6%

We can see from the table that the English narratives produced 0.12 logical markers per clause, whereas the isiZulu narratives produced 0.05 logical markers per clause. However, the table shows that from the overall amount of logical markers produced per narrative, that both the English and the isiZulu narratives produced a very similar percentage of logical markers. The English narratives contained 8% of logical markers and the isiZulu narratives contained 6% logical markers. Thus, although the English narratives contained a higher amount of markers per clause, both narratives contained a similar proportion of logical markers. We have also seen that both languages show a similar rate of development in terms of the amount of logical markers produced per age group. Table 21 illustrates the amount of logical markers per clause per age group.

Table 22

Logical Markers

	Age	Logical Cues	
		#	%
English	5-6 Years	0.11	7%
	9-10 Years	0.12	9%
	Adults	0.14	9%
	Total average	0.12	8%
isiZulu	5-6 Years	0.01	5%
	9-10 Years	0.01	6%
	Adults	0.09	7%
	Total average	0.04	6%

The table above indicates that regardless of language, the amount of logical markers produced per narrative increases steadily with age. For both languages, the younger children produced the least amount of logical markers (the younger English children produced 0.11 markers per clause, and the isiZulu children produced 0.01 logical markers per clause). The older English children showed a slight increase of 0.12 logical markers per narrative, whereas the older isiZulu children produced 0.11 logical markers per clause. In both populations, the adults produced the most logical markers per clause. The English adults produced 0.14 logical markers per clause and the isiZulu adults produced 0.09 markers per clause. We can see that there is a steady increase from the younger ages to adulthood in the use of logical markers in a narrative.

Qualitative Analysis of Logical Markers

As mentioned, logical coherence shows how one action or event causes another event or action to happen. In each instance, logical markers showed the relationship between two propositions.

Below are some examples:

(61) ingane ye dada bese iitjele **ukuthi** (conjunction) kahle kahle lokhu unogwaja
*(the baby duck told its self **that** this rabbit*) [18MZ003]

(62) langena ekameleni **kanti** (adverb) lo ulele
*(it entered the bedroom **but** this one was sleeping)* [9MZ002]

(63) and then it **obviously** (adverb) went on this whole journey [18FE001]

(64) and like wrapped it up **so** (conjunction) it was nice and safe and everything [18FE001]

As mentioned before, we observed that both languages used conjunctions and adverbs to indicate logical relationships between various propositions. Below are examples from English and isiZulu of how adverbs and conjunctions where used to communicate coherence through establishing logical relationships.

(65) (English conjunction) …a mother bird had laid her egg **but** she never realised the time… [9ME001]

(66) (English adverb) …and he wakes up **obviously** sitting on this egg… [18FE003]

(67) (isiZulu conjunction) …liyathuka **ukuthi** hhaibo… [18FZ002]

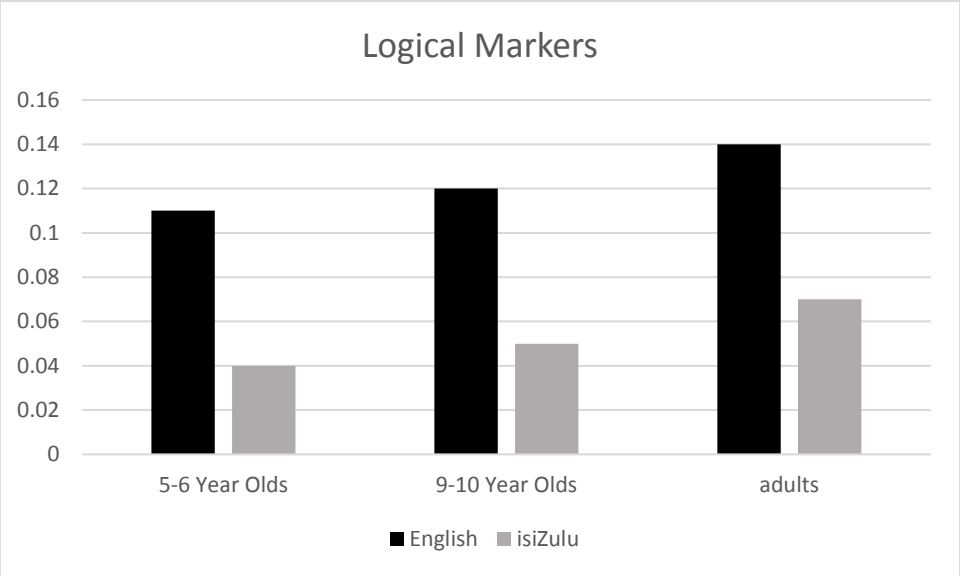
(68) (isiZulu adverb) …**ngathi** yingane yedada… [18MZ003]

Cross-Linguistic Analysis of Logical Markers

We have observed the development of logical coherence strategies for both languages. We can see certain trends emerge when we compare the two languages to each other. Figure 3 indicates the development of logical coherence strategies regarding the two languages.

Figure 2

Logical Markers



The above figure shows an almost identical increase in the trend and variation between the two language populations. With both languages, there is an increase in the amount of logical markers used per clause. It is interesting to note that the development almost parallels each other. Although there is a difference in the amount of logical markers produced per clause in each age across the two languages, we can see that the amount of logical markers produced per clause increased steadily across both languages' age groups. Thus, it would appear that the development of logical markers is similar in both language populations.

The following section will present the results of enunciative markers.

4.2.2.5. Enunciative Markers

When producing a narrative, the narrator includes information that advances the plot line. Sometimes, the narrator will depart from the plot line in order to add comments about the narrative; add information the clarify information in the narrative; or ask questions that serves to involve the listener. In a coherent narrative, the narrator will be able to indicate when they are departing from the narrative to make these additions, and when they are returning to the narrative.

Enunciative markers perform a pragmatic function rather than a semantic function. This is because they inform the listener that there will be a departure from the story line.

Irrespective of their particular purpose, enunciative markers informs the listener not to interpret the following utterance as part of the plot of the narrative.

In both languages, we could not find enunciative markers that came from a particular word category. Rather, we identified that various words and constructs functioned together to provide a particular function. For this reason, we will present the results obtained for both languages together. We will then provide examples from each language to illustrate how enunciative markers performed in each language.

Quantitative Analysis of Enunciative Markers

Upon our first analysis, we found that enunciative markers occurred in both languages. Table 23 indicates the amount of enunciative markers found in the two languages.

Table 23

Overview of Enunciative Markers

	English		isiZulu	
	#	%	#	%
Enunciative Markers	0.04	3%	0.04	3%

We discovered that both languages produced 0.04 enunciative markers per clause, and with both languages, enunciative markers constituted about 3% of the total discourse coherence markers. We also observed how enunciative markers were used at each age in order to trace development. Table 24 indicates the amount of enunciative markers produced per clause, as well as the overall percentage of markers dedicated to enunciative markers.

Table 24

Enunciative Markers

	Age	Enunciative	
		#	%
English	5-6 Years	0	0%
	9-10 Years	0.03	2%
	Adults	0.09	6%
	Total average	0.04	3%
isiZulu	5-6 Years	0.01	1%
	9-10 Years	0.01	1%
	Adults	0.09	8%
	Total average	0.04	3%

We can see from Table 24 that enunciative markers develop very similar in both languages. For both languages, the children produced the least amount of enunciative markers: the younger English children didn't produce any enunciative markers, and the older children produced 0.03 enunciative markers per clause. Both groups of isiZulu children produced 0.01 enunciative markers per clause. The amount of enunciative markers increased drastically amongst the adults. The adult groups of the two languages both produced a rate of 0.9 of enunciative markers per clause. The adults differed slightly in terms of the distribution of enunciative markers in comparison to other markers. For example, enunciative markers formed 6% of the English adult's repertoire of coherence cues. Enunciative markers formed 8% of the isiZulu speaking adult's repertoire of coherence cues. Thus, a slightly larger proportion of coherence devices were dedicated to enunciative markers amongst the isiZulu speaking adults.

Qualitative Analysis of Enunciative Markers

Although we found that both languages produced similar amounts of enunciative markers, we found that there was a difference in the use of enunciative markers. As mentioned before, enunciative markers serve the purpose of signalling information that is not necessarily part of

the plot line. We observed that enunciative markers were used to signal different purposes such as self-repair, or offer interjections. We will provide a brief analysis of how enunciative markers were used in each language.

We observed that enunciative markers were employed for similar purposes in both languages, albeit some differences which we will analyse. For both languages, we observed that enunciative markers were used to signal cognitive states (as mentioned in the work of Diessel, 2004), self-repair (as mentioned in Zarei, 2004). There were also various instances where tag-questions were employed.

When signalling cognitive states, the enunciative markers signal to the listener that they will receive information about the speaker's cognitive state. For example:

(69) (English) **I think** birds have a bonding thing… [18FE002]

(70) (isiZulu) …umang' **khumbula** kahlehle…

(…if I remember correctly…) [9MZ001]

Self-repair markers informed the listener that they are receiving information that is altering, or correcting, previously mentioned information. For example:

(71) (English) ...and then the egg fell, **I mean**, got out… [9ME002]

(72) (isiZulu) **Oh**, yamboza iqanda ngendwango…

*(**Oh,** it covered the egg with a cloth…)* [18FZ002]

In both languages, we also saw instances of tag-questions. For example:

(73) (English) **Isn't it** the little guy, **yeah**? [18FE001]

(74) (isiZulu) **Ok, like** ikhona into esihlahleni, **uyabo**?

(***Okay, like** there is something in the tree, **you see**?)* [18MZ003]

With isiZulu, we saw that enunciative markers fulfilled additional functions, other than signalling cognitive states, self-repair, or offering tag-questions. We saw that isiZulu participants also commonly used the expression 'ukuthi', which translates to 'it means'. This expression usually indicated that a clarifying explanation or interpretation was about to follow. For example:

(75) (isiZulu) **uyabonanjeukuthi** akasazi manje ukuthi usuzowenza njan?

(***you can see (that)*** *he does not know what else to do)* [18FZ002]

We also saw that unique to isiZulu was the use of interjections (as seen in Poulos & Msimang, 1990). These interjections were included as enunciative markers because they offered some indication of the narrator's response or emotional reaction to a situation. Furthermore, they also engaged with the listener by emotively highlighting a certain piece of information. For example:

(76) (isiZulu) igundwane melithi liyaphaphama, **haibo**!

(*when the mouse tried to wake up,* ***interjection****!)* [18FZ002]

The researcher saw that isiZulu narratives were richly adorned with enunciative markers that performed a variety of different functions. We can see that some of the enunciative markers, similar to English, was used to present information and to insure the integrity of the information. Enunciative markers, like cognitive states, clarification, and self-repair markers all insured the correct communication of information. These markers are not really interactive by nature. However, isiZulu narratives presented a whole host of enunciative markers that were interactive by nature. Interactive markers, such as 'uyabona' (you see?), and interjections not only directly included the listener into the narrative, but they also allowed for an emotive interpretation of the narrative. IsiZulu narratives include not only a presentation of information, but they also incorporate an interactive/emotive evaluation of the information.

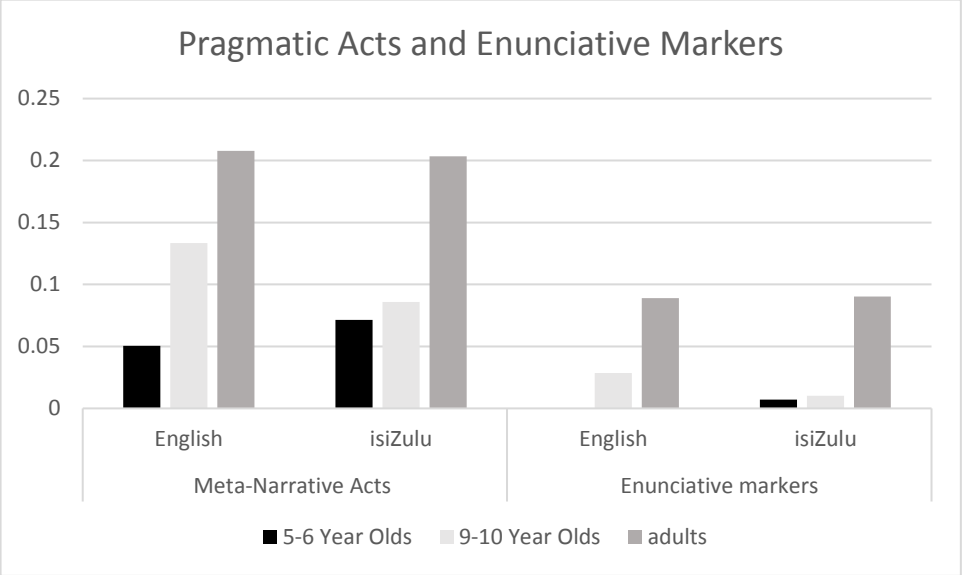
Cross-Linguistic Analysis

Enunciative markers indicate explicitly that there is a departure from the story line and a return to the story line. Thus enunciative markers go hand in hand with pragmatic acts. The different pragmatic acts, such as commentary, interpretation, explanation and other non-narrative acts, all function parallel to the story line. However, we can see that, although the younger children were able to produce a variation (albeit very small) of pragmatic acts, they were not able to produce a marker that explicitly showed the transition between the pragmatic acts. This would suggest that the ability to navigate between various pragmatic acts precedes the ability to mark the transition between pragmatic acts using linguistic

expressions. Figure 3 indicates the development of pragmatic acts and enunciative markers across both languages.

Figure 3

Pragmatic Acts and Enunciative Markers



If we look at how the rates of pragmatic acts developed with the rate of enunciate markers, we will notice that development of pragmatic acts and enunciative markers parallel each other. We saw that there was an increase in the complexity and variation of pragmatic acts across age groups. We also saw that the use of enunciative markers increased with age. This showed that not only did the ability to navigate between pragmatic acts increase with age, but it also showed that the ability to verbalise and mark the transition between the acts increase with age. Thus, the older narratives were not only more complex, but they were also more coherent because of the fact that the transition between the narrative levels was explicitly marked.

What is very interesting is the rate of pragmatic acts and enunciative markers are almost identical for the young children and adults. This means that the younger children and adults (of both language populations) used the same amount of variation of pragmatic acts, and the same rate of enunciative markers. Although the rate of enunciative markers was almost identical, there was definitely a difference in the function of the enunciative markers.

We saw that the cultural stylistic differences were evident in the use of enunciative markers. In English, most of the markers concentrated on communicating information and insuring that the information was correct. For example, cognitive markers indicated the narrator's cognitive response towards certain events, self-repair markers indicated the correction of faulty information, and clarification markers allowed for the acceptance of information as correct. These markers are all concerned with the presentation of information. IsiZulu narratives, on the other hand, also contained all of these markers in addition to interactive and emotive markers. Certain expressions like 'uyabona' directly engaged with the listener, whereas interjections provided an emotional evaluation on the part of the narrator.

Markers such as self-repair and clarification are critical for coherence. They inform the listener as to which information is part of the narrative, and which information should be disregarded. Information presented in cognitive states assists the listener in organising the information presented to them. The listener is made aware that the following information is not necessarily focused on the narrative plot, but rather it is a personal interpretation of the narrator in response to events unfolding in the narrative. Interactive and emotive markers do not necessarily contribute towards the structural coherence of the narrative. However, they do contribute to the artistic representation of the narrative. These markers also reveal that there is a cultural and stylistic difference amongst the two narratives. The English narratives were more concerned with presenting a well-structured narrative *to* the listener. The isiZulu narratives, on the other hand, showed an increased consideration for engaging *with* the listener and including the listener in the unfolding of the narrative.

4.3. Non-Verbal Information

As discussed in the literature review, various theorists have presented solid evidence that communication is by nature multi-modal, and that non-verbal information contains both communicative and interactive value (Kendon, 2004; McNeill, 1992). Additionally, researchers have shown that gesture assists in a variety of functions, one of them being to assist in creating coherence throughout discourse (Cassel, 1988; Colletta et al, 2014; Kunene Nicolas, 2015; Ahmed, 2015). The analysis presented will be brief as the focus of this research is not to provide an in depth analysis of non-verbal communication, but rather, to provide a holistic view of the various strategies employed by speakers to communicate discourse coherence.

As seen in *Chapter 3: Methodology*, Colletta et al (2009) has identified a variety of different functions of gesture. The coding manual has made provision for the annotation of all of these functions for each gesture. All of these gesture functions were already coded on the archival data. For the purposes of this study, we will only be analysing the gestures that serve the function of creating discourse coherence. These are the discursive gestures.

The following section will present a brief analysis of gesture in order to observe how non-verbal behaviour can contribute to creating discourse coherence across a narrative. We will analyse the non-verbal behaviour through looking at how many overall gestures were produced by each age group, as well as how many discursive gestures were produced by each group.

Gesture

We observed that both languages employed gesture when producing a narrative. However, we have found individual variation within the amount of gesture produced per narrative.

Gesture researchers (Colletta et al, 2014; Kunene Nicolas, 2015) found that gesture correlates to the amount of words uttered by speakers. Simply said, the more you speak, the more you gesture. In order to account for these individual variations, we divided the amount of gesture produced in the narrative, with the amount of clauses uttered in the narrative. This gave us our gesture rate per clause.

Table 25 indicates the overall amount of gesture per clause produced by both language populations.

Table 25

Overview of Gesture

	English	isiZulu
Average Gesture per Clause	1.17	0.39

As one can see, gesture was present in both language populations. We can also observe that the isiZulu speakers gestured significantly less than the English speakers.

We further observed the amount of discursive gestures produced per narrative. Once again, we divided the amount of discursive gesture with the amount of clauses uttered per narrative.

The table below indicates the total amount of gesture per clause, as well as the total amount of discursive gesture produced per clause across all ages. Colletta et al (2014) and other researchers (see Ahmed, 2016; Kunene Nicolas, 2015) found that there was a relationship between discursive gestures and discourse coherence cues. Not only did they find that these gestures were produced simultaneously to uttering discourse coherence cues, but both discursive gesture and discourse coherence cues serve the same purpose: i.e. to provide coherence markers.

Therefore, for this study, we wanted to observe what the relationship was between discursive gesture, and the amount of discourse coherence cues produced verbally. In order to observe this relationship, we divided the amount of discursive gesture per clause, with the amount of discourse coherence cues produced per clause (as indicated Table 25).

Table 26

Overview of Gesture Production

	English	isiZulu
# Gesture	1.17	0.72
Discursive Gesture	0.39	0.12
DCC	1.49	0.86
Gesture per DCC	0.27	0.13

As seen in Table 26, there were differences in the amount of gesture produced by the two languages. Overall, the English speakers produced more gesture than the isiZulu speakers. The English speakers produced 1.17 gestures per clauses, whereas the isiZulu speakers produced 0.72 gestures per clause. Additionally, the English speakers produced a higher rate of discursive gesture. They produced 0.39 discursive gestures per clause, which meant that they produced 0.27 discursive gestures per discursive cue. The isiZulu speakers produced a lower rate of discursive gestures. They produced 0.12 discursive gestures per clause, which meant that they produced 0.13 discursive gestures per discourse coherence cue.

We also observed how gesture developed across the age groups within each language. Table 27 indicates the total amount of gesture produced per clause for each age group, the amount

of discursive gestures produced per clause, and the amount of discursive gestures produced per discourse coherence cue.

Table 27

Gesture Production

Language	Age	#Gesture	Discursive Gesture		DCC	Gesture per DCC
		#	#	%	#	
English	5-6 Years	0.82	0.15	18%	1.55	0.10
	9-10 Years	1.24	0.51	41%	1.42	0.36
	Adults	1.44	0.52	36%	1.5	0.35
	Total Average	1.17	0.39	33%	1.49	0.27
IsiZulu	5-6 Years	0.16	0.01	6%	0.77	0.01
	9-10 Years	0.52	0.14	27%	0.71	0.20
	Adults	1.48	0.21	14%	1.09	0.19
	Total Average	0.72	0.12	17%	0.86	0.13

Table 27 indicates that all age groups (of both languages) produced gesture. We can note that for the English data, the younger children produced the least amount of gesture (only 0.82 gestures per clause), whereas the older children produced increasingly more amounts of gesture (1.24 gestures per clause) and the adults produced the most (1.44 gestures per clause). We could see the same trend in the isiZulu data. The younger children produced the least amount (0.16 gestures per clause), the older children produced more than the younger children (0.52 gestures per clause), and the adults produced the most (1.48 gestures per clause).

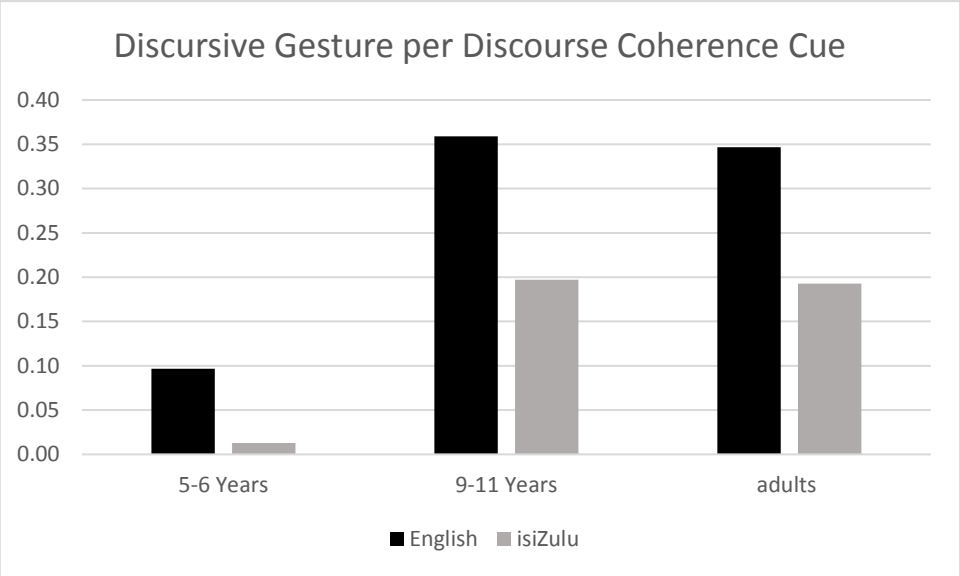
However, when we take into consideration the types of gesture produced by the participants, we see an interesting result. For both language populations, the older children produced a greater percentage of discursive gesture than the younger children and adults. For the English data, the younger children produced 18% of discursive gesture, the older children produced 41%, and the adults produced 36% discursive gesture. For the isiZulu population, we saw that the younger children produced 6% discursive gesture, the older children produced 27%, and the adults produced 14%. In both populations, the younger children produced the lowest percentage of discursive gesture, and the older children produced the most.

It is incredibly interesting when we observe the amount of discourse coherence cues presented in each language, as well as the non-verbal discourse cues presented through means of discursive gesture. As we can see from the table, in both populations, the older children produced the lowest amounts of discourse coherence cues. For example, with English, the older children produced 1.42 discourse coherence cues per clause, as compared to the younger children producing 1.55 discourse coherence cues per clause, and the adults producing 1.5 discourse coherence cues per clause. Regarding isiZulu, we saw that the older children produced 0.71 discourse coherence cues per clause as compared to 0.77 discourse coherence cues produced by the younger children, and 1.09 discourse coherence cues per clause presented by the adults. However, in both populations, the older children produced the highest amounts of discursive gesture. We see that they also produced the highest rate of discursive gesture per discourse coherence cue uttered.

We noted that with English, the younger children produced 0.1 discursive gestures for each discourse coherence cue uttered. We also saw that the older children produced 0.36 discursive gestures for each discourse coherence cue uttered, and the adults produced 0.35 discursive gestures for each discourse coherence cue uttered. For the isiZulu data, we see very similar results. The younger children produced 0.01 discursive gestures for each discourse coherence cue uttered, the older children produced 0.2 discursive gestures for each discourse coherence cue uttered, and the adults produced 0.19. The figure below illustrates the trend.

Figure 4

Discursive Gesture Production per DCC



As we can see from this graph, the English speakers produced a higher rate of discursive gestures per clause per each discourse coherence cue than the isiZulu speakers. Despite this difference, we observe that there is a very similar trend displayed in both languages. In both languages, the younger children produced a significantly small amount of gestures per discursive cue. The older children and adults produced significantly more discursive gestures per clause in both languages. In addition, the adults and older children produced very similar amounts of discursive gestures per discourse coherence cue in both languages. However, in both languages, the older children produced slightly more discursive gesture per discourse coherence cue.

The results show us that development is marked by an initial mismatch between speech and gesture, which later matures into a match between speech and gesture. Though the younger children produced a high rate of verbal coherence cues, they produced a low rate of non-verbal coherence cues. The older children produced the lowest rate of non-verbal coherence cues and the highest rate of non-verbal coherence cues. In both cases, there was a mismatch between speech and gesture. The adults, however, produced a high rate of both verbal and non-verbal coherence cues. By adulthood, there was an apparent match between speech and gesture.

4.4. Conclusion and Overview

In the analysis, we wanted to answer the three research questions. We aimed to observe which strategies where used by each language to communicate coherence information, to observe how these strategies develop in each language, and finally, to observe the effect that typological differences might have exerted on the development of these strategies. Through conducting a literature review, and using an existing coding manual for narrative research, we identified that coherence exists on a macro, micro, and non-verbal level. We identified coherence strategies through analysing the length of the narrative, the pragmatic acts used in the narrative, the reference strategies used in the narrative, the use of discourse coherence cues in the narrative, as well as the use of non-verbal information.

We were able to observe narrative length through the average amount of clauses produced per narrative. We identified that the two languages developed differently. Overall, English narratives became increasingly shorter, where isiZulu narratives became increasingly longer.

The overall semantic structure of the narrative is determined through the inclusion of narrative and non-narrative pragmatic elements. We accounted for this structure by evaluating the pragmatic information contained in every clause. We found that both languages made use of a variety of narrative and non-narrative pragmatic acts. Both languages developed from narratives severely dominated by narrative clauses, to adult narratives that liberally incorporated non-narrative pragmatic acts. Similar rates of development were present in both languages.

In addition to observing the overall semantic structure of the narrative, we also observed how micro-elements contained in the narrative functioned with each other in order to support this semantic (or macro-structure) of the narrative. One of these micro-elements that we observed was the use of strategies to communicate reference through the narrative. Reference is important to the narrative as it communicates which characters are involved with specific actions throughout the narrative. When observing reference strategies employed by both languages, we could see strong typological differences emerge due to the structure of the two typologically dissimilar languages. We observed that the English speakers made use of pronominal, lexical, and complex reference strategies. Younger narratives were dominated by pronominal use, whereas older narrative showed a higher proportion of lexical

and complex reference. With isiZulu we observed that agreement (in the form of concord), pronouns, and lexical reference were used as reference strategies. We saw that the younger children and adults performed similar in their preference of reference strategy.

In addition to looking at how reference was maintained, we observed various other discourse coherence cues which contributed towards establishing coherence across the narrative. The analysis of these discourse coherence cues included observing cues that function to aid the structure of discourse (discourse structure markers), communicate temporal, logical, or spatial information, or mark transitions between pragmatic acts through the use of enunciative markers. We saw that each type of discourse coherence marker was essentially different in its development and distribution. We found that discourse structure markers became increasingly abundant and complex throughout the increase of age.

We could trace a decline in the use of chronological markers in English, whereas the adults and children produced similar amounts of chronological markers in isiZulu. However, strategies of using chronological markers became increasingly complex and specific in both languages. We could observe immense typological differences in the strategies employed in the use of spatial coherence markers. In English, we could observe that spatial coherence markers took the form of satellites, whereas in isiZulu, they took the form of agreement and free standing words. We could not observe a specific developmental trend in the employment of spatial coherence markers. We saw that both languages used logical coherence strategies that allowed for the embedment of information. These strategies became more abundant throughout development in both languages.

When looking at enunciative markers, we observed that in both languages, enunciative markers were pragmatic in nature and did not belong to a specific grammatical or syntactic category. We observed that enunciative strategies became more abundant and complex throughout development. We also observed that isiZulu speakers offered a greater variety in the functions of the enunciative markers they employ.

The final part of the analyses observed non-verbal behaviour. We observed that although there was a difference in the amount of gesture produced between the two languages, both languages indicated a similar developmental trend. Through looking only at the discursive gesture produced, we observed a mismatch between gesture and speech amongst the

children age groups, and a match amongst the adult age group. We observed that the younger children produced a high rate of verbal coherence markers, but a low rate of non-verbal coherence markers. The older children, in contrast, produced a low rate of verbal coherence markers, but a high rate of non-verbal coherence markers. The adults produced a match between gesture and speech. They produced both a high rate of verbal and non-verbal coherence markers.

The following section of the dissertation will address what these results mean in respect to the development of coherence devices, as well as what these results say about the influence of typological constraints on the development of these devices.

Chapter 5: Discussion

The purpose of this research was to observe the development of discourse coherence in two typologically different languages in order to identify the typological influence exerted on the development of discourse in narratives. Through using a methodology created by Colletta et al (2009), the research identified various strategies for creating discourse coherence. These strategies were mapped and compared at different age intervals of two typologically different languages, namely, South African English and isiZulu. Through comparing the development of these typologically different languages, one is able to garner insight into which processes are at play irrespective of language, and which processes are shaped by language specific factors.

This study has shown that the results indicated two main areas of discussion: development and typology. In terms of development, the study has identified, for both languages, that there was evidence for the development of complexity in discourse coherence at both a macro and a micro-level. On a macro-level, we have seen through the analysis of pragmatic acts and enunciative discourse coherence markers, that narratives become increasingly complex in its pragmatic structure and coherency. Increasingly complex coherence is also observable on a micro-level through the analysis of referential markers, discourse coherence cues, and discursive gesture. Through discussing our findings in relation to existing literature, this study will make the case that narratives develop from being cohesively connected, to being coherently integrated. The discussion will also address which age, as suggested by the results, might show sensitivity to particular discursive abilities.

Although both languages appear to develop in parallel, we have also observed some differences that can be attributed to language typology. These differences were evident at both a macro-level (through differences in narrative length and enunciative discourse coherence markers), and at a micro-level (through the use of spatial discourse coherence markers and certain reference strategies). This section will present these discussions in two main sections: *5.1.-Development of Discourse Coherence and 5.2-Typology Sensitivity in Discourse Coherence.* Although this study was successful in answering the research questions, there are many limitations that need to be taken into account for future research. The various limitations and suggestions for future research will be presented in the *5.3.-Limitations and Recommendations*.

5.1. Development of Discourse Coherence

As outlined in *Chapter 2: Literature Review*, various theorists have made contributions towards defining coherence within a narrative. Essentially, coherence in a narrative is when independent segments are semantically linked with each other and the overall thematic structure of a narrative (Halliday & Hasan, 1976; Thorndyke, 1977). Moreover, coherence ensures that there is an overall thematic structure of a narrative, and every unit within the narrative is somehow both relevant to the overall theme, and also integrated into the overall theme of the narrative.

Wilkinson et al (1993) explained that coherence can be observed at a macro and a micro-level. At a macro-level, one looks at the overall thematic structure of the narrative (Van Dijk, 1985). This thematic structure of the narrative is explained as certain characters fulfilling various actions in order to achieve a particular purpose (Stein & Glenn, 1979). This thematic structure can be broken down into various story components, such as characters, events, goals, settings, etc. (Thorndyke, 1977). Narratives are considered coherent if they contain the necessary story components, and if these story components are related to one another through causal connections (Trabasso et al, 1984; Wilkinson et al, 1993). The current study segmented the narrative into various clauses which corresponded to specific story components.

Past research, as well as the study conducted for this research, has shown that not all clauses correspond directly to plot-advancing episodes. Sometimes, clauses were used to offer comments, evaluations, or interpretations. Thus, there was a pragmatic difference in the function of clauses that advanced the plot line, and clauses that functioned in parallel to the narrative with the purpose of structuring the narrative and guiding the listener through the narrative. As a result, a narrative does not only constitute of story components, but it also consists of various clauses that contain meta-narrative pragmatic content. The integration of various pragmatic acts plays a function in the overall coherency of the narrative.

Micro-coherence is concerned with observing the strategies used to establish links between individual segments and the overall thematic structure (Wilkinson et al, 1993). Various theorists have identified numerous linguistic strategies that are employed in creating these links (Fraser, 1999; Halliday and Hasan, 1976; Schiffron, 2008). These links serve to integrate

information about characters, time, space, and consequence into the overall flow of the plot line.

Thus, in summary, we can observe that coherence takes place at a macro and a micro-level. The macro-level observes how information is integrated hierarchically, whereas the micro-level is more concerned with how information is integrated linearly. The current study found that, with both English and isiZulu, there was evidence that these levels of coherence were different at different stages. The study found that young narratives predominantly used linear coherence strategies and lacked a rich use of hierarchical based coherence strategies. The transition to mature narratives was observed as adults used a system of discourse coherence that made use of both linear coherence strategies, as well as hierarchical coherence strategies. More will be said about this at a later stage.

The study noted that coherency became more complex throughout the age groups. Additionally, we saw that the pragmatic complexity increased through age as well. The following section will discuss the development observed in oral narratives. It will first discuss the development of pragmatic complexity, before it discusses the development of discourse coherence complexity.

5.1.1. Development toward Pragmatic Complexity

When analysing the various pragmatic functions of various clauses, we found that some clauses performed the function of story-telling (narrative pragmatic acts), whereas other clauses served the purpose of offering additional information not directly corresponding to the plot line (non-narrative pragmatic acts) (Cassel, 1988).

In our study, we noticed that the increased complexity at the macro-level was complemented with an increased complexity at the micro-level. We observed that the underlying pragmatic macro-structure was reflected in the evidence contained in the information of the clause. In other words, some clauses contained narrative pragmatic acts whereas other clauses contained non-narrative pragmatic acts. The arrangement of pragmatic acts determined the underlying thematic pragmatic structure of the narrative. With the age groups, we noted a greater complexity emerge within the pragmatic macro-structure. This complexity in the macro-structure was complemented by a complexity in the micro-structure.

5.1.1.1 Macro-Coherence: Pragmatic Acts

Our research observed that pragmatic complexity developed the same in both languages. Although, the narratives of all ages contained both narrative and non-narrative clauses, there was a development towards a greater amount of non-narrative clauses amongst the higher age groups. For both languages, the child narratives were dominated by narrative clauses, whereas the adult narratives showed a high integration of narrative, as well as non-narrative clauses.

This showed that the narratives by younger children were restricted to following the story structure. They offered very little departure from the story line. Adults, on the other hand, were able to transition easily between narrative and non-narrative acts. With both languages, we saw that the 9-10 year old children produced higher instances of non-narrative clauses than the younger children, yet less than the adults. This showed that the older children were on their way to transitioning to the pragmatic competency as displayed by the adults, but they have not yet mastered this discursive ability. The results were very similar to the results found in narrative studies conducted by Kunene Nicolas (2015) and Colletta et al (2014).

Kunene Nicolas' (2015) study on isiZulu narratives indicated that that by the age of 9, the child has not yet developed the ability to organise discourse on various pragmatic levels. In comparing 4 age groups (5-6 years, 9-10 years, 11-12 years, and adults), she found that the increase in non-narrative pragmatic acts increased with age. Her study revealed that the 5-6 year olds produced 94.2% narrative, the 9-10 year olds 92.4%, the 11-12 year olds 87.4%, and the adults 82.8% narrative. These results were significantly similar to the results obtained from the current study's sample group. It is evident that, irrespective of the vast difference in development between the ages of 5 and 12, children by the age of 12 have still not yet grasped same level of discursive complexity as shown by the adults.

It is evident in the current research, and supported by Kunene Nicolas (2015), that young children produce narratives that are primarily limited to the narrative level. These pragmatic abilities develop throughout childhood towards adulthood. Colletta et al(2014) found that adults not only showed a greater pragmatic diversity, but they also showed an ease with which they shift through the various pragmatic acts.

In the study, we observed that pragmatic development established a parallel trend across both languages. This would suggest that the complexity of narratives to include additional non-narrative acts as part of the structure is a universal development that takes place irrespective of linguistic influence. This is supported by a comparison of isiZulu and French narratives collected by Colletta et al (2018). Although the French narratives produced a greater variation of pragmatic acts, there was a constant development in both languages where the adults produced significantly more non-narrative clauses than the children, 5 and 10 year olds. Thus, we have seen once again that irrespective of language, pragmatic complexity develops steadily through age.

We can conclude that the development of the underlying pragmatic structure of a narrative is not influenced by language typology and does, in fact, develop similarly in all languages. Additionally, we have noticed in this study that growth in pragmatic complexity can be observed in both a macro and micro-structure. This growth in pragmatic complexity can be observed through the use of micro-linguistic strategies, such as various discourse coherence cues.

5.1.1.2. Micro-Coherence: Discourse Structure Markers and Enunciative Markers

As mentioned before, the micro-structure observes how relationships between clauses, or components, are explicitly marked using a variety of linguistic strategies. Various micro-linguistic strategies were used to guide the listener in making sense of the narrative and the non-narrative clauses. The complexity of these micro-linguistic strategies became increasingly complex with age.

Various researchers have conducted extensive studies on which linguistic strategies are used to express pragmatic information that assists in structuring discourse (Cassel, 1988; Fraser, 1999; Schiffron, 2008; Norrick, 2001; Zarei, 2012). The above mentioned theorists agree that it is near impossible to limit the analyses of discourse markers to simply conducting an analysis of syntax as discourse markers are not restricted to a particular word class. Various researches, such as Colletta et al (2009), suggested observing discourse markers based on the function they perform in language and, as mentioned, the study that was conducted used the criteria established by Colletta et al (2009) to identify discourse markers in the narrative. In this study, these various discourse markers are referred to as discourse coherence cues. We

found in this study that there were two types of discourse coherence cues that were used particularly to assist listeners in making sense of the various components of macro-structure.

Certain discourse coherence cues assisted the listener in following the structure of the narrative. These discourse coherence cues, referred to as discourse structure markers, guided the listener along the actual structure of the narrative. Alternatively, enunciative markers assisted the listener in discerning narrative clauses from non-narrative clauses. Thus, the discourse structure markers assisted the listener with organising information, whereas the enunciative markers assisted the listener with understanding the pragmatic value of the information.

In the current study, we found that both languages used various forms of discourse structure markers in order to assist the listener to organise the information presented in the narrative. For example, they signalled the start of the narrative, and offered cues to help the listener figure out where certain narrative clauses fit into the overall structure of the narrative. We have identified that discourse markers were used to structure discourse through introducing and concluding the narrative. Instances of turn-taking were also observed. These findings are supported in other research which will be discussed.

The study observed that the use of discourse structure markers increased considerably with age for both languages. As mentioned in the previous chapter, we saw that the introduction clauses of the narratives increased in frequency and complexity for both languages. This reflects that the organisational ability increases from childhood to adulthood.

Not only do discourse markers assist in structuring the information of a narrative, but they also perform a pragmatic function. Zarei (2012) explained that discourse markers assisted in co-ordinating speech turns. She observed that change of speech turns were often introduced with discourse markers ‘so’. This was also observed in the current research where adults often introduced the narrative by opening the speech turn with *so*. We observed that for both languages, this use of turn-taking markers were predominantly used by adults and very rarely used by the younger age groups. This indicates that pragmatic and discursive ability of turn-taking is not yet verbally marked by the age of 9.

Where discourse structure markers are more concerned with the organisation of data and the pragmatic-discursive ability of turn-taking, enunciative markers are utilised to mark the

transition between various pragmatic acts. Polyani (1982) explains that a narrative is a plot line marked by one event that transitions into another throughout a time-line. Often, these transitions are interrupted and information not relevant to the plot line is included. These disturbances to the plot line render a narrative incoherent. A coherent narrative will explicitly mark where the narrator departs from the plot line, and where they return to the plot line. In the research conducted, we found that enunciative markers were used to indicate the transitions between information that contributed to the plot line, and information that departed from the plot line. In other words, enunciative markers guided the listener through transitioning between various pragmatic acts.

Fraser (1998) and Zarei (2012) confirm this analysis. In their respective studies, they observed that specific discourse coherence markers were used to signal transitions between pragmatic acts. They identified that discourse coherence markers were used to signal pragmatic acts that served the function of providing an explanation, elaboration, contrast, comparison, summary, commentary, or clarification (Fraser, 1998, 1999; Ranger, 2015). Essentially, these markers were used to communicate the break and return of speech flow, or in the case of a narrative, the departure and return to the plot (Fraser, 1999; Zarei, 2012).

The current research found examples of pragmatic acts introduced by enunciative markers that indicated cognitive state, such as 'I think that', 'umang khumbula kahlehle' (if I remember correctly) and clarification, such as 'kushukuthi' (it means that). Additionally, instances of self-repair were also explicitly marked: 'oh' or 'I mean that…' Amongst the English adults, there were numerous examples of hedging: 'sort of' or 'kind of'. Ranger (2012) conducted a study on English discourse markers and found that these types of markers are also used extensively in conversation in English (Ranger, 2012). Additionally, both languages also used tag questions such as 'isn't it?', 'uyabo?' (you see?).

Using discourse coherence markers is a cognitive demanding task that draws on advanced pragmatic abilities. Discourse markers essentially refer to the meta-linguistic nature of language (Ranger, 2015). This could explain why discourse markers are used predominantly by the adults (of both languages). Although the older children showed limited instances of these discourse structure markers, enunciative markers were used exclusively by adults. This indicates that the use of discourse structure and enunciative markers is a pragmatically challenging task that is only fully developed by adulthood.

Although we observed that the development of discourse structure markers and enunciative markers showed the same trend in both languages, we did note that there were differences between the use of enunciative markers in English and isiZulu. These differences could be attributed to cultural differences inherent in the speakers of both languages.

With the English participants, we noted that the enunciative markers were used primarily to ensure the accurate communication of correct information. Self-repair markers, tag questions, and clarification markers were used in order to confirm correct information. For example, markers such as 'isn't it?' or 'I think it was', were used to confirm that both the speaker and listener agree upon the information.

However, in the isiZulu narratives, a great amount of enunciative markers were used to establish an interactive relationship between the narrator and the listeners. Enunciative markers such as tag questions — *'right?', 'uyabo?'*(you see?) — were used in a way not to confirm or clarify information, but rather to engage the listener interactively. The markers used by the isiZulu speakers directly addressed the person that they were speaking to. This inadvertently drew the listener into the narrative. None of the enunciative markers used by English speakers in this study directly referenced the listeners. One could argue that the use of tag-questions implied that the speaker wanted to draw the listener into the discursive setting by offering a change to respond. However, although there was an implication that the listener was given the opportunity to respond, the listener was not directly referenced in the English enunciative markers. The narrator did not use any linguistic means to explicitly reference the speaker. This act of referencing the listeners in the discourse was only done by the isiZulu speakers.

In addition, in order to explicitly engage the speaker, various emotive expressions were markedly present in the isiZulu data. These were in the forms of interjections, such as 'haibo!' These markers were not observed in the English narratives. Poulos and Msimang (1990) noted that various linguistic strategies such as interjections are used in isiZulu purely for the function of adding emotive colour to narratives.

Cultural differences were also observed by other researchers. In the study conducted by Colletta et al (2018), the authors found that when comparing isiZulu and French narratives, the isiZulu adult participants produced longer narratives than the French adults. They

attributed that cultural influences accounted for this difference. The current research confirms that isiZulu narratives were considerably longer than the English narratives. In the isiZulu culture, story-telling is part of an oral cultural tradition that involves performance. These stories are often enriched with character and event depictions, which one would not find as readily in English narratives.

The use of isiZulu is framed by a rich oral tradition. IsiZulu contains a rich oratory repertoire in the form of wisdom lore (like sayings, proverbs, and riddles), poetry, praise song, and folktales (Groenewald, 2003). The isiZulu language structure is sensitive to expressing this strong history of oral narrative (Poulos & Msimang, 1998). In the study conducted, we have seen that various discourse markers are used specifically for the narrative, for example, the use of 'ke', and the morphological expression of 'ma-'. These markers are restricted to narrative settings and they are used to place specific weight on selected information. In summary, we can regard that narratives become increasingly complex with age. This increased complexity of structure is matched by an increased complexity in coherence. The study has found that the underlying pragmatic structure of a narrative becomes increasingly complex and diverse with age. This allows for a much more pragmatically rich narrative to be produced by adults than younger children. We have seen that 9 year olds are well on their way to producing pragmatically diverse narratives, yet they have not yet gained the same level of mastery that was observed among the adults.

Although we have observed various differences that could be attributed to language typology or cultural differences, we have seen that both populations display similar developmental trends. This study showed that discourse coherence strategies became increasingly complex throughout the age groups.

5.1.2 Development of Discourse Coherence Complexity

As stated before, coherence is created when individual elements are related to each other, in addition to being integrated with the overall narrative structure (Thorndyke, 1977). Narrative theorists have agreed that coherence is dependent on the ability of the narrator to establish temporal and causal links between various events (Polyani, 1982; Trabasso et al, 1984; Trabasso & Rodkin, 1994). Both temporal and causal links assist the listener in organising and integrating information. Temporal relationships relate the sequence in which events unfold (Polyani, 1982). Logical links, on the other hand, allow events to be organised in hierarchically

structured networks (Trabasso et al, 1984). These causal relationships assist in integrating individual events to the overall thematic structure. In the study, we observed that both languages presented similar results in the development of discourse coherence cues used to communicate temporal and causal relationships. Colletta et al (2009) identified various chronological discourse coherence markers that communicated temporal information, as well as various logical discourse coherence markers that served to establish causal relationships between clauses.

5.1.2.1 Chronological Discourse Coherence Markers

In the study, we marked that, with both languages, the complexity of chronological markers increased with age. The use of the amount of chronological markers decreased with age; however, the complexity of the nature of the markers increased with age.

With the younger age groups, we saw an abundant use of simple chronological markers. For English, we saw an extensive use of 'and then', and in isiZulu we saw an extensive use of 'yase' and its morphological variants. With age, increasingly complex chronological markers were added to the repertoire. Regarding English, we saw an increased use of complex syntax, such as clauses introduced by conjunctions or conjunctive adverbs, such as 'while', or 'before that'. With isiZulu, we also saw an increased use of complex constructions, such as the use of conjunctions.

Various other researchers have analysed the use of these chronological markers in narratives. Berman and Slobin (1994) observed the use of 'and' and 'and then' markers amongst children. They observed that different ages associated different functions to these discourse markers. They found 3-4 year old children use 'and' as discourse fillers. The word 'and' was not used to co-join clauses, instead it was just used as a discourse filler while the child thought of the next clauses (Berman & Slobin, 1994). The use of the word 'and' also performed a similar function as uttering 'um' when trying to find a word. Thus 'and' did not perform the function of relating clauses. The 5-9 year old children use 'and then' markers to chain one clause to another in a narrative sequence. The use of 'and then' simply indicated that events were part of a sequence of events that unfolded. However, these markers did not show how the clauses related to each other. They simply showed that the individual clause was part of a sequence of events. Berman and Slobin (1994) found that only the adults were able to explicitly mark how clauses related to other clauses. They identified that adults used a variety of various

markers, such as ‘finally’ or ‘eventually’, which showed how various clauses fitted in relation to each other. They explain that the use of more complex markers assisted the adults in embedding events within each other. This allowed for a more hierarchical organisation of events occurring on a temporal plane.

Berman and Slobin (1994) also found that younger children presented with basic chronological markers (such as ‘and then’), whereas mature narratives presented more complex chronological markers. They explain that chronological markers transition from “sequential chaining” to “mature thematic chunking” (Berman & Slobin, 1994, pp. 177, 180). In other words, irrespective of language, younger children use chronological markers to list events, whereas adults use chronological markers to integrate events.

This notion that ‘and then’ performs different functions at different ages is supported by Diessel (2004). He presented a large corpus of research whereby he observed the acquisition of complex syntax. In addition to observing the patterns of acquisition, he also observed what particular function syntactic structures performed at specific ages. Diessel (2004) is in agreement with the above mentioned narrative theorists that young children are unable to integrate information, instead they use syntactic constructs to simply list information that seem to co-occur. Thus, ‘and then’ expressions do not function as co-joining conjunctions for younger ages.

Diessel (2004) explains that co-ordinating clauses introduced by the word ‘and’ was one of the first complex clauses to be acquired. However, Diessel (2004) argues that a complex clause should contain more than one proposition. Upon observing the early-child utterances of ‘and’ clauses, Diessel realised that most of these clauses were intonationally unbound with the preceding clause. He argues that this suggests cognitively and the child does not yet consider there to be a link between the two clauses. The intonational differences indicate that the two clauses are independent units and that the co-ordinating conjunction simply functions as conversational filler. Additionally, Diessel argued that very few of the clauses contained multiple propositions that were related to each other through the co-ordinating conjunction. Instead, these conjoined clauses contained grammatically independent information that was in no relation to each other.

Diessel (2004) argues that most of the ‘and’ expressions used by young children (1-5 years) have a pragmatic function rather than a semantic function for relating propositions. He argues that ‘and’ purely links various propositions to a discursive setting, but they do not link events to each other. In other words, in a narrative, the use of ‘and’ will purely indicate that there is more information that will unfold in the story, but it does not express how the information is linked to each other. These results support the notion that early ‘and then’ expressions are purely used for grammatical purposes. They purely function to mark the continuation of events across a temporal setting.

Thus, we can see from the above theorists that the early emergence of the word ‘and’, it does not function as a conjunction that co-joins clauses. Instead it serves the pragmatic purpose of acting as discourse fillers. Amongst the older children it served a very linear function of chaining clauses together by value that they belong to the same sequence of events. The word ‘and’ is not used to mark the relationships between clauses. Only the adults showed instances of using ‘and’ as a conjunction in the sense that it co-joined clauses in a way that communicated relational ties between the clauses.

I would argue that ‘yase’ expressions fulfil the same function as ‘and then’ expressions in English. For both languages, these expressions purely serve the pragmatic purpose of using grammatical means to link events together within the narrative context. As age progresses, the narratives indicate the use of more complex chronological markers (such as conjunctions in isiZulu, or subordinating conjunctions, complements, and relative pronouns in English). These complex chronological markers make it possible to embed events within one another. It also makes it possible to express the thematic and causal relationships that exist between the events.

These conclusions are similar to those presented in the narrative profiles conducted by Berman and Slobin (1994). In these narrative profiles, Berman and Slobin (1994) argue that the narratives of young children (5-6 year olds) present narratives where events are linked in temporal chains. The narratives of older children indicate the start of thematic chunking. We see this thematic chunking emerge more and more as children grow with age. It is not surprising that we also observe the increase in logical discourse markers which indicate these relationships.

5.1.2.2 Logical Discourse Coherence Markers

Not only does coherence rely on the ability to express the temporal relationship between events, but it also depends on the ability to indicate the causal relationships between events. Trabasso et al (1984) have shown how cognitively events are not organised in a linear structure. Instead, events are organised according to a hierarchical network. This hierarchical network links events through causal relationships. Trabasso et al (1984) has shown that the ability to identify causal relationships not only assists in structuring the narrative, but it also serves to assist the recall of the narrative. Colletta et al (2009) states that logical discourse coherence markers are any type of discourse coherence marker that contributes to understanding the logical (or causal) relationship between events. These logical (or causal) relationships indicate the consequences, or outcome, of certain events.

In the study, we have found that with both languages, the use of logical markers was present at a young age, although it increased steadily into adulthood. Additionally, the study found that both languages made use of adverbs and conjunctions to communicate logical relationships between clauses. Both conjunctions and adverbs were used in a manner which allowed various clauses to be embedded within each other.

Diessel (2004) explains that this form of embedment is made possible through complex syntax. According to Diessel (2004), it allows one to express hierarchical relations between events. Complex sentences allows for propositions to be subordinated and embedded within each other. This act of subordination relates events to each other in a hierarchical manner (Diessel, 2004). For example, through using complex connectives, one is not only able to explain how one event is linked chronologically to adjacent events, but one is also able to position this event in relation to the overall temporal structure of the narratives. This hierarchical arrangement of events allows for relationships of causality to be established.

Through the use of complex sentences, the narrator is able to not only sequence events, but to communicate the relationship between events. Thus, narratives progress from sequentially related events to hierarchically integrated events.

Although being able to hierarchically structure events in a complex manner is a step closer to coherence, it does not fulfil the sufficient criteria for coherence.

It is important, at this point, to revisit the definition of coherence and to make a distinction between coherence and cohesion. Halliday and Hasan (1976) indicate that cohesion refers to the links that are established between segments. Van Dijk (1985) explains that coherence is the ability to connect individual units of meaning, both to other individual units of meaning, and to an overall thematic structure. Thus, for a narrative to be coherent, there must be explicit links between events *and* the overall thematic structure. One can see that there is a difference between a *cohesive* narrative and a *coherent* narrative. A cohesive narrative might have only established links between events, but a coherent narrative will have explicit links between individual events and the overall thematic structure.

Theorists (Rodkin & Trabasso, 1994) have explained that the thematic structure of the narrative is communicated through the causal relations that exist between individual events. Causal relations allow for a hierarchical, integrated network, of connectivity to exist between individual events.

Wilkinson et al (1993) and various other researchers like Berman and Slobin (1994) have shown that the grammatical temporal-sequential connectives used by younger narrators do not communicate any causal relations between events. The young children's narratives were often characterised by isolated events that were chained together through connectives. By implication, they indicated very little integration into the overall thematic structure of the narrative. As a result, one can argue that the younger children were able to produce a cohesive narrative, but not a coherence narrative. However, with age, we could see the progression from cohesive narratives to coherent narratives.

One way in which we observed this transition was through the increased development of logical markers, which in both English and isiZulu was indicative of complex syntax. Diessel (2004) has explained how syntax develops from simple sentences, expressing singular propositions, to using complex structures that allows for the embedment of various propositions within each other. Through the use of complex connectives, such as conjunctions, one is able to relate clauses to each other in a manner that emphasises the relationship between propositions. This ability allows for causal relations to be established. Through stating causal relationships, one is simultaneously establishing a hierarchical link between individual units of information, and integrating these units of information to the overall thematic structure of the narrative.

5.1.2.3 Non-verbal Discourse Coherence Development

We have observed that discourse coherence develops in complexity not only in the verbal modality, but also in the non-verbal modality.

Kendon (2004) and McNeil (1992) have shown that language is expressed in a mono-modality. In addition to being communicative in nature, gesture also assists language comprehension and production, and is also indicative of various mental processes responsible for language processing (Krauss, Goldin-Meadow & Alibali, 2013).

This current study revealed that there were observable relationships between gesture and language. This current study focused specifically on the use of discursive gesture, in other words, gesture that serves the communicative purpose of conveying coherence. As mentioned in *Chapter 2: Literature Review*, discursive gesture serves the pragmatic function of structuring the narrative. Discursive gestures were used, amongst other functions, to mark the transition from one episode to another, or emphasises certain words.

In the study, we found that both languages displayed similar trends when comparing the relationship of gesture and verbal discourse coherence cues. With both languages, we noticed that the young children produced a high amount of discourse coherence cues, whereas they produced a low amount of discursive gestures. The older children produced the least amount of discourse coherence cues out of the three ages, yet they produced more discursive gesture than the younger children. The adults produced a high amount of discursive gesture and discourse coherence cues. This showed that the children produced a mismatch between gesture and speech. The younger children, although they were able to use discourse coherence cues, did not produce a high amount of discursive gesture. The older children showed a decline in the amount of verbal discourse coherence cues produced; however, they showed an increase in the use of discursive gestures. Thus, although they did not verbally express as much coherence cues, the non-verbal modality communicated discourse coherence. The adults were able to communicate discourse coherence through both the verbal and non-verbal modality. Colletta et al (2018) also observed the relationship between discourse coherence cues and discursive gesture in oral narratives produced by children (5-6 year olds), and adults.

Colletta et al (2018) compared the use of discursive gesture to the use of chronological markers. They found that, in the case of French, Italian, and isiZulu, the amount of chronological markers decreased with age. However, the use of discursive gesture increased from the children to the adults. This research study is different than the study by Colletta et al (2018) in the sense that they focused on selected discourse coherence markers. The current study consolidated a variety of discourse coherence markers. However, when looking at how discursive gesture compared to the development of chronological markers, we saw identical results.

If we had to only observe the use of chronological markers, we would see in the conducted study that, irrespective of age, the use of chronological markers decreases steadily through age. Thus, both studies show that the use of chronological makers decreases with age, whereas the use of discursive gesture, increases with age.

We can see from these results that there is a relationship between the development of verbal and non-verbal coherence strategies. We found that for both languages, the use of discourse coherence cues indicated a U-shape development. This means that in these languages, the older children, overall, produced the least amount of discourse coherence cues. However, with both languages, the use of discursive gestures increased exponentially in a linear fashion from childhood to adulthood. This showed that the older children (age 9-10 years) had the highest rate of discursive gesture produced per discourse coherent cue produced. This indicates that from 9 there was an increased reliance on expressing discursive coherent information in a non-verbal manner. Amongst the younger children, clauses were linked to each other through using verbal markers (such as ‘and then’ or ‘yase’). The 9 year olds were more prone to indicate links between clauses, or structuring information through the use of gesture. For example, often gesture would be used to indicate the transition between episodes. Beating gestures (rapid up and down movement of the hand or tapping of the fingers) were used to highlight information or to indicate the transition between pragmatic acts. The adults were prone to use both gesture and verbal cues to indicate these links and transitions.

Goldin-Meadow and Alibali (2013) explain that often changes in gesture indicate both changes in language and changes in cognitive processing abilities. They base this statement on their observations of reviews of studies which observed gesture production in problem-

solving tasks. When participants were presented with a specific problem and were asked to explain how they solved it. They found that participants who did not understand the correct solution presented explanations whereby the information presented through gesture was identical to the information presented in the accompanying speech. However, participants who were successful at the task presented explanations where they expressed certain information in the gesture, and other information in the accompanying speech. Thus, there was a mismatch between the information presented in the gesture and in the speech. Goldin-Meadow and Alibali (2013) argue that a mismatch of information expressed in the verbal and gestural modalities indicate that the person is ready for a transition of knowledge change.

Although the studies reviewed by Goldin-Meadow and Alibali (2013) are quite different from the current study, they contribute a valid argument that changes in the relationship between gesture and language as they are often indicative of a change in the underlying cognitive processes. We can safely assume that the higher rate of discursive gesture produced by discourse coherence cues amongst the 9 year olds is indicative of some cognitive or mental transition that takes place at that age. Furthermore, this change was observed in both languages, which further gives credence to the assumption that this might reflect a cognitive transition. However, more research will be required before definite statements can be made about this claim.

5.1.2.4. Developmental Profiles of Discourse Coherence

The results found in this current study are consistent with the developmental profiles of narratives presented in other research. Looking at narrative production throughout development, we can observe that narratives become increasingly thematically motivated. Reilly et al (2004) established that children as young as 3 years old are able to produce narratives. However, when analysing the macro-structure of the narrative, it becomes evident that children have very little knowledge of the overall thematic structure of the narrative. Although they could identify that certain events happened, they could not identify the reason why these events happened, or how these events might lead to the resolution of the story (Trabasso & Rodkin, 1994). As a result, their descriptions of events were not thematically structured and were unrelated to a central theme.

Berman & Slobin (1994) observed that children included events in a narrative not based on the thematically relevance, but rather based on how saliently they remembered the events

expressed in the stimulus. In terms of pragmatic ability, 3 year olds failed to display enough concentration and attention in order to produce an extended speech turn to produce a narrative. Instead, they constantly required confirmatory affirmations and prompts (Berman & Slobin, 1994).

Berman and Slobin (1994) have found that by the age of 5 years old, the macro-structure of a narrative reflects that narratives become increasingly globally structured and thematically motivated. Thus, narratives become more coherent at the macro-level because there is evidence of thematic integration. This was also evident in the current study because the youngest age group (5-6 year olds) were able to utilise logical discourse coherence markers indicative of causal relations and thematic integration. Despite this, we found that overall organisation of the story grammar is still very narrowly confined to a local level. This was also found by Berman and Slobin (1994).

Berman and Slobin (1994) explained that, at this age, children are able to differentiate between foreground and background information, yet they are unable to thematically integrate events. In other words, the younger children were able to differentiate between information that was part of the setting and information that was relevant to the plot. However, they were not able to say how individual events related to the purpose of the characters in achieving a specific outcome. The 5 year olds still presented sentence-by-sentence accounts of events without showing causal connections to the overall hierarchical theme of the story (Berman & Slobin, 1994). Kunene Nicolas (2015) found that at this age, children still produce long narratives that are not yet synthesised.

Pragmatically, we have seen in the current study that children at this age present a very low-level of non-narrative pragmatic acts. Similar studies conducted by Colletta et al (2014; 2018) and Kunene Nicolas (2015) found very similar results. They found that 5-6 year olds produced narratives dominated by narrative pragmatic acts and rarely departed from the story line. Bliss et al (1989) assert that initially young children provide narratives that offer only sufficient information for the listener to follow or infer the story line. As children get older, they add more embellishments, optional details, and personal comments to the story (Bliss et al, 1989).

Carrol (2008) explains that it is only during the late language acquisition phase that children develop meta-linguistic knowledge as they become increasingly aware of the language they

are using. This meta-linguistic knowledge is matched with pragmatic development as children grow in their ability as conversationalists (Carroll, 2008). This explains why older children were able to offer more forms of non-narrative pragmatic acts and pragmatic discourse coherence markers (such as enunciative markers) because they were increasingly aware of the function of language. They became increasingly aware that not all linguistic expressions relate to the narrative structure, and that the listener needs cues to guide their comprehension of the various expressions. Although the older children demonstrated a greater pragmatic proficiency, it was still not comparable to those of the adults.

We saw a lack of information expressing coherence in the non-verbal modality. Very little discursive gesture was produced. This indicates that although discourse coherence cues were presented through the verbal modality, this was not reflected through the non-verbal modality. The design of the study does not allow for a thorough observation of what the lack of discursive gestures implies for language comprehension and production at this stage.

As children grow in their faculty of identifying causal and temporal relationship between events, we can see that the thematic and pragmatic complexity develops throughout the later years of childhood (age 9-10). This can be seen in both the current study and in other research. Slobin and Berman (1994) found that children of this age were able to make explicit reference to the causal relationships between plot components, identify attempts with purpose and failed outcomes, and hierarchically structure events on a temporal plane. Children at this age were able to use planning knowledge in order to select specific information and intentionally structure the information into episodes.

This is in contrast to the younger children who simply listed information based on their ability to recall information. The 9 year olds were able to produce episodes that are causally and temporally related, as well as organised hierarchically into the overall plan (Trabasso & Rodkin, 1994). We can see that at this age, individual events are both related to each other through temporal links, and are integrated into the overall macro-structure through causal networks. They use causal relationships as a manner of organising background information and foreground information. Additionally, they are able to plot events on a temporal-sequential chain which allows them to embed certain events into certain situations (Berman & Slobin, 2004).

We can see from the current study that a greater awareness of discourse coherence is reflected in the non-verbal modality. The 9 year olds reflected the highest rate of discursive gesture produced per clause. Although the study does not allow us to interpret these findings in greater depth, these findings are aligned with literature which suggests that at age 9 there is a greater awareness of discourse coherence than at younger ages. Around age 9 seems to be a transitional phase between immature and mature adults. Often, readiness of transition is evident in the relationship between gesture and speech. The high rate of discourse coherence information expressed in the non-verbal modality could potentially be reflective of a readiness to transition to a greater cognitive knowledge that underpins more mature discourse coherence strategies, as presented in narratives produced by adults.

The younger and older children's narrative was placed in comparison to mature narratives produced by the adults. Adults are able to present mature accounts of events. These accounts are considered mature because they show evidence of narratives being hierarchically organised, thematically motivated, and contain explicit reference to all plot components. We saw that the adults produced accounts which not only contained relevant information, but the listener was guided through the use of various discourse structure markers as to why information was relevant, and how it fitted into the overall narrative structure. Additionally, various events are embedded in each other. The adults were successful at using complex chronological and logical discourse coherence markers to embed events within each other. This served to relate events to each other temporally, as well as to integrate events into the overall thematic structure based on causal relationships. As mentioned by other theorists, accounts of events indicated a rich diversity of pragmatic acts in the form of elaborated background circumstances, commentary, and personal evaluation of the narrative (Berman & Slobin, 1994; Colletta et al, 2014, 2018; Kunene Nicolas, 2015). We could also see a greater repertoire of non-verbal communication. For both languages, the adults produced the most amount of gesture. Discursive information presented in the verbal modality was also expressed in the non-verbal modality.

5.2. Typological Differences in Coherence Strategies

We have seen that there were many strategies of discourse coherence used where both languages performed similarly. These results were in alignment with results found in other research. The aim of this study was to not only observe the development of discourse

coherence strategies in the two typologically dissimilar languages, but it also aimed to observe any influences of language specific typological constraints exerted on the languages under observation. We observed typological differences mainly in the use of reference markers, and spatial discourse coherence markers.

5.2.1. Spatial Discourse Coherence Markers

Spatial coherence is important in narratives. One of the major elements in a narrative is the setting (Thorndyke, 1985). It is the task of the narrator to provide sufficient spatial information so that the listener can orientate characters in a narrative setting. The narrator is tasked with the responsibility to communicate how these various characters transition through space throughout the narrative. The narrator has to inform the listener how settings change, or how characters move about in the spatial setting.

We have found that across all ages and languages the narrators were able to successfully communicate the transition of characters in space. We did not find enough evidence to suggest that there was a developmental trend. This research refrains from offering conclusive commentary on the development of spatial coherence strategies in English, and isiZulu. However, regarding both languages, we saw that the adults presented a reasonably high level of spatial coherence. Although spatial reference is an important aspect of coherence, spatial relations have also been used as a valuable indicator of language specific constraints in language acquisition.

Berman and Slobin (1994) observed that with English, the richer forms of communicating spatial information involved a single clause that communicated both manner (through the verbs stem) and the source and goal of movement (through locative particles). Berman and Slobin (1994) observed that these markings were present at a young age (3-4), yet they developed in variety and precision throughout age. Although the younger children included spatial information in their narratives, they rarely conflated the information into one clause. As they developed with age, spatial information was conflated into one clause. We see that in English, mature narratives are marked by the ability to conflate information in minimal expressions.

Hickmann (2001) explains that linguistic devices must also be taken into account as a factor that shapes the linguistic expression of spatial relations. Talmy (2000) has shown that

expressing spatial relation depends on various semantic aspects. For example: spatial relations involves relating one object (figure) in relation to other objects (ground), in addition to how motion is packaged (satellite vs verb-framed languages). Language specific constraints influence how spatial relations are encoded and expressed.

In the current research, we found that the expression of spatial relations indicated the most typological and cross-linguistic differences out of any of the other languages. Language specific constraints can be observed through how language packages motion, and how language encodes spatial relations (Hickmann, 2001; Talmy, 2000). We know from previous research that English is a satellite framed language, and isiZulu is a verb framed language (Kunene Nicolas, 2015; Talmy, 1985, 2000). As a result, English necessitates the use of satellites (such as adverbs or prepositions) to coherently express the transition of objects in space.

Additionally, the results indicated that English and isiZulu differed in terms of how they relate the location of objects in space. Hickmann (2001) illustrated that English makes use of grammatical devices such as prepositions, such as 'to', 'on' etc., to indicate the location of objects in space. The current research identified that prepositional phrases, 'in the nest', or adverb, 'falling down', were used to indicate the location of objects. Once again, this correlates with the satellite-framed typology. Hickmann (2001) suggests that often spatial information can be located in an additional clause. The research confirmed this, since complex syntax (mostly relative pronouns) was used to locate the location of the referent in space. The research revealed linguistic specific differences between the two target languages. In English, most spatial information was expressed in grammatical structures removed from the verb or noun. In isiZulu, spatial information was expressed in grammatical structures attached to the verb. Morphological markings (such as agreement, locatives, or copulatives) all indicated spatial information. Thus, in English, spatial coherence was expressed grammatically through separate structures, whereas in isiZulu, grammatical markings were attached to the target word.

The study of spatial reference is a large field that necessitates the incorporation of factors such as aspect, ground, figure, motion, manner, path, trajectory, etc. (Berman & Slobin, 1994; Hickmann, 2001; Talmy, 2000). The semantic expression of motion is very much influenced by the typological constraints of a narrative. Unfortunately, the scope and design of this

research cannot do justice in addressing this complex study. However, we can make a few surface-level observations regarding the topic of space and language.

Firstly, the ability to express the location and transition of objects in space is a fundamental requirement of coherence. The results from the conducted study indicated that children at a young age (for both languages) are able to use the linguistic packaging devices present in their language to express these locations and transitions of objects in space. This means that, by the age of 5, children have already mastered the cognitive principle implicit in communicating motion. Additionally, we see that the two languages offered different developmental trends for the use of spatial connectives. In English, the younger children and adults performed similarly to each other. For isiZulu, the younger and older children performed similarly to each other (both being outperformed by the adults). With both languages, the older children (albeit incrementally less) produced the least amount of spatial connectives in each language.

All this current study is at liberty to say is that children as young as 5 make use of the same linguistic resources as adults do to communicate spatial coherence in a narrative. Additionally, spatial coherence strategies indicate strong typological language specific influences. Further studies (addressing more factors related to space and language) will be required to make adequate observations about typological differences in expressing space.

5.2.2. Reference Strategies

The study also observed that typological differences were evident in the use of referential coherence strategies.

One of the most important story components is ‘characters’. In essence, a narrative explains the unfolding actions of a character through a period of time. Thus, the ability to identify the characters in a story is intrinsic to coherence. Incoherence occurs when there is insufficient information made available to understand which character is the topic of discussion (Gordon & Braun, 1985). Reference involves identifying the character under discussion. A coherent narrative involves when reference is used to identify characters, and to communicate when new characters are being spoken about (Gordon & Braun, 1985). This research observed that both languages employed various linguistic strategies to communicate reference. The research indicated that there was a difference in the development of preferred reference

strategies between the two languages. The researcher argues that these developmental differences are the result of language specific constraints.

For the English narratives, we saw that there was an age related influence in the preference for reference markers. There was a steady decrease in the use of pronouns and a steady increase in the use of lexical anaphora. We did not see this age related increase in the preference for lexical anaphora with isiZulu. Typological differences can account for these results.

In the current study, we saw that the younger English children showed the highest preference for the use of pronominal reference markers. Cassel (1988) explains that children younger than the age of 10 cannot maintain referents in the same cohesive manner as what adults do. Young children's use of pronouns is used exophorically. In other words, children assume that there is a shared reference between them and the listener and, as a result, they assume that the listener would understand which referent they are referring to without having to make explicit reference (Cassel, 1988).

Orsolini et al (1996) explain that the introduction of referents introduces a common information-sharing setting between the listener and speaker. When producing a narrative, referents have to be re-introduced and maintained in order that the listener can disambiguate reference and assign reference to a particular entity already mentioned previously in discourse. This ability to reintroduce reference is a complex cognitive and pragmatic task. Speakers must be able to monitor the discourse and use pragmatic knowledge to judge which referents are easily accessible to the listeners, and which referents might become ambiguous to the listener (Orsolini et al, 1996).

Orsolini et al (1996) explains that salient linguistic strategies (such as the use of demonstrative pronouns) are used when initially introducing a referent. This is to create a common knowledge with the listener. However, when maintaining a referent, less salient linguistic strategies are required. The narrator assumes that the listener is keeping the previously mentioned referent in mind, and that the listener can use sufficient contextual clues to understand which referent is being referred to. However, re-introducing the referent once again requires a more salient linguistic strategy in order to disambiguate the focus of the referent.

Bearing this in mind, we can see how typological structures of the language can influence the reference strategy selected. In English, reference is contained only in the grammatical subject/object of the sentence. Subjects can be expressed through grammatical means, such as the use of pronouns, or through lexical/semantic means. Lexical reference is a salient means of reference because it provides semantic information about the referent. Pronouns, on the other hand, are a less salient means of reference. English pronouns provide intrinsically very little information. Pronouns are dependent on the context for meaning. We see that the younger children have not yet mastered the cognitive and pragmatic principles required for coherently maintaining reference.

Young children struggle to monitor the discourse and evaluate what the listener knows based on the information that they have presented to the listener. They might be unaware that their exophoric use of pronouns can make ambiguous reference to the referents. Adults, on the other hand, have already mastered these pragmatic and cognitive principles. As a result, they are able to monitor discourse and evaluate which reference strategy is more suitable to the situation. For example, they can monitor and evaluate whether they can use a non-salient strategy (such as pronominal reference) to maintain reference, or if they should rather use a more salient strategy (such as a noun phrase) to provide more information in order to re-establish reference.

In the isiZulu participants we saw a steady increase in the rate of reference used overall, but we did not see a specific increase in the preference for favouring lexical anaphora as a reference strategy. One possible reason could lie in the semantic information that is communicated in the linguistic typological structure of isiZulu. In isiZulu, the reference is communicated by the sentence subject. However, unlike English, isiZulu is a pro-drop language. This means that reference can still be communicated without the sentence subject being explicitly stated. The complex agreement morphology marks the verb with information about the subject and the object of the sentence. Furthermore, isiZulu makes use of a noun class system which marks certain features, such as inanimate/human/tense/person/number etc. Thus, the grammatical reference system of agreement communicates a lot more semantic information than the grammatical reference system found in English. As a result, the isiZulu morphological reference system is a lot more salient than the English pronominal

system. The isiZulu morphology provides sufficient disambiguating information that it does not necessitate the use of lexical anaphora as a salient form of reference.

Thus, in both languages we can see that there is an increase in the functionality and coherency of reference. In English, we saw a U-shape development, where the older children used a higher rate of reference than the younger children and the adults. However, upon analysis, we saw that the coherency of reference increased steadily with age as older children and adults use reference in a more salient manner in order to accurately disambiguate the maintenance and re-introduction of referents. Furthermore, with isiZulu, we observed an overall increase in the rate of reference. Therefore, for both languages, we saw an increase in coherence in terms of reference. We can see that although there is a remarkable growth between the ages of 5 and 10, children at the age of 10 have not yet mastered to an adult equivalent relevant cognitive functions, such as monitoring and evaluating discourse, and pragmatic skills.

5.3. Summary and Overview

The study aimed to observe the typological influence on various discourse coherence strategies employed in the narratives of typologically different languages. The study sought to answer this objective by addressing three questions: what type of discourse coherence strategies is employed in an oral narrative; how do these strategies develop over time; and what are the typological constraints on these languages?

The study is in consensus with other literature that coherence refers to how a narrator relates individual elements of information to each other and to the overall thematic network. The study showed that for both languages, there was a development towards a greater thematic and pragmatic diversity in the overall thematic structure of the narrative. Additionally, we saw that both languages became more complex in the verbal and non-verbal strategies they employed to communicate how individual clauses relate to the overall thematic structure. The study also showed that both languages showed a growth in pragmatic, linguistic, and gestural complexity. We saw that irrespective of language, narratives transitioned from being cohesively related to coherently integrated.

The conducted study also aimed to observe whether or not there was a typological influence at play on the development of the various strategies. It identified that the various strategies

are shaped by typological structure. We could see vast differences displayed in the spatial coherence strategies and the reference strategies. Additionally, we marked differences in the narrative length and use of enunciative markers; however, these could be attributed to cultural differences.

5.4. Closing Comments and Future Recommendations

The aim of this current study was to make observations about the typological influences on the development of discourse coherence strategies in oral narratives produced by participants of typologically dissimilar languages. The study was successful in answering the research questions and was able to identify the strategies used by each language to create coherence. It was also able to identify how these strategies developed throughout the age groups. Furthermore, the study was able to identify that there was evidence to suggest that language specific typological constraints influences the development of certain discourse coherence strategies. Through identifying differences and similarities in developmental trends, we were able to make observations about the overall development of coherence within an oral narrative.

5.3.1. Macro- and Micro-Coherence Development

In the research, we have seen a repetitive theme emerge, namely, that coherence is closely related to structure, relations, and pragmatic. We have seen that macro-coherence is defined by the underlying thematic structure of the narrative. At a micro-level, we have seen that individual events are related to each other through logical and temporal links. However, we have observed that micro-coherence and macro-coherence feed and build each other. The underlying structure is shaped according to a hierarchical network of causally related and integrated events. However, coherence cues at the micro-coherence level relate events to one another that express this hierarchical network.

Although all the story components that constitute the macro-structure may be present in a narrative, it is the coherence clues employed at a micro-level that allows the events to be related in a manner that reflects and constructs the macro-structure. In essence, it is the micro-coherence strategies that give flesh to the macro-coherence. Furthermore, we have seen that both macro and micro-coherence is explicitly dependent on the pragmatic abilities of the narrator. At a macro-level, various narrative levels exist. Some pragmatic acts, or

narrative levels communicate information directly related to the narrative; other pragmatic acts, or narrative levels communicate information that assists in either structuring the narrative, or in offering personal/interactive information about the narrative. The art of shifting through these various pragmatic acts reflects pragmatic ability.

Additionally, this pragmatic ability is explicit at the micro-level. Various enunciative connectives mark the transition between the various pragmatic acts. We can see that pragmatic ability informs the selection of information communicated in the narrative. This information forms the macro-structure of the narrative. Micro-coherence cues assists in relating pragmatic information to one another in a manner that reflects and communicates the underlying macro-structure.

5.3.2. Typological Importance

As mentioned in the introduction of this research, one of the motivating factors that stimulated this research is the fact that language, especially narratives, is used as a diagnostic tool for educational and psychological purposes. However, very little research (in relation to the demand) has been made available of the typological nature of Bantu languages. What this research has revealed is that not only are there typological differences between English and isiZulu, but these typological differences could be indicative of different processing mechanisms responsible for the production of linguistic output. This opens an important discussion on not only the reliability and validity of language assessment tools, but also, the importance of understanding the language specific influences on cognition and pragmatics when adapting these tools from one language to another.

This research will comment that language specific constraints could influence our interpretation of development. For example, let us revisit the discussion on the development of reference in English and isiZulu. We saw that in English, there was a developmental increase in using salient linguistic strategies to express reference. This increase in preference for salient strategies reflected cognitive and pragmatic growth. Reference involves cognitive abilities such as monitoring, evaluation, and Theory of Mind (Orsolini, Rossi & Pontecorvo, 1996). Coherent reference depends on the ability to monitor what information is presented, and to evaluate whether or not the listener has sufficient information to identify the correct referent. The researcher argued that the English language constraints make it possible to observe the absence or presence of specific cognitive and pragmatic strategies in reference.

However, the researcher argued that the language specific constraint of isiZulu masks the presence or absence of the same cognitive and pragmatic strategies.

As mentioned before, the reference strategy utilised in isiZulu involves complex morphological agreement which allows for the omission of pronouns without compromising the communication of information. The agreement morphology in isiZulu is a much more salient structure as it packages much more disambiguating referential information as compared to the pronominal reference strategy in isiZulu. The results have shown that even the youngest age group is able to coherently use agreement morphology. This implies that isiZulu children are able to use agreement morphology before they have mastered the pragmatic and cognitive functions such as monitoring, evaluation, or making assumptions about the understanding of listener based on the amount of information the narrator has offered in the narrative. By implication, the researcher argues, that the isiZulu referential agreement is not a good indicator or cognitive and pragmatic ability. It seems that language typology allows for different packaging of semantic information in the two typologically dissimilar languages. Furthermore, the results would suggest that the two reference strategies draw on different cognitive and pragmatic functions across the two languages.

Although more research is required to give credence to this speculation, it is safe to say that typological differences need to be taken into consideration when using language as a diagnostic tool. This current research (both due to the sample size and design), can by no means be used to extrapolate and generalize the typical (or atypical) trends of language development. However, it is successful in showing that there are fundamental typological differences that can be observed in the linguistic structure. This has potential pragmatic, and perhaps cognitive, implications (Colletta et al, 2014; Dhillon, 2010). This research does validate the importance of understanding the influence that the underlying linguistic structures are language specific and these language specific constraints should be understood and taken into consideration. The cognitive and pragmatic faculties that allow for the linguistic packaging of semantic information in one language may be completely different to the cognitive and pragmatic faculties required for the linguistic packaging of the same semantic content in another language.

This research points out how incredibly valuable it is to take into consideration the influence that language typology might have on the results of language assessment tools. For example,

in English, we found that the use of salient and non-salient reference forms beautifully correlated to the development of pragmatic abilities. However, the isiZulu reference structure is salient by default; thus, speakers of isiZulu would use a salient form of reference whether or not they have acquired the underlying pragmatic principles that dictate the use of reference. In other words, in English, coherent reference is dependent on pragmatic principles, and the lack of pragmatic abilities might be evident in the use of reference. However, in isiZulu, coherent reference is already encoded in the language structure, whether or not it is supported by the speaker's pragmatic abilities. It would be interesting to see whether pragmatic vulnerabilities (such as reference) would be evident in the reference strategies of an isiZulu speaker.

In conclusion, this current study was aimed at observing the development of various strategies used to create discourse coherence in an oral narrative in order to observe if there were typological implications at play in the development of these strategies. The study found that various strategies are used at various ages in order to achieve discourse coherence. Although the study found a lot of similarities in terms of pragmatic development and coherence complexity, the researcher did find that there were various typological factors at play. This emphasises the necessity to take typological factors in consideration when dealing with topics relating to multi-lingualism.

References

Ahmed, S. (2015). *Multimodal-Bilingual oral narrative development of Zulu children and adults.* Johannesburg: University of the Witwatersrand

Alibali, M., Evans, J., Hostetter, A., Ryan, K. & Mainela-Arnold, E. (2009). Gesture-speech integration in narrative: Are children less redundant than adults? *Gesture, 9,* 290-311. https://doi:10.1075/gest.9.3.02ali.

Barber, C. (2000). *The English Language: A Historical Introduction.* Cambridge: Cambridge University Press.

Bates, E. & Dick, F. (2001). Language, Gesture, and the Developing Brain. *Language, Gesture, and Brain Development,* 293-310.

Berman, R.A. & Slobin, D.I. (1994). Development of Linguistic Forms: English. In R.A. Berman & D.I. Slobin (Eds.), *Relating Events in Narrative a Cross linguistic Developmental Study* (pp 127-187*).* New Jersey: Lawrence Erlbaum Associates.

Bliss, L.S., McCabe, A., & Miranda, A.E. (1998). Narrative Assessment Profile: Discourse Analysis for School-Age Children. *Journal of Communicative Disorders, 31,* 437-363.

Buell, L. C., Riedel, K., & van der Walt, J. (2011). What the Bantu languages can tell us about word order and movement. *Lingua, 121*(5), 689–701. https://doi.org/10.1016/j.lingua.2010.10.015

Campbell, L. (2008). *Historical Linguistics.* Edinburgh: Edinburgh University Press.

Carroll, D.W. (2007). *The Psychology of Language* (5th ed.)*.* Belmont: Thomas Wadsworth.

Cassel, J. (1988). Meta-Pragmatics in Narrative. *Acta Linguistica Hungarica, 38,* 5-18.

Chomsky, N. (1959). *A Review of BF Skinner's Verbal Behaviour in Language, 35*(1), 26-58.

Chu, M., Meyer, A., Foulkes, L. & Kita, S. (2014). Individual Differences in Frequency and Saliency of Speech-Accompanying Gestures: The Role of Cognitive Abilities and Empathy. *Journal of Experimental Psychology, 143*(2), 694-709. https://doi:10.1037/a0033861

Coertze, N. (2015). *A Multimodal Comparative Study of Typical and Atypical Language Populations*. (unpublished Honours research essay). University of the Witwatersrand.

Colletta, J. M., Kunene Nicolas, R., & Guidetti, M. (2018). Gesture and speech in adults' and children's narratives. *Sources of Variation in First Language Acquisition: Languages, contexts, and learners,* 22, 139-160.

Colletta, J.M., Capirci, O., Cristilli, C., Goldin-Meadow, S., Guidetti, M. & Levine, S. (2009). *Coding Manual ANR Multimodality Research Project 2005-2009.* Grenoble: Université Stendhal-Grenoble III. Retrieved from http://www.w3.u-grenoble3.fr/lidilem/labo/file/ANRMultimodalityresearch-codingmanual.pdf

Colletta, J.M., Guidetti, M., Capirci, O., Cristilli, C., Demir, O. E., Kunene-Nicolas, R. N., & Levine, S. (2014). Effects of age and language on co-speech gesture production: an investigation of French, American, and Italian children's narratives. *Journal of Child Language, 42*(1), 122–145. http://doi.org/10.1017/S0305000913000585

Colletta, J.M., Pellenq, C. & Guidetti, M. (2010). Age related changes in co-speech gestures and narratives: evidence from French children and adults. *Speech Communication, 52,* 565-576.

Collins, K.J., du Plooy, G.M., Grobbelaar, M.M., Putterfill, C.H., Terre Blanche, M.J., van Eeden, R.V., van Rensburg, G.H., & Wigston, D.J. (2000). *Research in the Social Sciences.* Pretoria: University of South Africa

Cummings, L. (2009). *Clinical Pragmatics*. Cambridge: Cambridge University Press.

De Schryver, G. M. (2009). The lexicographic treatment of ideophones in Zulu. *Lexikos*, *19*(1), 34-54.

De Vos, M. (2007). 'And' as an aspectual connective in the event structure of pseudo-coordinate constructions. In A. Celle & R. Huart (Eds.), *Connectives as Discourse Landmarks* (pp 48-70). Amsterdam: John Benjamins Publishing Company.

Demuth, K. & Weschler, S. (2012). The Acquisition of Sesotho Nominal Agreement. *Morphology, 67-88.* http://doi.10.1007/s11525-011-9192-7

Demuth, K. (2003). The Acquisition of Bantu Languages. In D. Nurse & G. Philippson (Eds.) *The Bantu Languages* (pp. 209-222). Surrey: Curzon Press.

Dhillon, R. (2010). Examining the 'Noun Bias': A Structural Approach. *University of Pennsylvania Working Papers in Linguistics,* 16, 50-60.

Diessel, H. (2004). *The Acquisition of Complex Syntax.* New York: Cambridge University Press.

ELAN annotation Software. [Computer Software]. Retrieved from http://www.tla.mpi.nl/tools/tla-tools/elan/.

Field, J. (2006). *Psycholinguistics a Resource Book for Students*. London: Routledge

Fraser, B. (1998). Contrastive discourse markers in English. *Pragmatics and Beyond New Series,* 301-326.

Fraser, B. (1999). What are discourse markers? *Journal of Pragmatics, 31,* 931-952.

Goldin-Meadow, S., Alibali, M. W. (2013). Gesture's role in speaking, learning, and creating language. *Annual Review of Psychology*, *64*, 257–283.

Gordon, C.J. & Braun, C. (1985). Metacogntivite Processes: Reading and Writing Narrative Discourse. In D.L. Forrest-Pressley, G.E. MacKinnon and T.G. Waller (Eds.) *Metacognition, Cognition, and Human Performance* (pp 1-77). Orlando: Academic Press.

Greenberg, J. (1974). *Language Typology: A Historical and Analytical Overview.* Paris: Mouton

Halliday, M.A.K., & Hasan, R. (1976). *Cohesion in English.* London: Longman Group Limited.

Hickmann, M. (2001). Language and cognition in development. *Pragmatics. Quarterly Publication of the International Pragmatics Association (IPrA)*, *11*(2), 105-126.

Hickmann M., Hendricks, H., & Gullberg, M. (2013). Developmental Perspective on the Expression of motion in speech and gesture. A comparison of French and English. Grammaticalization and First Language Acquisition. *Cross Linguistic Perspectives, 50*, 129-155.

isiZulu.Net. (2018). *Zulu-English Dictionary.* Retrieved from https://isizulu.net/

Kendon, A. (2004). *Gesture Visible Action as Utterance.* Cambridge: Cambridge University Press

Kita, S. & Özyürek, A. (2003). What does cross-linguistic variation in semantic co-ordination of speech and gesture reveal?: Evidence for an interface representation of spatial thinking and understanding. *Journal of Memory and Language, 48,* 16–32.

Kunene Nicolas, R. (2015). Zulu oral narrative development from a speech and gesture perspective. *Per Linguam, 31*(3), 1-18. https://doi.org/10.5785/31-3-560

Kunene Nicolas, R., Guidetti, M., & Colletta, J. M. (2017). A cross-linguistic study of the development of gesture and speech in Zulu and French oral narratives. *Journal of child language*, *44*(1), 36-62.

Kupersmitt, J., Yifat, R. & Blum-Kulka, S. (2014). The development of coherence and cohesion in monolingual and sequential bilingual children's narratives. *Narrative Inquiry, 24*(1), 40-76.

Lucy, J. A. (1997). Linguistic Relativity. *Annual Review Anthropology, 26,* 291-312.

Martin, J.R. (2008). 'Cohesion and Texture' in Schiffron, D., Tannen, D. & Hamilton, H.E. (Eds.), *The Handbook of Discourse Analysis (*pp 55-75). Oxford: Blackwell Publishing LTD.

McNeill, D. & Duncan, S.D. (2000). Chapter 7: Growth Points in Thinking-For-Speaking. In D. McNeill (Eds.) *Language and Gesture* (pp. 141-161). Cambridge University Press: Cambridge.

McNeill, D. (1992). *Hand and Mind: What Gestures Reveal about Thought.* Chicago: The University of Chicago Press.

Ministry of Education. (2002). *Language Policy in Higher Education.* South Africa: Department of Education. Retrieved from http://www.dhet.gov.za/Management%20S upport/Language%20Policy%20for%20Higher%20Education.pdf

Ndlovu, M.V. (2013). Referential Cohesion in isiZulu translated health texts. *South African Linguistics and Applied Language Studies, 31*(3), 349-357.

Norrick, N. R. (2001). Discourse markers in oral narrative. *Journal of pragmatics, 33*(6), 849-878.

Ntuli, N. (2016*). Gesture and speech in the oral narratives of Sesotho and Mamelodi Lingo speakers*. Johannesburg: The University of the Witwatersrand

Orsolini, M., Rossi, F., & Pontecorvo, C. (1996). Re-introduction of referents in Italian children's narratives. *Journal of child language, 23*(2), 465-486.

Oxford. (2018). *IsiZulu Oxford Living Dictionaries.* Retrieved from https://zu.oxforddictionaries.com/translate/english-isizulu/zulu_-english

Özyürek, A., Kita, S., Allen, S., & Furmans, R. (2007). How does linguistic framing of events influence co-speech gestures? In K. Liebal, C. Muller, and S. Pika (Eds.), *Gestural Communication in Nonhuman and Human Primates, 10,* (pp. 199-218). Philadelphia: Benjamins Publishing Company.

Polyani, L. (1982). Linguistic and Social Constraints of Story Telling. *Journal of Pragmatics, 6,* 509-524.

Poulos, G. & Msimang, C.T. (1998). *A Linguistic Analysis of Zulu.* Cape Town: Via Afrika.

Rauscher, F.H., Krauss, R.M., & Chen, Y. (1996). Gesture, Speech, and Lexical Access: The Role of Lexical Movements in Speech Production. *Psychological Science, 7*(4), 226-230.

Reilly, J., Losh, M., Bellugi, U., & Wulfeck, B. (2004). "Frog, where are you?" Narratives in children with specific language disorders, early focal brain injury, and Williams syndrome. *Brain and Language, 88,* 229-247.

Sah, W. H. (2015). The development of coherence in narratives: Causal relations. *Taiwan Journal of Linguistics, 13*(1), 25-51.

Schiffron, D. (2008). Discourse Markers: Language, Meaning and Context. In D. Schiffron, D. Tannen, & H.E. Hamilton (Eds.), *The Handbook of Discourse Analysis,* (pp 55-75*).* Oxford: Blackwell Publishing LTD.

Slobin, D. I. (2005). Relating narrative events in translation. *Perspectives on language and language development,* 115–129. https://doi:10.1007/1-4020-7911-7_10.

Slobin, D. I., & Bever, T. G. (1982). Children use canonical sentence schemas: A crosslinguistic study of word order and inflections. *Cognition*, 12(3), 229-265. http://doi. 10.1016/0010-0277(82)90033-6.

Slobin, D.I. (1987). Thinking for Speaking. *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society*, 435-445. Retrieved from https://www.linguistics.berkeley.edu/bls/.

So, W. C., Kita, S., & Goldin-Meadow, S. (2013). When do speakers use gestures to specify who does what to whom? The role of language proficiency and type of gestures in narratives. *Journal of psycholinguistic research, 42*(6), 581-594.

Song, J.J. (2001). *Linguistic Typology: Morphology and Syntax.* Harlow: Pearsons.

Statistics SA. (2011). *Consensus 2011*. http://mobi.statssa.gov.za/census2011/ First%20 Language.html [accessed on 02 July 2018].

Stein, N & Glenn, C. (1979). An Analysis of Story Comprehension in Elementary School Children. In R.O. Freedle (Ed), *New Directions in Discourse Processing, 2,* (pp 53-120). New Jersey: Ablex Inc.

Talmy, L. (1985), Lexicalization patterns: semantic structure in lexical forms. In T. Shopen (Ed.), *Language Typology and Syntactic Descriptions, Vol. 3: Grammatical Categories and the Lexicon,* (pp 57-149). Cambridge: CUP.

Talmy, L. (2000). *Toward a Cognitive Semantics Vol.1.* Cambridge: MIT Press.

Thorndyke, P.W. (1977). Cognitive structures in comprehension and memory of narrative discourse. *Cognitive Psychology, 9,* 77-110.

Trabasso T., Rodkin P. (1994). Knowledge of goal/plans: a conceptual basis for narrating frog, where are you, in Berman R. A., Slobin D. I., (Eds.), *Relating Events in Narrative: A Crosslinguistic Developmental Study.* (pp 85-106). Mahwah, NJ: Lawrence Erlbaum Associates Inc.

Trabasso, T., Secco. T., & Van Den Broek, P. (1984). Causal Cohesion and Story Coherence. In H. Mandl, N.L. Stein & T. Trabasso (Eds.), *Learning and Comprehension of Text*. New Jersey: Lawrence Erlbaum Associates.

Van der Spuy, A. (1993). Dislocated noun phrases in Nguni. *Lingua 90,* 335-355.

Van Dijk, T. A. (1985). *Semantic Discourse Analysis. Handbook of Discourse Analysis, Vol 2.* London: Academic Press.

Wagner, C., Garner, M. & B. Kawulich. (2011). The state of the art of teaching research methods in the social sciences: towards a pedagogical culture. *Studies in Higher Education, 36* (1), 75-88. https:doi: 10.1080/03075070903452594.

Wang, Y., & Guo, M. (2014). A Short Analysis of Discourse Coherence. *Journal of Language Teaching and Research, 5*(2). https://doi.org/10.4304/jltr.5.2.460-465.

Wilkinson, L. C., Silliman, E.R., Nitzberg, L. A., & Aurilio, M. (1993). Narrative Analysis: Filtering Individual Differences in Competence. *Linguistics and Education, 5,* 195-210.

Zarei, F. (2015). An Investigation of Discourse Markers in English. *The Journal of Linguistic and Intercultural Education,* 5. https://www.questia.com/library/journal/1P3-3215289671/an-investigation-of-discourse-markers-in-english

Appendix A

Tiers for Coding

1. Transcription conventions

2. Linguistic Annotation (6 stages)

3. Narrative Annotation (5 stages)

4. Annotation of explanations (1 stage)

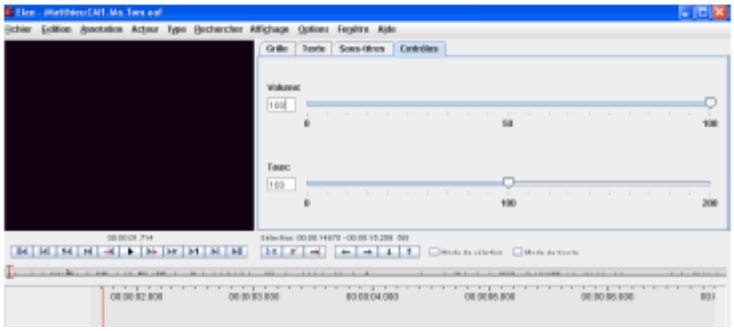
5. Gesture transcription (5 stages)

6. Validation of the gestures' annotation (2 stages)

7. Other gesture coding (6 stages)

The transcription of both the narrative and gestures are carried out using the software *ELAN*. *ELAN* is an annotation tool developed by the Max Planck Institute of Nimègue which can be downloaded at : http://www.lat-mpi.eu/tools/elan/

Here is an outline of the interface:



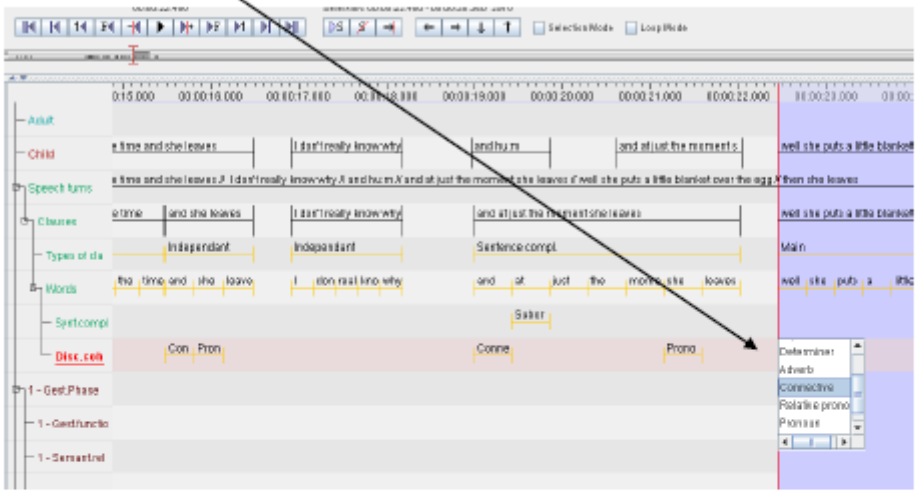
(Colletta et al, 2009, p.5)

Appendix B

Discourse Coherence Cues

Stage 6: < Disc.Coherence.clues > identification of connectives and anaphora

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:



6.1. Connectives : one annotates like **< Connective >** all the words which have a role of either marking the discourse structure, or marking logical, chronological, spatial, argumentative or enunciative relationships beween clauses. See examples in the table below (extracted from Colletta, 2004).

Discourse structure markers	They allow to announce the opening or the end of a conversational unit (well, now, then, okay, so…), and to organize the discursive progression (initially, firstly, to start, secondly, in the second place, then, lately, lastly, to finish, finally…).
Logical, chronological and spatial connectives	They mark inter-clause relationships within explanatory sequences (logical connectives such as if…then, therefore, because, consequently…), narrations (chronological connectives such as and, then, before, at the same moment, afterwards, later…) and descriptions (spatial connectives such as at the top, below, under, near, on the left, on the right, further, in front, behind…)
Argumentative connectives	They mark inter-clause relationships within argumentative sequences. They mark opposition (no, on the other hand…), justification (because, since, indeed, moreover…), concession (certainly, of course, it is true that…), counter-argumentation (but, however, nevertheless…), consequence (thus, also, therefore, consequently…), summary (finally, all in all, in short, definitely…)
Enunciative connectives	They signal metadiscourse (otherwise said, I want to say, it means…)

6.2. Anaphora : one annotates all the words which have a role of reiterating a former referent. Anaphoric function (referent in bold, anaphora underlined) can be carried by:

< Noun > a noun or a nominal group: **the mouse**… Jerry… **the mouse Jerry**

< Determiner > a determiner: **a sheep**… **the** sheep… **this** sheep

<Pronoun> a personal pronoun : **a sheep**…**it** entered the house

< Relative pronoun > a relative pronoun: there is **a sheep** which gets off a truck
and there it sees **the plant** which had been eaten

< Zero anaphora > : no example in french

< Other > : anaphora carried by a verbal group, an adverb, a clause, etc (to be annotated by leaving annotation box empty)

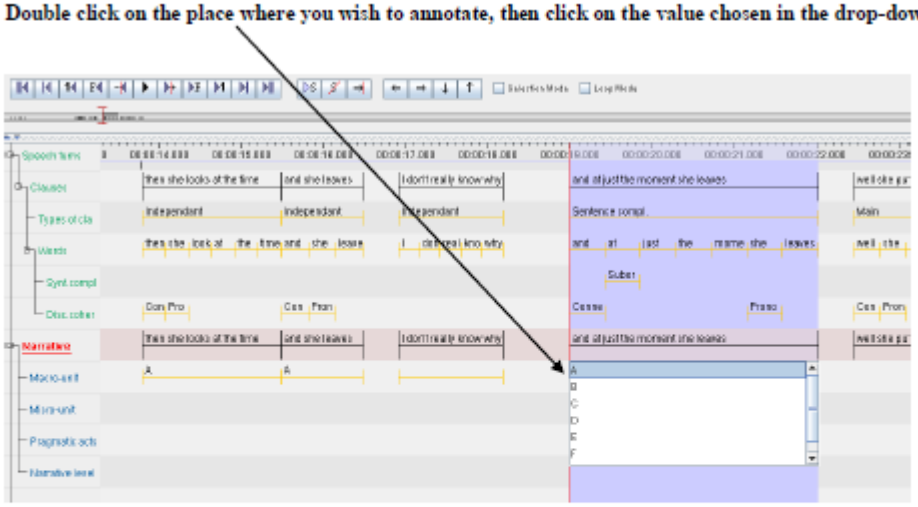
(Colletta et al, 2009, p13).

Appendix C

Narrative Tier

Stage 2: < Macro-unit > categorization of the clauses in macro-episodes

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:



List of macro-episodes :

Episode code	Episode description
A	In the nest
B	From nest to bed
C	The hatching
D	"Imprinting"
E	Damage
F	How to calm the baby bird
G	Back to the nest

(Colletta et al, 2009, p. 16)

Appendix D

Pragmatic Acts

< narrates > when the clause takes the description of a micro-episode or states the explicit dimension of this micro-episode: the child tells the event such as it appears in the cartoon.

Thus: any clause having been identified at stage 3 as corresponding with a micro-episode is to be annotated with < narrates >

< explains > when the clause imports a precision of a causal nature: the child includes a supplementary explanation to the narrated event such as it appears in the cartoon.

Ex:
(then afterwards he tries to sit down) **because he (Jerry) is tired**
(he takes it back to his nest) **because it's breaking everything**

< interprets > when the clause presents an inference or an interpretation concerning the situation or the intentions of the characters: the child invents from the event, makes some hypothesis…

Ex:
(then it looks at its alarm clock) **it realizes {that it is the hour [to leave]}**
>>> 3 clauses to be annotated with < interpret >

< comments > when the clause deals with neither the explicit aspects, nor the implicit aspects of the course of the events but presents a "meta-narrative comment" relating to a character, an action or any aspect of the story, or a "para-narrative comment" relating to the action of telling the history (judgement, personal appreciation…)

Ex:
it is a crazy bird
I like [when the egg falls into the spider web] >>> 2 clauses to be annotated with < comments >

Excerpt from Coding Manual (Colletta et al, 2009, p.19)

Appendix E

Gesture

< **stroke** > = the gesture itself, which is a hand gesture, or a movement of the head, shoulders or bust.

Note: every stroke corresponds to a gesture: the number of strokes which one annotated must thus correspond to the number of gestures which one identified in the sequence.

< **prep** > = the movement which precedes a hand gesture stroke, which takes the hand(s) from its (their) initial position (at place of rest) to where the gesture begins.

< **return** > = the movement which brings back the hand(s) from its (their) position at the end of a hand gesture stroke to a rest position, identical or not to the preceding one.

< **chain** > = the movement which brings the hand(s) from its (their) initial position at the end of a hand gesture stroke to the place where a new stroke begins, without returning to a rest position between the two strokes.

< **hold** > = the maintaining of the hand(s) in its (their) position at the end of a hand gesture stroke, before the returning phase or a chained gesture, or during the < prep > (preparation) phase.

< **mix** > = we do not use this annotation.

Excerpt from Coding Manual (Colletta et al, 2009, pp. 23-24)

Various gesture functions

< **Deictic** > = hand or head gesture pointing to an object present in the communication setting, or to the interlocutor, or to oneself or a part of the body, or indicating the direction in which the referent is found from the actual coordinates of the physical setting.

Ex :

- The locutor points to himself while saying « this is what I understood »

****

Note : not all pointing gestures have a deictic function. A deictic pointing gesture strictly implies the presence of the referent or its location from the actual physical setting, and these gestures are rare in a corpus of spoken narratives. When the narrator points while speaking of a character, an object or an internal localisation of the story, the gesture does not have a deictic function. Its function is either a representational one, or a discourse one (an anaphoric function, as in the case of gesture anaphora). See < **Representational** > and < **Discursive** > below.

Ex :

- The speaker points ahead of himself and upwards, while saying: "Jerry climbs on top of the tree" (abstract pointing)

******

< **Representational** > = hand or facial gesture, associated or not to other parts of the body, which represents an object or a property of this object, a place, a trajectory, an action, a character or an attitude, or which symbolises, by metaphor or metonymy, an abstract idea.

Examples of gestures representing objects, properties, places, trajectories, actions, characters from the concrete world :

- 2 hands drawing an oval form to represent the egg
- 2 hands drawing the form of a container to represent the nest
- Rapid movement of the hand or index high then low to represent the fall of the egg (abstract pointing)
- Hand or head movement, in the direction to the right, to the left, high or below to represent the trajectory of an object or a character (abstract pointing)

Examples of gestures symbolising abstract ideas :

- Hand or head gesture pointing to a spot that represents a character (the bird, Jerry) or an object (the nest, furniture) (abstract pointing)
- Movement of the hand towards the left to symbolise « before », the past or the perfect, or towards the right to symbolise « after », the future or the imperfect.
- Movement of both hands flat, palms towards the top, to express the idea of wholeness.
- Head gesture of negation to express ignorance or the incapacity of the character
- Gesture of the hand and shoulders to express helplessness, the inability of a character to do something

…

< **Performative** > = gesture which allows the gestural realisation of a non assertive speech act (response, question, request for confirmation, etc.), or which reinforces or modifies the illocutionary value of a non assertive speech act.

Example of gestures which accomplish a speech act:

- Nodding head for an affirmitative response
- Hand or head gesture for a negative response
- Shrugging, associated or not with a doubtful mimic, to express ignorance as an answer to a question

…

Examples of gestures reinforcing the function of the act expressed verbally:

- Vigorous head nodding accompanying an affirmative response
- Vigorous head shaking gestures accompanying a negative response

…

Examples of gestures modifying the function of the act expressed verbally:

- When the gesture or the mimic contradicts speech : not seen in Grenoble corpus

…

< **Framing** > = gesture occurring during narration (during the telling of an event, or commenting an aspect of the story, or commenting the narration itself) and which expresses an emotional or mental state of the speaker.

Ex :

- Face showing amusement to express the comical side of a situation
- Shrugging or facial expression of doubt to express incertitude of what is being asserted
- Shrugging or facial expression to express the obviousness of what is being asserted
- Using « finger inverted commas » to express distance in relation to terms used
- Frowning and staring above to express reflection while trying to recall the story or the next event

< **Discursive** > = gestures generally brief which aid in structuring speech and discourse by the accentuation or highlighting of certain linguistic units, or which mark discourse cohesion by linking clauses or discourse units with the help of anaphoric gestures or gestures accompanying connectives.

Examples of accentuating or highlighting gestures:

- Rhythmic movements (beats) of the head or hands accompanying the accentuation of certain words or syllables
- Raising of eyebrows accompanying the accentuation of certain words or syllables

Examples of segmentation or demarcation gestures:

- Rapid movement of the hand sketching the gesture of hunting/ chasing something to signify changing an episode, when coming back to the narrative after a commentary or vice versa

Examples of gestures of discourse cohesion

- Hand sketching the form of a content to symbolise the topic or the title of the story
- Hand sketching the form of a content to symbolise an episode of a story
- Hand or head abstract pointing gesture with an anaphoric function : pointing to a spot in the frontal space to refer to a character or an object previously referred and assigned to this spot
- Representational gesture with an anaphoric function (gesture identical or similar to another gesture produced before and that tracks the same referent in the story)
- Brief hand gesture or beat accompanying a connective

…

< **Interactive** > = gesture accompanied by gaze towards the interlocutor to express that the speaker requires or verifies his attention, or shows that he has reached the end of his speech turn or his narrative, or towards the speaker to show his own attention.

Ex :

- Rapid hand or head movement, including a gaze towards the interlocutor in quest for his attention
- Nodding head while interlocutor speaks
- Orienting the head and gaze towards the interlocutor at the end of speech turn or narrative.

…

< **Word Searching** > = Hand gesture or facial expression which indicates that the speaker is searching for a word or expression.

Ex :

- Frowning and staring above while searching words
- tapping fingers, with or without a mimic of reflection, while searching words

Excerpt from Coding Manual (Colletta et al, 2009, pp. 25-26).

Appendix F

English 5 year old

[5FE002]

the mommy egg was knitting another egg / and the baby hatched / and it rolled / and it falled in the spider web / and it fell on a flower / and then it rolled / and on a leaf it rolled and then on a house / and then she was sleeping / doop doop / and then when he hatched / he said mamma / and he snuggled him / then he saw a wood / and then he gnaaaaw / then he found a wall / and he knocked through it / and she grabbed the beak / and she had a piece of wood / then he knocks it and then had another one / and then it got on her finger / then it hurted her / then when he wanted to sit / it knocked it down / then she was cross at it / so she carried it home / and she saw the nest / then she goed there / and she put it there / then that's the end of the story

IsiZulu 5 year old

[5FZ003]

ngi bone iqanda / la xhuma / la hamba la vula umnyango laphayana / la fika la ngena lapha embedeni / wa vuka loya popayi / eqandeni / kwa suka kwa phuma inyoni / yathi le nyoni yathi mama / ya suka le nyoni ke / ya suka ya (sound) / ya suka inyoni ya suka lapho yahamba yayo bhidliza udonga / la hamba la phumela ngapha / wa fika umama loya na / wayi nikeza isinkwa / wa fika wa yi nika isinkwa / umama ya m luma / wa donsa kanje / ya luma umama e sandle ni / ya yi donsa ya yi donsa / wa fika umama wa yi xhoba kanje onyawe ni / wa fika wayi donsa kanje / ya suka lapho / umama loya wa hamba nayo / wa fika wa khuphuka lapha e sihlahle ni / wa fika wa yi beka / wa yi lali sa / wa yi mbathi sa

<u>English Translation</u>

I saw an egg / it jumped / and went to open a door over there / it went in there and into the bed / it woke up that popayi / on top of the egg / then a little bird came out / then that bird said mama / then this bird / it went (sound) / this bird then went to destroy the wall / it came out this side / that mother gave it some bread / she gave it some bread / she gave it some bread / it bit the mother / she pulled like this / it bit the mother on the hand / it pulled it it pulled it / the mother stomped on it like this on the foot / she pulled it like this / and then / that mother left with it / she went up that tree / she put it down / she put it to sleep / she covered it

English 9 year old

[9FE001]

there was a woodpecker mom / and she had a little pink egg / and then she had to go somewhere / and she was busy knitting / and then she left the egg / and she went flying / and then the baby wanted to come out / so it kept on jumping / and landed into jerry's house / and then it landed under jerry's bum / and jerry thought that he made a little baby / and then it came out a little woodpecker / and it bit anything that was wood / and then he made a hole through one of the walls / and jerry fed him a biscuit / and the first time he got it nicely / and the second time it went up / and got his arm / and then jerry was able to get it out / and jerry got a chair / and it bit the chair / and jerry fell on the floor / and then jerry took the little baby back / and put a blanket over it / and waved goodbye

IsiZulu 9 year old

[9MZ003]

ngibone inyoni esidlekeni / ithunga / kwasuke lapho ukuthunga / yabeka iqanda / baligoqa ngendwango / yahamba inyoni / iqanda labelokhu libampa / lasuka lapho larounda / lehla / langena endlini kaspiderman / yasuka lapho yaqubula embalini / yangena embalini / yasuka embalini / yachitheka / yahamba yayongena endlini / yangena endlini yonogwaja / yangena embedeni / unogwaja elokhu ebampa / wagibela phezu kwonogwaja / kwasukalapho walibuka / lalokhu libaleka / selibidlikile ngenzansi / waliqubula / aseliqubula kanje / lalokhu lihamba lilokhu lihamba / lasuka lapho lahamba layobhoboza ikhabethe / wathi uyalibamba / lagijima / layobulala udonga lapho / wasuke walibamb a / wacinga ukudla / wathatha isinkwa wasinika / waphinda wasinika ingalo / yambamba ingalo / wathi wayidons / wawa / wasethi uyahlala / wafuna ukuhlala esihlalweni / yayidonsa inyoni / wasewa / wase eqeda ukuwa / yase eyiqubula eyithi / eseyisa endlini yayo / mase eqeda ukuyisa endlini yakhe / yasuka yaphela

English Translation

I saw a bird on the nest / it was knitting / after that knitting / it put down the egg / they covered it with a cloth / the bird left / the egg went on to bounce / it went around / it fell / it entered spiderman's house / it then went up to the flower / it entered the flower / it left the flower / it spilled over / it went to enter the house / it entered the rabbit's house / it got in the bed / whilst the rabbit was busy bouncing / he climbed on top of the rabbit / from there he looked at it / it kept running / it had fallen into pieces underneath / he lifted it up / while lifting it up like this / it kept going and going / from there it went to bore the cupboard / he tried to grab it / it ran / it went to destroy the wall there / he then grabbed it / he thought of food / he gave it the bread / he then gave it the hand / it grabbed his hand / he tried to pull it / he fell / he tried to sit / he wanted to sit on the chair / the bird pulled it / he then fell / after falling / he lifted it up like / taking it to its house / after taking it to its house / it ended

English Adult

[18ME003]

so there was like a woodpecker parent / and it had an egg / that was incubating / and then the parent left / and the egg kind of woke up / and fell out the nest / and kind of rolled into the mouse's house and into his bed / where it woke him up / and then it hatched / and then it was a woodpecker / so then it ended up kind of eating all the wood in his house / after a while the mouse got irritated / and chucked it out the house / well actually carried it back to the nest

IsiZulu Adult

[18ME003]

ok I like i ikhona into esihlahleni / uyabo / okey esihlahleni bazalel'iqanda / and then iqanda / lahamba hamba isikhathi / bese liya khula / and then belikhula / bese liphuma i think ingane ye dada / bese ingane ye dada bese iyahamba iyahamba / ifike endlini / ifike kulele unogwaja embhedeni right / and then mayifika bese / iphazamusa lona lolele / the next thing bese kuphuma ingane / ngathi yingane yedada / and then the next thing ingane ye dada bese iitjele ukuthi kahle kahle lokhu unogwaja / am not sure if unogwaja noma ikati yini / lokhu isuka lapha embhedeni / bese itshele ukuthi umama wayo / and then from there bese iyaqala iyahlupha / imosha izinto endlini /

beyfid'isinkwa / and then ekugcineni bese bayayithatha ingane / bayi buyisela eshlahleni esidlekeni sayo

English Translation

okay like there is something in the tree / you see / okay in the tree an egg has given birth to / and then the egg goes and goes time / and then it grows / and then it grew / and then I think a baby duck came out / and then the baby duck goes and goes / it arrives at the house / it arrives to find the rabbit sleeping on the bed right / and then when it arrives / it disturbs the one sleeping / the next thing a child comes out / it seems like a duck's baby / and then the next thing the baby duck told its self that this rabbit / am not sure if it is a rabbit or a cat / when it moved from the bed / it thought it was its mother / and then from there it starts to be naughty / wasting things in the house / feeding it bread / and then at the end they take the child / they take it back to the tree to its nest

Appendix G

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Ahmed

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H13/08/29**
PROJECT TITLE	The Development of Discourse in Second Language (L2) Acquisition from a multimodal Perspective
INVESTIGATOR(S)	Ms S Ahmed
SCHOOL/DEPARTMENT	Language, Literature and Media
DATE CONSIDERED	16 August 2013
DECISION OF THE COMMITTEE	Approved Unconditionally
EXPIRY DATE	27/05/2016

DATE 28/05/2014 **CHAIRPERSON** _____ (Professor T Milani)

cc: Supervisor : Dr R Kunene Nicolas

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10000, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____

Signature **Date**

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Ntuli

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H14/06/32**
PROJECT TITLE	Conversational abilities of Mamelodi Lingo, IsiZulu and Sepedi
INVESTIGATOR(S)	Ms N Ntuli
SCHOOL/DEPARTMENT	Linguistics, Literature & Media/Linguistics
DATE CONSIDERED	20 June 2014
DECISION OF THE COMMITTEE	Approved Unconditionally
EXPIRY DATE	24/08/2016

DATE 25/08/2014

CHAIRPERSON E.M. Take
pp (Professor T Milani)

cc: Supervisor: Dr R Kunene-Nicolas

DECLARATION OF INVESTIGATOR(S)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____

Signature **Date**

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Kunene-Nicholas

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H14/06/16**
PROJECT TITLE	The multimodal development of Bantu language oral narratives
INVESTIGATOR(S)	Dr R Kunene-Nicholas M Malofha P Munaka
SCHOOL/DEPARTMENT	School of Linguistics, Literature & Media/ Linguistics
DATE CONSIDERED	20 June 2014
DECISION OF THE COMMITTEE	Approved Unconditionally
EXPIRY DATE	24/08/2016

DATE 25/08/2014

CHAIRPERSON E.M. Taboe
pp (Professor T Milani)

cc: Supervisor:

DECLARATION OF INVESTIGATOR(S)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____

Signature **Date**