Ethnobiological inventories

significance of multilingualism and lexical variation in rural Cameroon

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Abstract

This thesis provides a description and analysis of multilingual ethnobiological lexicons in a rural, linguistically diverse village in Cameroon where people depend daily on plants and animals, making the ethnobiological lexicon extensive. It focuses on the significance of multilingualism and the distribution and nature of lexical variation in ethnobiological inventories. The analysis explores the dynamicity of small-scale multilingualism and describes how multilingualism and lexical variation expand choices and knowledge. It assesses the multivariate social and linguistic factors contributing to variation and the vitality of multilingualism. Quantitative and qualitative methods combine to holistically describe multilingual linguistic repertoires. This thesis views language as social practice and languages as socioculturally constructed. Ethnobiological lexicons are also viewed as constructions of how people perceive and organise the natural world. Much of the data derives from an ethnobiology stimuli set designed to elicit plant and animal names in five common languages spoken in the village: Vute, Gbaya, Fulfulde, Mbum, and French. Elicitations were conducted in language mode, an unnatural elicitation task that serves analytical purposes to understand how participants conceptualise languages and language boundaries. Responses were analysed with a set of heuristics defining response categories. These categories reveal the asymmetry of multilingualism and the ways speakers navigate language boundaries, some being more porous than others. Many of the responses exhibit patterns, identifying individuality and groups, some that form communities of practice, explainable through qualitative analysis that transcends the traditional variables of age and gender. The concept of scale is applied throughout this thesis for its explanatory power. Additionally, incorporating cognitive research that views languages as a system informs the interactions of languages and lexical choices made by speakers. The complexity of multilingual practices calls for further understanding of the social factors and linguistic ecologies that maintain language vitality, linguistic diversity, and ethnobiological knowledge.

Table of Contents

List of Tables

List of Figures

Abbreviations

CL	noun classifier
DIM	diminutive
GEN	genitive
INF	infinitive
LOC	locative
PL	plural

Tone marking

High tone is marked with an acute accent, low tone with a grave accent, mid tone unmarked, and falling tone with a circumflex.

Multilingual transcription

Fulfulde transcriptions follow Noye (1989).

Mbum transcriptions follow Hino (1978).

Vute and Gbaya transcriptions follow IPA conventions.

Participant codes

People are referred to with codes representing their age, gender, and self-reported primary affiliation. For example, 62MV refers to a sixty-two-year-old male who primarily affiliates as Vute. 50FGb refers to a fifty-year-old woman who primarily affiliates as Gbaya.

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My research is timely, conducted at a time when research models are being developed for rural, small-scale multilingual settings, particular those where Friederike Lüpke, Pierpaolo Di Carlo, and Jeff Good conduct research. It has been educational to follow their publications and track how they have shed preconceptualisations of multilingualism and forge new conceptualisations. I thank Pierpaolo and Jeff for the invaluable experience of attending their workshops in Buffalo and Cameroon. I owe a great deal of gratitude to Friederike Lüpke for guiding me and connecting me to literature and concepts that gave me the theoretical framework, tools, and vocabulary to express my ideas and present data. She made my experience at SOAS remarkable. I thank her also for the Crossroads workshops she invited me to and all that I learned from that project.

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1 Introduction

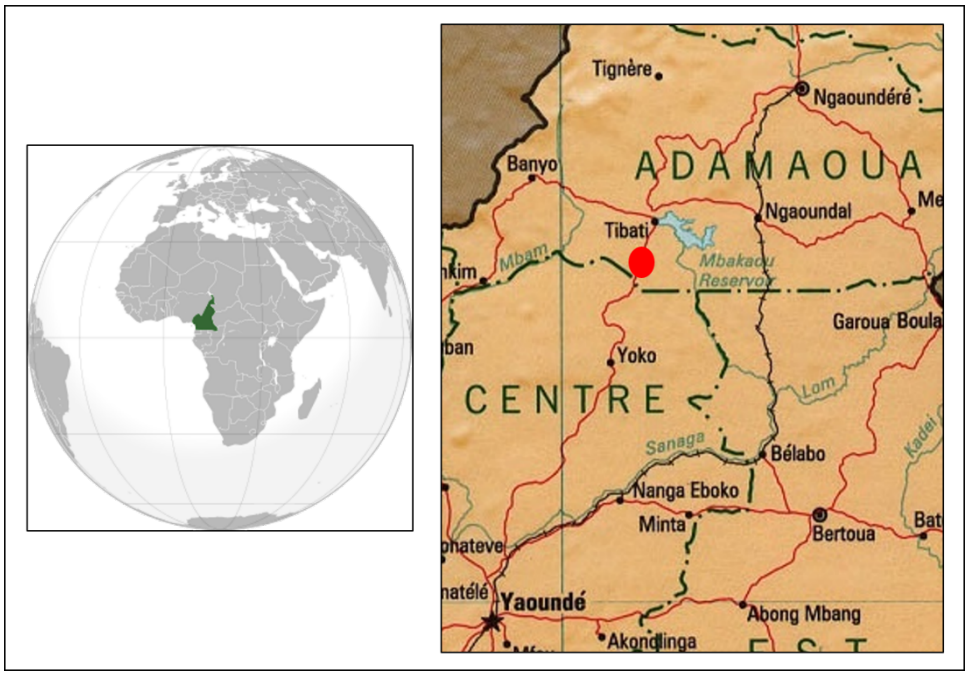
1.1 Ethnobiological inventories: significance of multilingualism and lexical variation

"Life is flux." (Heraclitus)

Much of Africa's population is multilingual and those in rural areas rely on plants and animals for their daily well-being. Field linguists often find themselves in such situations, where ethnobiological knowledge makes up a large part of their documentation and documenting just one language does not adequately capture the whole picture. This thesis provides a description and analysis of the multilingual ethnobiological lexicon in a rural, linguistically diverse village in Cameroon. It focuses on the significance of multilingualism and the distribution and nature of lexical variation in ethnobiological vocabularies.

In rural Cameroon, multilingualism is the norm and plants and animals feature prominently in daily lives, making ethnobiological lexicons extensive, although this is of course not evenly distributed across the population or across languages. Livelihoods depend on the dynamic and fluid nature of language and ethnobiological knowledge. The research took place in Nyanjida (*ɲândʒìdà*), a small, rural village located in the Djérem Department of the Adamawa[1] Region of Cameroon. Figure 1 shows the research site with a red dot locating Nyanjida and the locations of the towns Tibati, Banyo, Yaoundé, Yoko, and Ngaoundéré mentioned in this thesis.

Figure 1 Research location



[1] Adamaoua in French

Nyanjida is nominally associated as a Vute village, but residents come from various linguistic, social, and cultural backgrounds, making for a multiplex setting. This thesis focuses on the main languages spoken in the village, which include Vute, Gbaya, Fulfulde, Mbum, and French. Other languages are spoken, but such language knowledge is specific to individuals and dependent on their backgrounds, making each individual repertoire unique. Like their mud houses built, repaired, and perhaps abandoned over time, the linguistic landscape of Nyanjida is dynamic and fluid, influencing the naming of plants and animals. Some languages are like the mud bricks, solidly encompassing many spaces of interaction, some languages fill in the cracks, while others weather away, being left to specific interactions and contexts. The houses are shaped and reshaped, mud layers that fade away are renewed, as are the linguistic repertoires of the individuals within. People come and go, forming and reforming groups. These frontier processes have been continuous throughout African history (Kopytoff 1987). The social settings and linguistic ecologies of small communities in this area of Cameroon have constantly been in flux. Like life everywhere, change is axiomatic and in such a multilingual context, variation is widespread within and across languages.

This thesis describes how multilingualism and lexical variation act as resources in the domain of ethnobiology by expanding choices and knowledge available in the ethnobiological lexicon. It assesses the social, cognitive, and linguistic factors contributing to lexical variation and the vitality of multilingualism. Quantitative and qualitative methods combine to describe and explain multilingual repertoires and the distribution and nature of lexical variation. I chose 'ethnobiological inventories'[2] in the title instead of 'ethnobiological lexicons' since 'inventory' invokes a sense of action, a part of a dynamic process of constant change. This thesis provides an evaluation of the ethnobiological and linguistic resources in one moment in time, in a sense what is on hand at the moment, an inventory involving the categorisation and organisation of ethnobiological knowledge in a multilingual village, an additive and subtractive process. Ethnobiological knowledge is dynamic, built over a lifetime, and continually added to. This knowledge in rural multilingual communities is in a way a shared system, one that involves large ethnobiological lexicons comprised of several languages. Sharing does not equate to symmetry across the population. Rather, certain people share parts of knowledge and lexicons. These vocabularies often exhibit considerable lexical variation, which, like multilingualism, is often a blind spot in language documentation; we are aware of it, yet the sociolinguistic aspects may not be well documented, even though it quite commonly occurs. Dictionaries often omit variation or if it is documented, it is not accompanied with explanatory sociolinguistic information.

[2] Thank you to Friederike Lüpke for first mentioning "ethnobiological inventory".

This thesis follows a sociolinguistic perspective, viewing language as social practice and languages as socioculturally constructed, abstractions of how people place themselves and others in the world. Ethnobiological lexicons are themselves constructions of how people perceive and organise the world around them. Much of the data is derived from an ethnobiology stimuli set (ESS) designed to elicit plant and animal names in Vute, Gbaya, Fulfulde, Mbum, and French. Participants were asked to identify each of the species images in language mode (Grosjean 2008), passing through the set language by language by asking participants to engage in monolingual mode. This unnatural elicitation task does not reflect normal multilingual practices but serves analytical purposes to understand local perceptions of how participants conceptualise languages and navigate language boundaries. Much of the analysis throughout the thesis draws on elicited lexical data from the ESS.

This thesis explores boundaries, both the construction of and movement within and across, which create multiple memberships and alliances. The data analysis suggests that repertoires concerning ethnobiological knowledge reflect and are built around communities of practice (Eckert & McConnell-Ginet 1992; Lave & Wenger 1991; Wenger 1998), where individuals come together through mutual engagement, resulting in shared practices. Linguistic behaviour and features index groups and individuals associated with those groups. Language and ethnobiology concern how people orient themselves in relation to the world, negotiating relationships, positioning, and associating, which involve matters of scale (Carr & Lempert 2016a; Gal 2016; Irvine 2016). Scale is applied throughout this thesis as a heuristic in order to analyse multilingualism and lexical variation. This thesis considers scales of perspective, providing analyses from different points of view, those of my own, of previous research, and mostly significantly, of the people who live in Nyanjida who practice multilingualism as part of their normal everyday lives. It calls for a reconceptualisation of standard perceptions of multilingualism and language(s) to better reflect the multilingual setting in Nyanjida. This thesis takes a rather eclectic approach, reflecting my continuously changing understanding of social and linguistic practices in Nyanjida and the challenges of placing the analysis within current research frameworks. It attempts to identify commonalities of different approaches and present them as complementary. I follow a psycholinguistic perspective to complement the sociolinguistic perspective and show how the ethnobiological lexicon reflects multilingual cognition.

This thesis provides a snapshot in time, capturing generational differences, the status of Nyanjida at one moment, a brief pause button, after which everything changes again. Ethnobiological knowledge and linguistic repertoires are ongoing processes, shaped and reshaped over a lifetime. My research was timely, after which the small dirt road passing

through the centre of the village was paved, completely altering it. The paving provides a direct link to Cameroon's capital, Yaoundé, which will have a considerable effect on ethnobiological knowledge over time, much more so than ever-changing linguistic repertoires and language endangerment.

My research was kindly funded through an Individual Graduate Scholarship from ELDP (Endangered Languages Documentation Programme) for documenting Vute ethnobiological knowledge. For this reason, Vute data features prominently in this thesis. I also received funding from SOAS Department of Linguistics, SOAS Fieldwork Grant, and Troy Ladies' Auxiliary.

1.2 Research questions

This thesis examines the complexities of the multilingual ethnobiological lexicon. The objective is to determine the significance of multilingualism and lexical variation in ethnobiological inventories and knowledge.

This thesis aims to answer the following research questions:

1) What are the patterns and social factors involved when speakers access their multilingual ethnobiological lexicons and how does cognition play into this?
2) What is the role of lexical variation in a multilingual ethnobiological lexicon?

This thesis examines the hypothesis that multilingualism and lexical variation expand the choices available to speakers, and that these choices correlate with social and cognitive factors. This raises interrelated subsidiary questions concerning the interplay of languages in the ethnobiological lexicon, which patterns and forms are shared across languages, and what motivates and facilitates multilingualism and lexical variation.

1.3 Structure of thesis

This thesis begins with background for the research, beginning with ethnographic and demographic information through a description of the field site, population, and social structure. Then the linguistic background is given, including brief language profiles of the five languages under study. Each language is introduced with an overview, description of genetic affiliation, and summary of relevant grammatical features. Afterwards the multilingual context is presented with a description of the language contact situation, roles and functions of each language, description of linguistic repertoires with details on influencing factors such as gender and age, then an overview of language attitudes and ideologies. Chapter two finishes with a description

of the historical background, covering linguistic and social aspects, and ethnobiological background.

Chapter three presents the theoretical background in Linguistics and Ethnobiology. The Linguistics section details how this thesis conceptualises language and discusses research in sociolinguistics and lexical variation, multilingualism, language contact, and language vitality. The Ethnobiology sections present previous research concerning multilingualism and Ethnobiology and related research in Africa and elsewhere.

Chapter four gives an overview of methods, describing my relationship to the community, data collection procedures and management, issues and limitations, and ethics.

Chapter five presents research data through a characterisation of the multilingual ethnobiological lexicon. The chapter begins by describing the structure of ethnobiological lexicons and the linguistic characteristics of ethnobiological terms. Next, the results of the ethnobiology stimuli set are outlined, first introducing the types of responses, followed by an overview of lexical variation. The next section details factors involved in multilingualism and lexical variation, providing data on individual participants in the ethnobiology stimuli set. This is all brought together by linking the data to cognitive functioning. Next, the relation of ethnobiological classification and multilingualism is discussed and the interconnectedness of multilingualism, ethnobiology, and language endangerment. Chapter six concludes the thesis with a summary of the research and prospects for further research.

Note that people are referred to with codes representing their age, gender, and self-reported primary affiliation. For example, 62MV refers to a sixty-two-year-old male who primarily affiliates as Vute. 50FGb refers to a fifty-year-old woman who primarily affiliates as Gbaya. Relationships of people are presented in Figure 5 in Chapter five.

2 Background

2.1 Introduction

Research concerning Africa often points out the lack of and need for increased attention to the social, cultural, and geographical settings where languages are spoken (Lüpke 2016b, 2010a, Di Carlo 2016). Examining the setting for this research proves absolutely essential to understanding the complexities of multilingualism, lexical variation, and ethnobiological knowledge, all of which reflect the interconnections of people and place.

The Adamawa Region of Cameroon constitutes an area that has been constantly in flux, making it of utmost importance to consider ethnographic, demographic, linguistic, and historical backgrounds in order to best understand the current cultural, social, and linguistic situation. The historic and current situations derive from "frontier processes" (Kopytoff 1987), where societies are neither static nor homogeneous.

> African societies over the centuries would move, reform, disappear, break-up into pieces; the pieces would reassemble, and new distinct areas would form; and the channels between them would expand, contract, and shift. As new polities and societies emerge, other polities and societies would shrink or disappear and their populations would redistribute themselves among new groupings. (Kopytoff 1987: 12)

This fluidity has vast implications for the complexity and diversity of languages, helping to explain what Trudgill (2011) points out, that similar social settings can have such different linguistic repertoires. Gausset (2010: 123) refers to this paradox in Cameroon as "melting pots scenarios, a great mosaic in which one can hardly find two villages having the same combination." In this regard, one Vute village is not like another. Villages and regions are made up of varying confluences of identities, languages, and social structure, making each place unique. Frontier processes are continual and as new societies are formed, they are not formed a new, but bring with them aspects from the society from which they split. These local frontiers are "lying at the fringes of the numerous established African societies. It is on such frontiers that most African polities and societies have, been "constructed" out of the bits and pieces–human and cultural–of existing societies (Kopytoff 1987: 3)." This contributes to social and cultural similarities, yet creates linguistic heterogeneity, a paradox pointed out by Lüpke (2018a). "In Sub-Saharan Africa we often find instead that specific confluences of languages are a defining feature of communities (Childs et al. 2014)." Villages are differentiated by linguistic repertoires and multilingual practices. Although settings are similar, the compositions of separate villages in this region differ quite drastically. Even villages considered Vute vary considerably. This research is only a reflection of one period of time in one small village. If the research were completed in another Vute village, observances and outcomes may have been comparatively different, with differing individual repertoires, social settings, patterns of multilingualism, and ethnobiological knowledge.

Linguistic, cultural, and social differentiation are maintained through deeply entrenched ideologies of difference, yet, in actual practice many similarities exist. For example, certain animals frequent folk stories as the hero. The hare features most prominently as Vute *tùkur*, Fulfulde *mbuju*, and Mbum *nyáàmôk*, whereas *wàntò* 'spider' frequents Gbaya stories. Vute, Fulfulde, and Mbum maintain separate lexemes for 'hare', but share the concept of hare as

hero. The animal heroes transcend the embodiment of an actual animal and instead represent a being to which people can relate their lives and societies, an analogy of life. The Gbaya hero, *Wàntò* can be interpreted in two ways, firstly as 'spider' and secondly as a compound of *wan* 'chief, owner, lord' and *to* 'tale', which gives an overall meaning of 'master of the tale' (Noss 1971: 4). In Mbum, 'hare' has two variations: *rómá*, the general name, and *nyáàmôk*, a compound of *nyáà* 'father, man' and *môk* 'joke' (Hino 1978: 823). Vute, Fulbe, and Mbum may share the hare as hero, creating cultural homogeneity, yet maintain linguistic heterogeneity through distinct lexemes. The duality of sameness and difference creates many paradoxes.

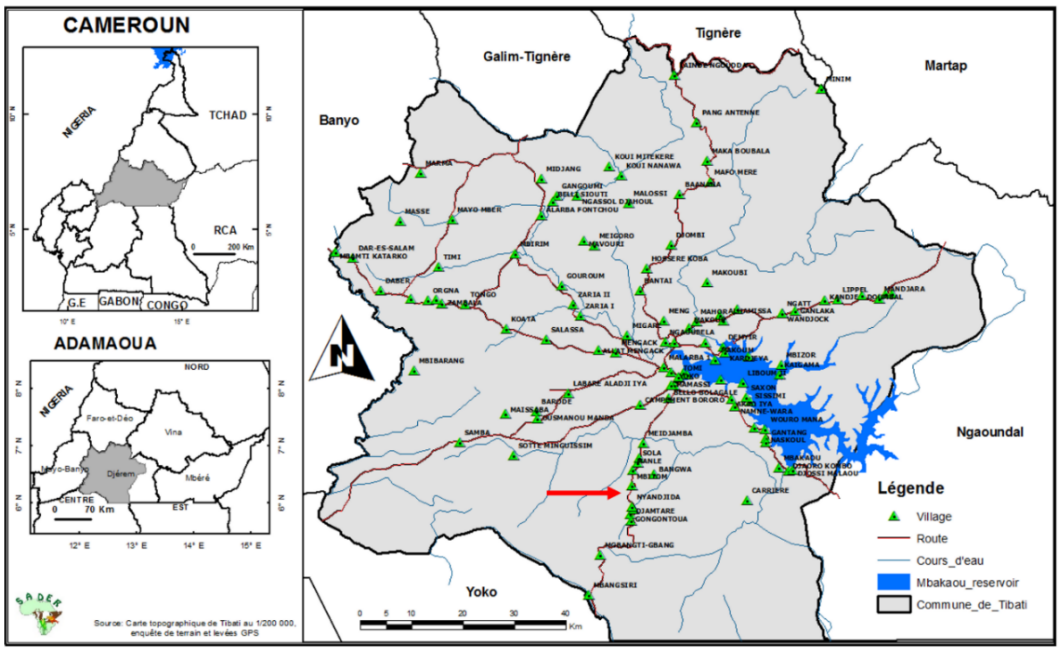
This duality is deeply interwoven into social and linguistic organisation and thus becomes a recurrent theme throughout this thesis. "This dualism can be understood as a Frontier process, and the Frontier as a location and locus of numerous boundaries that create both the motivations and the habitus to keep complex patterns of multilingualism alive (Lüpke 2018a: 20)." In Nyanjida, micro and macro Frontier processes are apparent in social organisation and language, even lexical variation, as a way to contrastively define each other and languages. "A key component in the historical process of cultural and linguistic heterogenisation is this ideological bias towards the active differentiation among local communities (François 2012: 92)." Speakers engage in micro Frontier processes by actively accessing language features and variants that are not prototypical, that stand apart from the norm. The following sections feature some of these dualities and processes, giving background on Nyanjida, its demographic and social structure, followed by linguistic background, then historical and ethnobiological backgrounds.

2.2 Ethnographic and demographic background

2.2.1 Village profile and population

The research took place in Nyanjida, a small heterogeneous village. Figure 2 shows the Djérem Department of the Adamawa Region and indicates the location of Nyanjida with a red arrow. It is nominally associated as Vute and when asked about the village, residents communicate a monolingual bias (Auer 2007) that Vute is spoken there and Vute people live there. Deeper questioning evidences that Nyanjida comprises diverse linguistic, social, and cultural backgrounds. Nearby villages are associated as either primarily Gbaya or Fulbe (singular Pullo), but also have a heterogeneous population.

Figure 2 Map of Adamawa Province (Tibati 2013: 32)



Nyanjida, detailed below in Figure 3, comprises eight main houses, including a mix of larger family households and smaller bachelor houses. The village has few amenities, consisting of a primary school, mosque, Christian church, central water pump, and no electricity. People primarily rely on a subsistence economy and gain monetarily through the small-scale local economy. They rely on agriculture and hunting for self-reliance, which contributes to the vast ethnobiological knowledge. Most people rely on traditional medicine from plants since health services are far. The chief is absent from the village, living in Tibati, a town forty kilometres away. Tibati is a central town for the area, holding a large market every Friday and children from the village attend secondary school there.

Nyanjida comprises mainly a stable core group of extended family members averaging about forty to fifty people, although numbers fluctuate as people come and go. Due to high mobility, the population of the village varies, especially during festivals and planting time. Nearly every person has connections outside the village, whether it is a faraway field they tend seasonally, visiting other villages, or going to Tibati to visit relatives, attend the market, or attend school. Previously the village was much larger, but most of its inhabitants disbursed or left for Doume, another Vute village further south. In the past, Mbum people also lived in the village, as evidenced in the Mbum names for the forest fragments surrounding the village. Pygmies also used to live in the village. Nyanjida exemplifies frontier processes of a constantly changing society which is not and never was exclusively Vute.

Figure 3 Map of Nyanjida[3]

2.2.2 Social structure

Social structure is highly important and there exist many complex regulatory norms for social conduct, with hierarchical obligations and utmost respect for elders. This section briefly introduces kinship, marriage, social behaviour, communities of practice, and social networks.

2.2.2.1 Kinship and marriage

Kinship is one of the most important aspects of social structure. Nyanjida is kin-based, with nearly everyone related. Since the chief is absent, one older man acts as head of the village, which is primarily comprised of his children and their families, and a few other extended relations. Relationships of ESS participants are shown in Figure 5 in Chapter five. The Adamawa Region exhibits a diversity of kinship systems. Vute have been described as having a matrilineal system (Siran 1981b; Siran 1981a; Thwing 1987) and by others as patrilineal (Hurault 1993). Gausset (2010) reminds us that literature on kinship systems is often reductionist, giving a system a simple label like 'matrilineal', when they are actually far more complex, as kinship systems in this region show. Vute cover a large geographical region and exhibit cultural, social, and dialectal diversity. This is also likely the case with kinship, where Vute in different areas

[3] Drawing courtesy of George.

practice different types of kinship systems or as Gausset suggests, emphasise matrilineal or patrilineal systems in different contexts. Virtanen (2003) also reports a mix of patrilineal and matrilineal kinship systems for pastoral Fulbe in this area. Gbaya practice patrilineal kinship as do the Mbum, which consists of membership groups called *ndòk fû* (Hino 1978). These kinship systems may be more complex than available labels allow to define (Di Carlo, p.c.). The high number of dialects in these languages and being dispersed over large geographic areas makes these systems complex and influenced by other groups, making it challenging to directly associate kinship types and group labels.

Both Vute and Gbaya practice exogynous and virilocal marriage. Fulbe mainly practice endogamous marriage (Virtanen 2003). Exogyny is a mechanism for exchange that contributes to the social structure of Nyanjida and further increases its ethnolinguistic heterogeneity (Lüpke 2018a). Another mechanism of exchange, child fostering, is common and involves several types, including kinship fostering, domestic fostering, and educational fostering (Lüpke 2015b). Fostering goes both ways, with children coming into the village and also leaving. Children are often raised by relatives and it is common for children who live elsewhere to visit the village during school holidays to participate in and understand village life. Young girls, and less commonly young boys, are fostered to relatives to help with domestic tasks, especially grandmothers and women just starting to have children. It is also common for younger siblings to live with their older sister when she first marries and leaves for another village. Educational fostering is necessary for children who attend secondary school far away, where children often live with relatives or associates in the larger town, Tibati or in the intermediary town of Meidjamba.

2.2.2.2 Social behaviour

Social categories such as age and gender dictate how individuals should conduct themselves socially. Gender roles in Nyanjida are distinct and operate on many levels, from how each gender conducts themselves in the household to how and what they cultivate. As with many other African societies, (Lüpke 2015b) age is a significant part of society. Age and relationships can be indexed through language, as exemplified in Vute kinship terms that use of separate terms for older and younger aunts and uncles as well as older and younger siblings, as shown in (1)-(4) (Thwing 1987: 2):

(1) *já* ‘mother’
jàdʒíri ‘mother’s elder sister’
jàténè ‘mother’s younger sister’

(2) *tá* ‘father’
tádʒíri ‘father’s elder brother’
táténe ‘father’s younger brother’

(3) *tə́kɨ̀r* ‘older brother’
mɨkɨ̀r ‘older sister’
wúrúb ‘younger sibling’

(4) *njaá* ‘spouse’s younger sibling’

Social structure and codes for social behaviour are inherent in language. The Fulbe refer to how one should behave as *pulaaku*, “the Fulbe code of ideal public behaviour, which refers to a restrained and self-controlled bodily behaviour (Virtanen 2003: 15).” The concept defines what it means to be Fulbe, guiding everyday interactions and social relationships. *Pulaaku* is widely known and the term is used in other languages and by non-Fulbe. Appearance and public presentation are also very important to Vute, as evident in the terms *sìja-nɨ*[4] ‘be proper’ and *dʒírɨ-nɨ* ‘be big’, which portrays self-control and reverence. Gbaya also have a term for properness, *sə̋*. These concepts that dictate ways of speaking and acting index characteristics rather than categories (Eckert 2012). The concepts of *pulaaku*, *sìja-nɨ*, and *sə̋* signify how one should behave; in other words, the lexemes index characteristics and behaviour pertaining to social conduct.

Social cohesion and relationships are maintained through performances such as joking relationships. For example, younger relatives maintain joking relationships with the wives of their older siblings, most of whom arrive through exogynous marriage. Joking allows them to behave out of the norm and cross boundaries through practices such as crossing (Rampton & Charalabous 2010), which creates a sort of cohesion, strengthening boundaries. “These relationships are widespread throughout West Africa and rely on differences that can be contextually evoked to create special relationships of inversion or solidarity...[They] create the affinities (resulting in sameness) that were based on symbolic ties between perceived different entities (Lüpke 2018a: 9).” Joking allows interlocutors to behave out of expected norms, creating

[4] In Yoko dialect *sàrɨ̀-nɨ̄* ‘be proper’ (Guarisma (1978: 117)

informality and minimising social distance (Lüpke 2015b). These relationships offer a way to scale away from social norms and promote cohesion.

Insults, on the other hand, are a way to regulate social norms. They often integrate ethnobiological knowledge and are a part of social performativity to counteract any unwanted behaviours, such as taking aim at another's appearance. For example, the following insult given by older adults in Vute to those younger who are unacceptably dirty:

(5) *ɓár só hɛ̃ wùúm*
stain body like viper
'A stain on the body like the viper.'

Another example of an insult connected to ethnobiology occurs when a person's shirt hangs unacceptably too short or long in the back, they will be called *ndʒàŋne*, the Vute name for 'cricket'. Insults take aim at a person's incongruent physical features, comparing them to animal features. Insults maintain sameness by pointing out difference. On the other hand, joking relationships erase difference and transcend social norms to promote sameness and cohesion.

Social structure and norms create cohesion and avoid conflict. "One of the notable things about life in African communities is the care given to containing individual conflicts as much as possible, precisely because of their tendency to become group conflicts if they are not contained (Kopytoff 1987: 23)." When conflict arises, entire families are assembled, and the problem discussed and resolved. If it cannot be resolved, those involved are expected to leave, creating a local frontier process in which people break off from groups and join others, thus contributing to heterogeneity.

Groups in Nyanjida are not strictly formed by age, language, culture, ethnicity, or other social categories, but through a complexity of linguistic and social practices. The concept of community of practice and social network approaches are more empirically anchored and aptly characterise "mobile and flexible sites and links in which representations of group emerge, move and circulate (Blommaert & Rampton 2011: 4)." The following sections briefly outline communities of practice and social networks in Nyanjida.

2.2.2.3 Communities of practice

Social structure in Nyanjida reflects how people live and interact together in a small, rural village. The collective nature of the village permeates and is exemplified when individuals usually speak in the first person plural and seldomly in the first person singular. While conducting the

ESS, participants often asked to participate as a group and when collecting elicitations, people often consulted others to remember a lexeme or determine the correct form. As people engage in everyday activities, most often not alone, they develop shared practices. The concept of community of practice is a useful analytical tool for describing the ways people come together. Eckert & McConnell-Ginet (1992: 96) adopt Lave & Wenger's (1991) original concept to define a community of practice as “an aggregate of people who come together around mutual engagement in an endeavour. Ways of doing things, ways of talking, beliefs, values, power relations—in short, practices—emerge in the course of this mutual endeavour.” A more detailed description and reasons for this approach are found in the theoretical chapter, section 3.2.4.2. This thesis draws heavily on Wenger (1998) to define communities of practice in Nyanjida.

A community of practice is defined by social engagement and is built through a continuous process of mutual engagement of learning and negotiating meaning. Communities of practice are situated within the larger social structure of Nyanjida, not separate, but engaging within the larger community. Not only do they develop within the broader context of the village, but also within social, historical, and cultural contexts. The concept, along with social networks, helps to understand the distribution of ethnobiological knowledge in Nyanjida. Communities of practice provide a locus for accumulating ethnobiological knowledge, where varying small groups of people develop shared knowledge and practices. In this thesis, evidence of communities of practice comes from shared ESS responses, reflective of mutual engagements and experiences. The data reveal that specific individuals pattern together, some of who form communities of practice. As will be elaborated in Chapter five, the ways ethnobiological knowledge patterns with social structure does not clearly align with categories such as kinship, ethnicity, or religion. Rather, it aligns more with the relationships and behaviours inherent in the concept of community of practice.

Communities of practice in Nyanjida comprise various groupings of individuals with flexible overlapping patterns and are attributed to shared linguistic and social experiences and characteristics. The fluidity of communities of practice allow individuals to belong to more than one practice. Communities of practice influence lexical repertoires; groups of people who mutually engage in activities such as hunting tend to have similar ethnobiological vocabularies and extensive knowledge of individual species. Gender does play a role in that females and males in Nyanjida have quite different communities of practice, since their roles within the community and divisions of labour differ dramatically. They individually tend different types of crops and form separate communities of practice for large shared fields. Groups of females also come together for tasks such as washing clothes at the river and processing food. Males form a communities of practice through hunting. Although some hunt alone, they often go as groups,

bringing along adolescents to assist and learn. These communities of practice are not strictly attributed to gender alone, but from the experiences of individuals and associations, such as some women whose husbands hunt also hold extensive hunting vocabulary. Communities of practice are also formed, mainly by women and children, concerning fishing when groups come together seasonally to manually dam the river. Through their shared practices, they develop shared specialised vocabularies concerning fishing and damming. For example, they share lexemes that arise from the processes involved in these shared practices, such as the semantic extension of *naŋ* 'fufu' in Vute to describe the mud used to build fish dams.

Social practices such as circumcision ceremonies contribute to the formation of communities of practice. Groups of young males undergo the ceremony together, creating life-long bonds and symbolic ties. Practices such as this are delineated by age, a significant factor in a community of practice. The significance of age comes from the way children grow up together; they form a cohesive group that mutually engages in everyday life, creating shared practices. Their shared engagement of learning and practicing ethnobiological knowledge results in shared ways of doing, of talking about, and of conceptualising their ethnobiological world. These communities of practice do not have explicit markers of membership but are apparent in everyday activities that make them stand apart from the larger social structure. One such significant practice involves eating. Large families eat at the same time, divided into groups, each sharing one large pot, forming small communities of practice. The father of the house usually eats by himself and groups of children eat together based on age classes and differentiated by gender, with girls usually eating with the mother of the house. People express their affiliation with others by saying, "*On a mangé dans le même plat.*" 'We ate from the same plate'. Children form communities of practice based on these age groups and their mutual engagement in activities such as cultivation, fishing, and gathering wild foods. ESS data reveals two particular communities of practice that exemplify the shared practices resulting from groups of children growing up together; these are detailed in section 5.5 and are only briefly introduced here.

One of these communities of practice comprises a group of five young males in Nyanjida ranging in ages nineteen to twenty-seven who form a coterie as they participated in mutually engaging activities growing up together. They "ate from the same plate" and underwent the circumcision ceremony together. ESS data show that their ethnobiological lexicons tend to coincide and several species' names are used by this group only. Data also show that they gave the highest numbers of lexical variation. They reported that they deliberately use language as a way to differentiate and distance others, and tend to cross language boundaries, code-mixing from several languages and dialects so that others do not understand. The community of practice is a locus for negotiating meaning; it provides a place to synthesise information from older

generations, to process it and make it their own as a group engaging in the process of learning. This participation creates shared ways of doing things and interpreting the world around them, while finding their place and identity within it as not only an individual, but as a part of a community of practice, while also positioning themselves within the larger social structure.

This group of young males form a community of practice from which other ESS participants emerge as associated members, the majority of whom are older male relatives. The community of practice's younger siblings and cousins form an emerging community of practice that is not as well-defined since they are younger but as they mature together, will develop more cohesive ways of doing, speaking about, and conceptualising their ethnobiological world.

2.2.2.4 Social networks

Social networks play an important role in Nyanjida and extend far beyond the village, a reflection of high mobility and ties to other villages and beyond. People have frequent external contact and tend to have multiple affiliations, creating complex social networks. They have tight local social networks, as well as loose networks extending quite far to the north to large towns such as Maroua, Garoua, and Ngaoundéré and south to the capital Yaoundé. People travel from all over Cameroon to receive care from local medicinal healers or request that medicines be sent (field notes, 2015). Multilingualism extends access to multiple social networks (Di Carlo 2018). Social ties are formed through marriage, religion, kinship, language, communities of practice, political alliances, and economic activities. An extensive distribution of people claims the village as their own, even though they may never have visited it and perhaps do not speak Vute, yet they remain connected to place. "Speakers may indeed "inherit" a language in the sense that they think of the language as "their" language–and at the same time they may regret they "do not know their language". So, regardless of what perspective we choose, we find that the relationship between an individual and a language is a sociocultural construction. It is negotiable, and it may become the object of political power (Jørgensen et al. 2011: 32)." Some Vute living in Yaoundé claim Nyanjida as "their village", despite having never travelled there and they may speak another Vute dialect or none at all[5]. People index their affiliation to the village by identifying as Nyanjida Vute and expressing an indexical language ideology, meaning "that people index the language most important to their identity (Singer & Harris 2016: 194)," by claiming a language even if they do not know it, as a symbolic marker of identity (Lüpke 2016a).

Varying alliances and oppositions exist between neighbouring villages. Nyanjida and neighbouring villages form dense, multiplex social networks where everyone knows everyone

[5] Many people I met in Yaoundé maintain associations with a rural village.

(Milroy & Milroy 1985). Villages can have very little distance between them yet remain ideologically distinct. The frequency of communication is high, where knowledge of linguistic repertoires is complex, encompassing many languages and varieties of language, social codes, and sociocultural awareness. The connections to nearby villages reflect regional history and the alliances that were formed during times of upheaval and change. Social networks reflect these alliances, particularly affinal and consanguineal ties. Men in Nyanjida marry women, most often Gbaya, from other villages, which creates ties with those villages. Gbaya women in Nyanjida maintain affinal and consanguineal ties, often visiting their home village, where it is common to maintain cassava fields and return for several months to give birth.

Social networks play an important role in ethnobiological knowledge and practices. They provide access to important things like medicinal knowledge, spiritual protection, and subsistence such as bush meat. If a person experiences an ailment, they know who holds medicinal knowledge. In a small place where most people grow up together and see each other on a daily basis, ethnobiological knowledge is not merely individual, but shared, where everyone has their own unique knowledge reflecting their interests, needs, and experiences, put together through social networks and daily interaction, forms a body of knowledge, in which some know more than others, but everyone is generally aware of resources available in their network. Social networks also play into sameness and difference. “Affinities could be selectively activated, not only through choosing a shared language, but also through other symbolic means... The dualism between similarity and difference was, and remains, a driving force for maintaining multiple identities and complex multilingual repertoires (Lüpke 2018a: 9).”

These sections have provided a brief introduction to aspects of social structure that are pertinent to this research.

2.2.3 Identity

“How can we be so different and feel so much alike? And how can we feel so different and be so much alike?” (Cannon 1993: 41)

The community of practice and social network concepts introduced above help to characterise the complexity of social structure in Nyanjida. Another aspect of social structure significant to this research involves identity, a multi-layered concept that signifies the fluidity and complexity of social structure in Nyanjida. Identities are formed in respect to ethnicity, religion, lineage, age, gender, and language(s). Identities in Nyanjida are formed through scale-making, whether selecting a scale of language as a marker, scales of kinship, scales of ethnicity, scales of religion, overall selecting one scalable marker over another (Irvine 2016). Identity involves scalar

projections that facilitate multiple perspectives in the construction of similarity and difference. The scalar nature of identity applies not only to individuals but also to collective identities defining what it means be a certain ethnicity, religion, lineage, age, gender, or to speak a specific language. This section gives a brief overview of identity, focusing on aspects relevant to this research project.

In this region of Cameroon, identity is flexible, multiple, and changeable, as aptly portrayed in Gausset (2010: 262) regarding the Kwanja: "The question is not, "Who are the Kwanja?" but rather when, how, and why the identification "Kwanja" is preferred[6]." Identities are constructed and portrayed often with purpose. A malleable identity is a complex tool that maximises or minimises differences or similarities depending on context and interlocutors. These differences and commonalities are used to construct personal and collective identities not only within the village, but beyond to far-reaching contexts. The rural environment of Nyanjida experiences a distance from demographic pressures of urban areas such as Yaoundé. The dissociation from national economic processes contributes to forming local identities and maintaining self-definitions (Goheen 1995). Identity is scalar in that being Vute, Gbaya, Fulbe, or Mbum is categorised differently by different actors and different prototypical identity-markers can be manipulated depending on needs and purpose, a process of continual rescaling and re-orienting.

Identity requires juxtapositioning, having something with which to compare, a way to align or position oneself or one's group. It can be approached "as constituted through the *boundaries* that groups construct between themselves, rather than the characteristics of group members (Bailey 2007: 258)." In language, it involves creating boundaries and treating languages as discrete entities. Identity creation behaves similarly in the ways an individual or group constructs boundaries and norms of identity. People in Nyanjida continually scale aspects of their identities, whether through speaking or socially, where similarities and differences are selectively activated or downplayed, depending on each situational context and interlocutor, as a way to portray themselves and control how others view them or their group, often creating a "we-they" scenario. People engage in subjective, phenomenological processes, referencing differences to socially distance and similarities to socially associate (Bucholtz & Hall 2009). Gal (2016) applies a fractal model, which accounts for continuous changes in perspective, a rescaling that can change within a single event. One twelve-year-old Vute adolescent in Nyanjida reported that he identifies as Vute with his father, whereas in the schoolyard identities become fluid as he interacts with Gbaya and Fulbe friends and may portray a certain local identity to his teachers who come from out of the area. Identity can be considered a social process, formed though an

[6] Originally from Moerman (1974: 62) and Barth (1969).

interplay of relationships. “Identities become anchored in each other and what we do together (Wenger 1998: 89).” People contextually place themselves in wider and narrow scales of relations. Communities of practice contribute to the construction and maintenance of identities as individuals are brought together through mutual engagement. A community of practice maintains identities through habitual actions, where certain behaviours and characteristics become expected, creating different levels of contrast within a broader community (Bucholtz & Hall 2009). Similarities and differences are “often essentialised and imagined as homogeneous (Irvine & Gal 2000: 39).” The construction of sameness creates homogeneous identities, which are defined by ethnicity, language, religion, lineage, age, and gender. The following sections discuss these aspects of identity.

2.2.3.1 Ethnicity and identity

Ethnicity comprises one of the main influences of identity formation in Nyanjida. This thesis avoids strict labels of ethnicity due to the fluid and multi-layered nature of the concept locally. Defining ethnicity in this region is so multifaceted and changing, involving complex historical processes layered onto current continual reifications. Ethnicity (and language) are used as a metric, a marker by which authorities organise people, an ideological process of “bureaucratic scale-making” (Irvine 2016), of placing people into ethnolinguistic groups. “Ethnolinguistic identities–identities based on nationalistic and essentialist ideologies linking ethnic identities to particular languages (Lüpke 2018a: 14)” are also adopted by people for different purposes that are multiple and changing. Lüpke (2010c: 125) points out “the problematic nature of a monolithic concept of ethnicity and the impossibility to determine the number of members of an ethnic group (and even more so of speakers of (a) given language(s).”

Ethnicity can be minimally defined “as a collective identity based on at least one objective diacritical marker (“cultural trait”), subjectively negotiated through self-ascription and ascription by others (or a “we-they feeling”), and existing because people defining themselves along similar lines have an interest (private and/or collective) in doing so (Gausset 2010: 244).” Assessing identity and specifically ethnicity in this region of Cameroon proves dynamically complex and changeable. Instead of using the term ‘ethnicity’, I choose to use the term ‘self-reported primary affiliation’, which allows for changing perspectives and secondary affiliations.

The Frontier processes resulting in current social structures have created multiple affiliations rooted in historical processes. Labels such as ‘Vute’, ‘Gbaya’, ‘Mbum’, and ‘Fulbe’ are socially constructed; their characteristics and boundaries portray homogeneous groups defined by sameness and difference. Larger villages in the area are subdivided into *quartiers*

'neighbourhoods' according to perceived ethnicity, yet with closer inspection these divisions comprise a mix of ethnicities. Even the early Fulbe establishing power in the region were not entirely a homogeneous group but were an aggregate of different groups vying for power (Gausset 2010). When discussing the "multi-ethnic structure" of Gbaya society in Meiganga, Burnham (1980: 7) questioned "whether it was warranted to follow traditional anthropological practice and restrict my work to a single ethnic unit or even whether I should use ethnic identity as a demarcating criterion for my study at all." He discusses the complexity of Gbaya identity through the term *zú dùk*, used to identify Gbaya groups but with multiple levels of reference. It can refer to dialect groupings, family groups, and all Gbaya collectively as opposed to other ethnicities. Gausset (2010: 32), when countering the concept of linguistic and ethnic homogeneity, describes the identity of the Sultan of Banyo: "Instead of being seen as "pure" Fulbe, the Sultan must be situated at a crossroads between the Fulbe and the local communities. He defines himself as Fulbe in public or when talking to Fulbe interlocutors, but he speaks Bute [Vute] and emphasises his local origins on his mother's side when it suits his interests to do so." The Sultan of Tibati shows similar multiple, changing identities, ethnicities, and language use to strengthen his alliances and has several wives with different ethnicities and linguistic backgrounds. In the past, Sultans of Ngaoundéré were required to marry Mbum women as an alliance-building strategy.

The majority of the population in Nyanjida identify as Vute, except Gbaya women who have come to the village through exogynous marriages. Since Nyanjida is considered a Vute village, children with Vute fathers and Gbaya mothers scale their affiliations. They adopt Vute as their primary affiliation but maintain secondary affiliations with Gbaya and may even have tertiary connections to the affiliations of their grandparents who may not be strictly Vute or Gbaya.

2.2.3.2 Religion and identity

The existence of multiple religions adds to the complexity of identities. Roughly two-thirds of Nyanjida identify as Christian and one-third as Muslim. Local religion is still very strong, and most people layer it amongst their Christian and Islamic beliefs, forming a syncretic belief system. Religious affiliation is scaled so that a person affiliates more with local religions or western religions depending on social situations and interactions, in other words with whom, where, and when. It is not uncommon for parents to follow different religions and children shadow the religion of one of their parents so that siblings follow different religions. A few individuals reported that they do not follow the religion of either parent.

Religion plays a significant role in identity and can also act as a political strategy, especially in the past, when it was common for non-Fulbe people to convert to Islam to seek power and influence. Often the use of the Fulfulde language was part of this strategy.

> The Fulbe category in the census is comprised of a heterogeneous mixture of peoples identified largely by their use of Fulfulde as their main language and by their Islamic beliefs, as well as by their public self-ascription to this ethnic category. Although many of this group can trace their ancestry to the various traditional Fulbe states of northern Cameroon, many others have only recently assimilated to this category, seeking to dissociate themselves from the non-Fulbe ethnic status of their birth and establish links with the Fulbe who are politically dominant both in northern Cameroon and in the nation at large. (Burnham 1980: 72)

Irvine (2016) refers to this as "scalar misalignment", whereby a person adopts a label such as Fulbe when the person previously affiliated as Mbum. Various forms of Fulbe ethnicity and identity exist. Fulbe who continue a nomadic pastoral life are called by the autonym Mbororo, also referred to as *Fulbe ladde* 'Fulbe of the bush'. Numerous scales of Fulbe identity exist; more of these distinctions are discussed in section 2.3.5 on language ideologies.

2.2.3.3 Lineage and identity

Lineage is an important marker of identity in Nyanjida, much more so than ethnicity. Vute matrilinearity has played an important role in Vute identity. However, in recent times, Vute kinship has become less of an identity marker due to government centralisation efforts and westernisation (Thwing 1982).

Identity construction begins just after birth when a child is named. Children in Nyanjida are given two names, a Vute or Gbaya name and a Muslim or Christian name. The Vute and Gbaya names are packed with meaning and expectations for the child or reflect current or past events and often family identities. Although two names are officially given at birth, in actuality people have multiple names, the use of which depends on their relations to people, places, and situations, and change throughout their lifetime. Children start forming their identities quite young, learning the rules of species edibility, following communities of practice, adopting their parents' and peers' identities, and immersing themselves in the identity attestation of school. They maintain links to older generations by spending much of their time with grandparents. One young Vute man reported that grandparents teach children more directly than parents; in this way they also garner respect for older generations.

2.2.3.4 Language and identity

Language marks identity, but is not always the most significant marker of identity (Lüpke & Storch 2013). It provides an overt tool for articulating identity. "Among the many symbolic resources available for the cultural production of identity, language is the most flexible and pervasive (Bucholtz & Hall 2009: 369)." Language reflects identity and identity reflects language. Speakers use numerous ways of speaking to highlight and downplay similarities and differences in identity. Characteristics of speaking a language such as Vute, Gbaya, Fulfulde, or Mbum are strictly defined to delineate boundaries and set themselves apart, creating an impression of homogeneity. Speakers access prototypical language features to maintain boundaries and follow norms of language use.

One common practice of creating distinction and boundaries involves esoterogeny (Ross 1996, Thurston 1989), a practice employed to exclude others. Thwing (1987: 65) mentions that speakers use the Vute determiner *tɬhwe* 'the one spoken of' to disguise a subject and keep others from understanding. Roulon-Doko (1997: 23) mentions an esoterogenic strategy by Gbaya youth that allows them to not be understood by adults. They insert an extra syllable *fV* after each syllable in a word and the regular tone scheme changes to follow a base-high scheme, as in (6).

(6) *zɔ́k mbé tùà* → *zɔ̀kfɔ́k mbèfé tùfúàfá*
see new house
'Look at the new house.'

Uses of language like this are quite deliberate and performative, involving metalinguistic and metapragmatic knowledge, purposefully used to cross boundaries of language norms. It is not only the creation and maintenance of boundaries, but the crossing of boundaries that also contributes to identity (Irvine & Gal 2000). Crossing language boundaries creates variation and unique ways of speaking, which contribute to and maintain diversity. Noye (1975) also documents the use of secret languages in Fulfulde. In Nyanjida, a group of young males that form a community of practice use several esoterogenic strategies in Vute. They report that they purposefully over-nasalise words, change tones, and rapidly codemix to make phrases unclear to older adults and those not inside their linguistic community of practice. They manipulate language features to produce linguistic forms different from norms of language use.

People report that they alter their speech depending on their interlocutor's age and identity. Words and phrases are chosen to create distance or show comradery. When speaking to Fulbe, one twenty-five-year-old Vute man (25MV) reported that he might choose to use 'true' Fulfulde,

or use a phrase that mixes languages, which entails knowing whether the other person will understand the composition of the chosen phrase. People familiar with different dialects of a language might mix two lexical variants to form a new lexeme with a different tone pattern. This same young man said that they often mix Gbaya spoken in the village with eastern dialects to form new lexemes with different tone patterns, thus creating shared registers based on shared metalinguistic knowledge. Speakers orient themselves along a linguistic scale to exclude or include, a practice that involves considerable understanding of other's perspectives. The ability to manipulate language demonstrates linguistic prowess and agency. Multilingualism is a strategic asset used to expand social networks, allowing access to identities that may otherwise be incompatible (Lüpke 2018a). Speaking becomes a performance, a way to display affiliation and cohesion. Once, when overhearing a multilingual conversation and asking the content, the young man replied that he did not really understand any of the conversation he had just had. His flexibility and adaptability allowed him to access features of different languages as well as identify those of his interlocutor to be able to carry out a multilingual conversation. It is not necessarily important that one understands a conversation, but that one is adept at showing affiliation and identifying with the other person.

2.2.3.5 Complex identities

The above sections have briefly introduced aspects of identity formation in Nyanjida involving ethnicity, religion, lineage, and language. Age and gender significantly factor into identity and social structure. They are discussed in detail in section 5.5.2.

Identity involves agency and power, where identity is a process, such as constructing similarities by actively downplaying differences (Bucholtz & Hall 2009). In Nyanjida, the complexity of identity is evidenced at the individual and collective levels, and these levels are not mutually exclusive, as they influence each other. Individuals maintain social ties associated with complex identities. Questionnaire data show that people in Nyanjida self-report a primary affiliation as either Vute or Gbaya, but also maintain secondary and tertiary affiliations. These labels signify an ethnic affiliation as well as a linguistic one. Being and speaking Vute or Gbaya scales the characteristics of these labels as more significant than others. Included with this positioning are varying scales of religious affiliations, along with lineage, age, and gender influences.

One older man in Nyanjida (62MV) who features often throughout this thesis strictly defines himself as a Christian Vute. His father was a Muslim Vute, and his mother Bafek, who followed local religious traditions and had a Mbum father, subsequently she spoke Mbum frequently. 62MV's ten children, including his one daughter, also define themselves as strictly Vute and

when asked which language they speak, say Vute. Their mother is Gbaya and they follow many of her Gbaya characteristics and practices. One of 62MV's sons reported that when he visits his mother's Gbaya village and family, he accesses more of his Gbaya identity.

Children like these who have a Vute father and a Gbaya mother identify as Vute but maintain Gbaya ties through their mother. Those ties depend on each family and their scaling of importance and permissiveness; one Gbaya woman may frequent her home village with her children and maintain close family ties, while another Gbaya woman may loosen those ties and create new ones. When Gbaya women marry into Nyanjida, they are expected to subsume their husband's ideologies. When discussing the edibility of a large grasshopper, Vute *mɨŋgər*, 62MV said that Gbaya eat them, Vute do not. When asked if his Gbaya wife eats them, he responded, "*Elle a pris mon système*." 'She adopted my system'. In actuality, women maintain their own identities, adopting and adapting identity as they become rooted in the village. Their identity becomes multiple as they behave one way in their husband's village and another way in their home village. Some younger Gbaya women do not seem to readily speak Vute. Perhaps this rejecting to speak Vute maintains their own identity and avoids subjugation and submission.

Ethnobiological knowledge and practices reflect identity. Perceptions on the edibility of certain foods contribute to collective identities. For example, Vute do not eat certain monkey species, while Gbaya lack such restrictions. Distinctions of edibility create a "we–they" contrast, forming constructed ideological boundaries between groups. Gbaya are viewed as the most knowledgeable about types and uses of melon, since they are thought to be the ones who introduced them to the area. Edibility and plant uses contribute to defining boundaries and the perception and maintenance of identities across many levels.

The flexibility and multiplicity of identity transpires from the cognitive plasticity of a multilingual speaker. The adaptability of a speaker to control multiple languages correlates with their dynamically complex and flexible identities. My understanding and portrayal of identity in Nyanjida has just barely touched the surface and because of the focus of my research, does not cover the unbounded depth of it all.

2.3 Linguistic background

This thesis follows a language ecology approach (Haugen 1972; Mühlhäusler 1996), situating language as part of a larger ecosystem and taking into account the intimate relationships between humans and their environments, viewing language and ethnoecological knowledge as

parts of an interrelated system. Nyanjida supports a complex language ecology[7] in which language practices and ethnobiological knowledge are inextricably linked. The linguistic background in and around Nyanjida is complicated and dependent on perspective. The way languages in Africa were documented and conceptualised in the past creates a preconceived approach to describing the linguistic scene and reinforced through colonial practices. Indexing languages and ethnicity is embedded in historical research practices and ideologies that continue to shape research outcomes today as well as national and local ideologies. This section aims to describe the linguistic background of Nyanjida, to show the ideologically entrenched and socially constructed processes (Irvine & Gal 2000) involved in linguistic differentiation and practices, while attempting to not prescribe preconceived ideologies. The notion of tribe in Africa set a precedent for how languages, cultures, and ethnicities have been documented and conceptualised, leaving much to erasure. "Nineteenth-century European ideologies of race relations, ethnic separateness, and African "simplicity" led to maps, schedules, grammars, and dictionaries that purged registers, ignored variation, and rewrote complex sociolinguistic relationships as ethnic relationships (Irvine & Gal 2000: 59)." This section describes some of these complex sociolinguistic factors and how they contribute to a complex linguistic ecology.

2.3.1 Language profiles

The main languages spoken in Nyanjida include Vute, Gbaya, Fulfulde, French, and Mbum. Other languages are also spoken depending on an individual's background and experiences. Languages spoken in the area include Tikar, Ewondo, Kwanja, Mambila, and Hausa. This thesis tends to focus on Vute and Gbaya, as they are the main languages spoken in the village and Vute is the subject of my grant. People in Nyanjida claim Vute or Gbaya as their identity language, an ideological foregrounding of one language in their repertoire (Lüpke 2016a).

Although this thesis takes a languaging approach, it is also necessary to discuss each language. Language boundaries are real to speakers, who define a language by selecting features that are prototypical to a socioculturally constructed language (Cobbinah et al. 2016; Watson 2019). Linguistic repertoires prove challenging to measure. I understand the difference between language repertoires and linguistic repertoires in that a language repertoire encompasses the socioculturally constructed languages available to a speaker, whereas a linguistic repertoire encompasses a wider range of socially motivated resources available to speakers. The extent of

[7] The complexity of Nyanjida's language ecology is perspectival. Calling it complex comes from my own background of growing up monolingual. From the perspective of other language ecologies in Cameroon, other parts of Africa, and throughout the world, this ecology would comparatively not be considered as complex.

linguistic differentiation is complex, giving rise to dialects, registers, lexical variation, and numerous styles. This, with the addition of the use of metalinguistic knowledge to manipulate languages in multilingual speech, creates linguistic competencies and proficiencies that are beyond measurement, especially by an outside researcher. Linguistic differentiation, "the ideas with which participants and observers frame their understanding of linguistic varieties and map those understandings onto people, events, and activities that are significant to them (Irvine & Gal 2000: 35)", varies significantly depending on perspectives and politics. Locally, language differentiation is socially constructed and embedded in various ideologies. As a researcher, I add my academic ideologies of language differentiation. Linguistic practices in Nyanjida do not follow one language at a time; rather, speakers access linguistic repertoires, here defined as all the resources available to a speaker, including languages, dialects, registers, idiolects, and styles. Monolingual mode is non-existent, yet speakers present ideologies of distinct named languages, as exemplified in the elicitation of the ESS and the way locals speak of distinct villages that speak a specific language.

The following sections give information on Vute, Gbaya, Fulfulde, Mbum, and French. The genealogical positioning of each language is given. However, it should be noted that intense language contact and multilingualism do not facilitate neatly branched genealogical trees. The Tree Model does not adequately account for contact phenomena and has limited explanatory value for this region (François 2015). The linguistic situation is much more complex than a tree model depicts. Physically separated languages and dialects remain in contact, some close, others quite distant, with social networks maintaining cross-linguistic diffusion, the "contact between already separated languages (François 2015: 167)." Linguists have classically treated dialects as relatively isolated and forming independently of others, and not maintaining contact (Irvine 2001), but this does not take into account dialects staying in touch with each other and speakers' knowledge of both, as well as another layering of influences from other languages.

I do not list numbers of speakers for each language for several reasons. Authors and Ethnologue (Simons et al. 2018) often do not cite sources for population numbers. Additionally, as explained previously, differentiating languages and dialects as well as what counts as a speaker of a language prove immeasurably complex.

> Since we cannot determine with certainty where one language ends and the other one begins, it follows that we cannot always be sure to be able to count languages. We cannot determine exactly which languages an individual knows, and consequently, we cannot tell how many languages this person knows. We can, however, observe that there is a wide spectrum of variation available to any individual, and we can also observe that this spectrum is different from person to person (Jørgensen 2008: 165).

For example, counting populations as 'Gbaya' poses many questions since the Gbaya constitute a population of diverse cultures and some distant, often not mutually intelligible dialects, with some dialects even considered separate languages. As explained in the Identity section above in 2.2.3.1, counting ideological ethnicity proves even more challenging and does not always produce accurate results, especially when people commonly claim multiple alliances. For example, many people who claim a Fulbe identity also affiliate as Mbum (Hino 1978). Measuring populations requires drawing borders, often arbitrarily (Jørgensen 2008).

2.3.1.1 Vute

Vute[8] (ISO vut) is spoken over a large area in the Adamawa and Centre Regions of Cameroon, spanning from around Banyo, east to Guéré, west to Métèp, and south to Mbandjock just north of Yaoundé. Sources cite between eight and thirteen dialects (Simons et al. 2018, Mohammadou 1986a, Starr 1989). The precise number of dialects is nearly impossible to assess, as the different dialects form a continuum of mutually intelligible dialects, although southern dialects are much different than northern dialects and not completely mutually intelligible. A thorough comparative assessment of each named dialect has not been carried out, especially in the Adamawa Region. The dialect spoken in Nyanjida is called *Nɨ̀ganì*. Children are aware of and learn local dialect differences. Non-adjacent villages share language similarities and maintain connections through social networks and mobility. Nyanjida maintains strong connections with Doume, a village quite far away that shares the same dialect name, whereas they maintain distinctness from adjacent Vute villages, claiming that the language is different. Most Vute villages are quite small and all inhabitants are multilingual with no village exclusively inhabited by Vute people or speaking only the Vute language.

Vute falls within the Mambiloid branch of the Benue-Congo language family (Connell 2001a). It is considered a non-Bantu Bantoid language (Williamson 1971) or Northern Bantoid . Mambiloid languages are not isolated languages but continue mutual influence and linkages (Ross 1988, 1997; via François 2015) through continuous contact. "A linkage thus consists of separate modern languages which are all related and linked together by intersecting layers of innovations; it is a language family whose internal genealogy cannot be represented by any tree... language families which have been shown to result from a long history of layered innovations with entangled patterns of distribution (François 2015: 171)." Language variation is prominent in Mambiloid languages, which exhibit complex dialect continuums and several blacksmith registers. Vute has a rich vocabulary reflecting sociocultural history, such as the informative

[8] Also written as Voute, B(o)ute, Baboute, Bavoute, Wute. Phonologically *vɨ́tè*.

vocabulary concerning slavery and war. Vute exhibits several grammatical features relevant to ethnobiology. Vute has a vestigial noun class system that shows relations to Bantu (Thwing 1987), although "at this point in the evolution of the language it is very difficult to discern what may be remnants of an original Vute noun class system and what may be a result of contact with Bantu languages as the Vute have moved southward (Thwing 1987: 68)." Thwing's thesis does not mention other languages besides Bantu languages, even though Vute is spoken over a large area, with exposure to numerous languages, of which Hausa has to have major influences in languages of the area, as Hausa have had a historical presence as traders and later as intermediaries. The Vute noun class system has several affixes concerning ethnobiology. The *mi-* prefix is the most used and is associated with many animals, particularly birds, fish, and insects. The *ti-* prefix is also commonly used and denotes humans, plant foods, and tools. The *ki-* prefix is commonly used in terms concerning plants and objects made from plants. The *ni-* prefix concerns humans. Prenasalised consonants (*mb*, *mv*, *nd*, *ŋmgb*, *ndʒ*, *ŋg*) are also significant in ethnobiological terminology. Thwing (1987: 44) found that nearly two-thirds of the nouns beginning with prenasalised consonants denote animals names, body parts, or designate humans.

Vute exhibits three contrastive tones, used lexically and grammatically. In this thesis, high tone is marked with an acute accent, low with a grave accent, and mid unmarked.

2.3.1.2 Gbaya

The term Gbaya[9] denotes a macrolanguage (ISO gba) for many languages spoken in Cameroon and the Central African Republic. The language spoken in Nyanjida is considered Western Gbaya (ISO gya) but will be referred to simply as Gbaya throughout this thesis. Gbaya is a Niger-Congo language in the Ubangian family (Roulon-Doko 1997). Roulon-Doko (2008a, 1999, 1998) has published an impressive body of research on ethnobiological knowledge of the Gbaya in the Central African Republic. Gbaya exhibits contrasting high and low tones, marked with an acute accent and a grave accent, respectively. Little space is devoted here to Gbaya since there exists no documentation on the dialect spoken in Nyanjida.

2.3.1.3 Fulfulde

Fulfulde[10] (ISO fub), an Atlantic language, is part of the macrolanguage Fulah (ISO ful) spoken in seventeen countries across west and central Africa, forming a complex continuum of dialects.

[9] Also written as Baya, Gbete. Phonologically gbájá.
[10] Also written as Fulani, Fula(h), Pula(a)r, Peul.

The Fulfulde language was brought to Cameroon by the Fulbe people who arrived at the beginning of the nineteenth century. The dialect spoken in Adamawa is referred to as Adamawa Fulfulde or Fulfulde Woɗaande[11]. Fulfulde in Cameroon forms its own continuum of dialects and varying forms of language. In the area around Nyanjida, several forms of Fulfulde are spoken. That spoken in the urban centre Ngaoundéré and smaller towns like Tibati is considered much different than Fulfulde spoken in villages near Nyanjida. Also living in the area are the Mbororo, pastoral Fulbe who arrived in Cameroon later and continue to migrate with their cattle. They live in small groups, setting up temporary camps in the bush. They maintain relationships to villages through a reciprocal economy, where they sell milk, yogurt, and other goods in return for village goods and agricultural products. They are said to speak a more complex form of Fulfulde compared to that spoken in villages (Virtanen 2003). A variety of Fulfulde, called Bilkiire, is also spoken throughout the area and is considered a pidginised Fulfulde (Noss 1979) due to its grammatical and lexical reductions. Even this variety of Fulfulde can vary individually or within a community, depending on the composition of linguistic repertoires and knowledge of 'pure' Fulfulde (Noss 1979). Refer to section 2.3.5 on language ideologies for a discussion of 'pure' Fulfulde. In Nyanjida, people are aware of and competent in several varieties of Fulfulde, depending on their personal backgrounds.

Surprisingly little ethnobiological research has been conducted with Fulbe in Cameroon. Fulfulde exhibits one of the most complex noun class systems, some of which concern ethnobiology. Fulfulde has a rich vocabulary concerning cattle raising and differentiation of types of cattle.

2.3.1.4 Mbum

Mbum[12] (ISO mdd) is also a Niger-Congo Ubangian language. It is spoken throughout the area in dispersed patterns from areas around Tibati through to the north and east of Ngaoundéré. Mbum came to live in the Adamawa region about a thousand years ago (Mohammadou 1986b). Population numbers since the time the Fulbe arrived have decreased dramatically. Many Mbum were subsumed into Fulbe power structures. In the past, Mbum functioned as a trade language (Thwing & Thwing 1979). Local metalinguistic knowledge asserts that Mbum served as a lingua franca in the past and when missionaries came they learned it and taught the bible in it. Mbum exhibits three tones, high, low, and falling. High tone is presented with an acute accent, low tone with a grave accent, and falling with a circumflex. Little space is devoted to Mbum here since there exists little documentation of the language.

[11] Also, Wooɗaabe.
[12] Also written as Buna, Mboum, Mboumtiba, Wuna.

2.3.1.5 French

Cameroon supports two official languages, French and English. Nyanjida is located in the northern French-speaking area, although some people in the area speak English or a form of Cameroonian Pidgin English, also called Kamtok. French is the language of instruction. Children in the village are taught French well before they begin school. Various registers and styles of French exist, depending on place and interlocutors. The French spoken in Nyanjida differs from that in the nearest town of Tibati, which differs from that spoken in the capital of Yaoundé. Speakers use different registers and styles of French performatively to index their education level or connections to place where certain styles are spoken, using tools such as prosodic emphasis to show a connection to national "standard" French. Speakers of village French, especially children, can be heard stylising their French, where they "shift into varieties or exaggerated styles that are seen as lying beyond their normal range, beyond what participants ordinarily expect of them, and this distinction of speaker and voice draws attention to the speaker herself/himself, temporarily positioning the recipient(s) as spectator(s) and at least momentarily reframing the talk as non-routine (Rampton & Charalabous 2010: 4)." The performance can go beyond stylisation into crossing, where "the speaker's use of another voice raises wider issues of entitlement ... exaggerated voices and codes that they'd never use in ordinary talk with friends (Rampton & Charalabous 2010: 4)." Local languages do not seem to be used as prestige markers, whereas French and English indexically mark education and prestige (also reported by Di Carlo (2016) for Lower Fungom).

2.3.2 Multilingual context

In this region of Cameroon, multilingualism is the norm and language contact is constant. Nyanjida is a linguistically diverse society where the levels of individual multilingualism are neither homogeneous nor symmetrical. "The degrees and motivations of multilingualism among the different speech-groups are multiple, uneven, and varying in source (Beyer & Schreiber 2013: 114)." Speakers use multiple languages on a daily basis. Languages are not formally acquired, but acquired through life experiences, communities of practice, and social networks. Multilingualism is understood in this thesis as speaking more than one language[13]. Multilingualism is situated within a shared system of knowledge interwoven with social structure, whereby it parallels society. A collective, communal nature permeates in which shared

[13] The term 'bilingualism' is avoided in this thesis since it does not apply to this type of setting where people speak multiple languages.

language practices parallel social practices, languages interact just as people live, work, and eat together. The collective nature and sharing between group and family members flows over into language and ethnobiology. They draw on their shared repertoires for communication and shared knowledge of plants and animals, sharing in a sense that is not symmetrical, where people know who knows what, all contributing. The communal nature is exemplified when hunters bring in meat and distribute to everyone according to social norms. Resources and knowledge are shared, tying into multilingualism, where features of language are shared and distributed across language boundaries. In a place where everyone knows everyone, this sharing coincides with reciprocity, "the exact scope of which depends on the trajectories and concomitant linguistic biographies of individuals as created by societal exchange mechanisms and individual initiatives (Lüpke 2016b: 50–51)."

Multilingualism in Nyanjida comprises fundamental differences compared to the dominant model of multilingualism from Europe. Multilingualism is the African norm (Lüpke 2017b) and the multilingual practices in Cameroon dramatically contrast to the "European national romanticist ideology which connects the concept of one nation with one language and one people (Jørgensen 2008: 164)." Prominent rhetoric in multilingual research such as 'mother tongue' and 'native speaker' are not applicable to this type of multilingual setting. Language competence in Nyanjida does not involve the ability to speak one single language, making the concept of 'native speaker' ill-suited. 'Native speaker' places emphasis on the speaker's ideal potential, not actual practice nor factoring in their behaviour across spaces (Blommaert et al. 2005). Families do not speak one language in the home; rather, they use multiple languages. Languages are acquired predominantly through horizontal transmission and children are "socialised into multilingualism from birth (Moore 2004: 13)."

Married couples often have different language repertoires. In most families in Nyanjida, the father claims Vute as his identity language and the mother claims Gbaya; in actuality both parents speak multiple languages with their children, who are relatively autonomous from their parents. Even those parents who both identify as Vute use multiple languages in the home. One thirty-four-year-old man (34MV) with Vute parents said his father often spoke Mbum with him growing up, especially concerning hunting and his mother often spoke Hausa with him. He and his siblings all speak Gbaya well regardless of having Vute parents. Their mother says she does not speak Gbaya and their father says he does not know it well. His father is from an area of Cameroon where Gbaya is not usually a part of people's repertoires. His mother has spent much of her time in a larger village nearby where people tend to speak Vute, Fulfulde, and Hausa, among other languages. 34MV reported that he learned Gbaya from growing up in Nyanjida as he spent time with other adults and more significantly, with other children as they spoke

multiple languages. This anecdote adds to the impression that children have a high degree of autonomy on the composition of their multilingual repertoires. 27MV reported that he speaks Mbum better than his younger siblings due to the time he spent in other villages and with people who speak Mbum more frequently. In essence, children learn the languages to which they are exposed. Some Fulbe speak Vute and Gbaya through exposure at school and depending on their particular individual exposure to the languages. 25MV spoke of a close Fulbe friend who speaks Gbaya due to exposure to people speaking the language and his curiosity to learn his friends' language. School teachers' children readily learn common languages in the villages even when their parents do not speak them.

The type of multilingualism in Nyanjida is a specific type, called small-scale multilingualism (Lüpke 2018a, 2016b; Singer & Harris 2016), "meant here to designate communicative practices in heteroglossic societies in which multilingual interaction is not governed by domain specialisation and hierarchical relationships of the different named languages and lects used in them, but by deeply rooted social practices within a meaningful geographic setting (Lüpke 2016b: 35)." Few detailed studies on this type of multilingualism have been conducted. It has also been referred to as 'endogenous multilingualism' (Di Carlo 2018), 'egalitarian multilingualism' (François 2012), 'balanced multilingualism' (Aikhenvald 2007) or 'traditional multilingualism' (Di Carlo 2016; Aikhenvald 2002). This type of multilingualism is endogenous in that linguistic repertoires and ideologies are not externally motivated (Di Carlo et al. 2019; Di Carlo 2018). In Nyanjida, even though Cameroon promotes national bilingualism in French and English, linguistic repertoires and ideologies are built locally based on "sociocultural motivations for multilingualism (Lüpke 2016b: 41)." These small-scale settings share certain characteristics (Lüpke 2018a: 13, 2016b: 63):

- confined geographic settings
- many shared cultural traits in the entire setting making it a meaningful entity
- complex exchange dynamics relying on dialectic relationships between similarity and alterity
- indexical language ideologies (see section 3.2.4.1.2)
- little or no use of a lingua franca, at least until the very recent past

Nyanjida is a locally confined setting, where the named cultures Gbaya, Vute, Fulbe, and Mbum actually share many cultural traits through Frontier and other processes. There is no overarching hierarchical political structure in Nyanjida itself, although in larger towns and in some villages Fulbe dominate the political structure, creating hierarchies. Some of the small-scale societies around Nyanjida are united through shared language practices, social networks, and kinship. No language acts as a lingua franca, although Fulfulde has been reported as such in other areas (Connell 2001b) and Mbum in the past (Thwing & Thwing 1979). The use of multiple languages

as a common means of communication is so pervasive that “multilingualism is the African lingua franca (Fardon & Furniss 1994: 4).” Languages do not neatly fall into hierarchies, where one language dominates certain domains, with the exceptions of Gbaya being used predominantly in church (because the pastor speaks this language well) and French in school (because teachers are not from this area and have completely different non-local repertoires). Lüpke (2016b) gives a typology of small-scale multilingualism, locating a set of parameters along a cline of the least multilingual setting to the most multilingual setting. The setting in Nyanjida lies at the extreme end of the cline with a high degree of multilingualism of the reciprocal type, where monolingualism is non-existent, intrasentential code-mixing is pervasive (field notes), and identities are indexically marked.

2.3.3 Interplay of languages

“Whenever Ugwu brought out the kola nut, master would say, “Doc, you know the kola nut does not understand English,” before going on to bless the kola nut in Igbo. (Adichie 2007: 18).”

Languages interact and are accessed by speakers in complexly different ways. The multilingual situation in Nyanjida is non-polyglossic (an extension of diglossia (Ferguson 1959; Fishman 1967), meaning the languages do not create a hierarchy like that often referred to in multilingualism literature regarding European patterns and speakers do not generally compartmentalise language use based on social contexts or domains. This perspective of polyglossia maintains a monolingual bias (Auer 2007) in which the roles of languages are set for each domain. One could assume that the local church represents a domain in which one language dominates, Gbaya, but the code choice depends on who is present. Gbaya currently dominates because the pastor and attendees share Gbaya as a common language. Other languages are used as well, and language choice patterns change when other pastors visit. French does have some prestige in that it indexes a person’s education and frequency in larger towns. Other researchers in Cameroon find this as well (Moore 2004). This prestige marking stems from colonialism (Lüpke 2016b).

Actual language practices are non-polyglossic, but polyglossic ideologies exist, creating a layering of practices and ideologies. Polyglossic ideologies depend on perspective. For example, different varieties of Fulfulde are perceived as more prestigious depending on the perspective of each speaker of a variety who perceive theirs as the more prestigious one (Virtanen 2003). One sixty-year-old man (60MV) living in Nyanjida, who is from the Banyo area, is perceived as speaking ‘pure’ Fulfulde, as Banyo is much closer to northern areas where ‘pure’ Fulfulde is spoken. The use of Fulfulde does not mirror other languages considered prestigious lingua francae, such as in

Lower Fungom, where Cameroon Pidgin English acts as "a default language for communication in settings where information is intended to be widely known or, especially in its more standard English-like forms, as a way for speaker to establish prestige, consistent with its general use in Cameroon (Di Carlo et al. 2019: 21)." I did not get a sense of this type of prestige-marking for Fulfulde. In Nyanjida it is easy to assume that when a speaker asserts language purity ideologies, that there exists a hierarchy, yet when interpreted as a scalar practice where people view their language or behaviour as the best, it acts as a recognition of difference, a way to contrastively define each other (Gal 2016).

The roles and functions of each language vary with each interaction and interlocutor, and one language is never solely used, nor hierarchically dominant, instead multiple languages are accessed. Rather than domains, the concept of linguistic spaces (Blommaert et al. 2005) is much more suitable in describing multilingual practices. For the multilingual setting in Nyanjida, domains are too abstract, compartmentalised, and restricting, whereas linguistic spaces are much more flexible and dynamic, better correlated to ever-changing sociolinguistic interactions. For example, a group of three and four-year-olds were playing on their imaginary motorcycles, usually executed in Vute and Gbaya, but were overheard speaking Fulfulde while imitating selling gas. When asked why they switched to that language, they quickly replied that Fulfulde was the language one uses to sell gas. In their ideological world the Fulbe sell gas, therefore Fulfulde is spoken in that space. Children learn to create spaces and act out what in their mind is permitted in those social spaces (Blommaert et al. 2005). Buying and selling gas is a space that calls for accessing appropriate features ideologically associated with Fulfulde. The children access features of language even though that language might not yet fully be a part of their repertoires. They cross boundaries to access features regulated by a certain space, a space that they know from running errands to nearby villages, where obtaining gas from a roadside stand entails speaking Fulfulde. Due to its small size, language use within Nyanjida is not as spatially regimented; it is more socially and individually motivated. The spaces that do exist provide an atmosphere that regiment language choices and behaviour to some degree, such as family compounds, school, church, and particularly the water pump, which provides a space for private conversations and seclusion; these spaces tie into social motivations that depend on who is present.

2.3.4 Linguistic repertoires

Individual linguistic repertoires in Nyanjida are incredibly diverse and influenced by a number of factors. Repertoires are not symmetrical, a reflection of personal backgrounds, experiences, communities of practice, and social networks created throughout a lifetime, making repertoires

unique and individual (Lüpke 2018a). This thesis focuses on the individual's repertoire since the concepts of speech community or language community do not aptly capture the diversity of repertoires that each individual may have (Lüpke & Storch 2013) and "it is impossible to generalise the dynamic multilingual repertoires of people (Lüpke 2018a: 4)." Local ideologies of village-level repertoires do exist; when asked why people learn Mbum in the village when it is not as common anymore due to Mbum moving away, the response was that it is part of the village repertoire. Speaking Mbum is a remnant of former times when Mbum lived in the village and reflective of ties to other villages where Mbum is more frequently spoken. A person's repertoire transcends beyond discrete languages, encompassing significant linguistic differentiation, languages, dialects, registers, styles, and variation. "Languages, in this microcosm of dense interactions, cannot be understood as stable, conventionalised parts of repertoires. Since speakers navigate local and translocal Frontiers, the roles attached to languages in these different contexts shape their practices into flexible, adaptive repertoires (Lüpke 2018a: 21)." The stylistic repertoire of each individual (Eckert 2012) and access to a multiplexity of linguistic resources create complexly diverse repertoires.

Nyanjida is a close-knit village, where everyone knows everyone and most grow up together, making people highly aware of each other's repertoires. There exists a high level of metalinguistic awareness. Predictiveness and regimentation play a large role in understanding others' repertoires and linguistic practices (Silverstein 2003), in which normal, expected expressions comprise communication (Blommaert & Rampton 2011). Speakers have in-depth metalinguistic and metapragmatic awareness that facilitates expansive ways of speaking. They access features from all languages, not in an uncontrolled way, but in a way that adheres to social and linguistic norms. For example, when eliciting ethnobiological insults with a group of children in Vute, they often brought in features from other languages, such as using a Gbaya word with a Vute suffix, but some were quick to point out any non-adherence to Vute language mode, down to the morpheme level. Metalinguistic knowledge can be very individual. One eight-year-old boy (8MV) was very aware of language boundaries, always pointing out which features belong to which language and he correlated with older adults when eliciting the ESS, strictly adhering to each language mode. The resources and choices available to a speaker are vast and people move through different styles, registers, and codes, combined with the use of shared and non-shared knowledge, common ground, and inter-subjectivity (psychological relation between people, agreement, shared meaning, shared definition of a situation). The breadth of choices available facilitates creativity and linguistic profusion.

Although repertoires encompass multiple resources, it is useful to reference discrete languages to explain the asymmetry of individual repertoires in Nyanjida and neighbouring areas. François

(2012) defines asymmetrical bilingualism as situations where one group tends to learn another's language, while the other does not reciprocate. In Nyanjida, asymmetrical bilingualism depends on personal and group identity as well as gender. In general, those who identify as Vute are the most multilingual, usually knowing all the common languages well. Vute have learned the languages of "newcomers" (Kopytoff 1987), similar to the adaptive multilingualism Lüpke (2016b) reports for Casamance in Senegal. "Newcomers", the Gbaya and Fulbe, generally do not learn Vute. In general, Gbaya speak their language, Fulfulde, and French. Gbaya women who come to the village through endogynous marriages tend to self-report that they cannot speak Vute, but observation shows that they do speak it, especially after they have lived in the village for several years. Fulbe predominantly speak Fulfulde and possibly some Hausa, French, Mbum, and Arabic. These are generalisations, as some Gbaya speak Vute and some Fulbe speak Gbaya and Vute, amongst other languages. Repertoires cannot be generalised across ethnic affiliations, as each individual's repertoire reflects their personal background and experience. In small-scale settings such as Nyanjida, where everyone knows everyone, people are intimately aware of others' repertoires. In this regard, language can be used as a tool in social interaction. For example, one woman explained that when speaking with a male friend, she selectively chose a language she knew the man's wife would not understand. Use of repertoires is egocentrically driven and not necessarily catered for interlocutors (Lüpke 2016b). For example, a young Vute man said that he can use his way of speaking Fulfulde and others will understand no matter their repertoire. This involves varying degrees of reciprocity, meaning interlocutors have asymmetrical repertoires, but they develop a mutual understanding.

The diversity of linguistic repertoires contributes to many kinds of modes of interaction. People grow up together hearing each other's languages in school and other social situations; it is not inconceivable that many are able to comprehend other languages even if they may self-report that they cannot speak them. Many people may self-report that they do not know a language when they also possess enough knowledge of other languages to access them in their speech. What counts as inclusion in a person's repertoire is highly dependent on perspective, that of the individual, their audience, local parameters, and the researcher's own prior assumptions. "Only languages closely tied to the speaker's identity through ancestry or family ties tend to be mentioned... Due to erasure, facts that are inconsistent with the dominant language ideology go unnoticed or ignored (Singer & Harris 2016: 196)." For example, 50FV did not mention in a questionnaire that she regularly spoke Hausa, perhaps because it is not considered a language of the village[14]. Documenting all the languages of a person's repertoire proved difficult and

[14] This may have been also prompted by her understanding of my research assumptions and focus on specific languages in the ESS.

required triangulation of asking individuals directly and indirectly through observation and by asking others. Gbaya women assert that they do not speak Vute, but in actual practice speak it, especially with children. Languages within a person's repertoire cannot be categorised on a fluency spectrum; in a complex multilingual situation, it is very difficult to pinpoint a person's "fluency". These Gbaya women may not have "full" command of Vute, but they access features of it, making it a part of their repertoire by monopolising features they do know. In these types of multilingual environments, a person's competency in a language involves multiple, complex factors.

The constant presence of multilingualism fosters receptive multilingualism (also called "*lingua receptiva*") (Rehbein et al. 2012; cited in Singer & Harris 2016), where a person understands a language but does not speak it back, instead they respond in another language. Endogynous marriage practices foster receptive multilingualism. Gbaya women, when communicating with their Vute husbands (and children), often speak in Gbaya while their husbands or children speak to them in Vute. They "actively resist linguistic accommodation, although they have a common language that they could use (Singer & Harris 2016: 186)." Receptive multilingualism is a mode of interaction that allows asymmetrical access of repertoires and shows that a linguistic repertoire transcends traditional conceptualisations of competence that label speakers as "passive" or "semi-speakers". People also engage in crossing, which involves crossing language boundaries, even if the person knows little of the other language. People report that when conversing with Fulbe, they will use features from other languages, such as Gbaya or Vute, that they do not know well, but know their interlocutor understands. Fulbe might not know the prototypical use of a language such as Gbaya or Vute, but they have knowledge of peripheral schema that allows them to use features from these languages when communicating with Vute or Gbaya speakers. Likewise, Vute and Gbaya speakers have knowledge of others' (with whom they are familiar) communicative congruencies and will use those features in communication, depending on each individual.

Repertoires differ by age, not only regarding discrete languages, but more so regarding registers, styles, and variation, which take a lifetime to learn. Children learn to navigate the diversity of repertoires and develop their own from an early age. In Nyanjida, children are often sent on errands to nearby villages, where they are required to adapt and build on their repertoires while learning to navigate varying linguistic spaces. They are sent to small Fulbe shops where they learn the schema of buying goods in Fulfulde. "Research has already demonstrated that multilinguals differ from their monolingual counterparts in their approach to second language learning, using different learning strategies, exhibiting greater metalinguistic awareness, and reflecting more on their language systems and language use (Moore 2004: 11)." In Nyanjida,

children do not begin speaking with one language and add on languages. Rather, they are multilingual from the start and even though one "language" may be used more frequently, children access features from several languages, learning languages simultaneously. Language socialisation begins before a child begins to speak and continues into adulthood. Language learning involves expanding repertoires through feature acquisition (Jørgensen & Juffermans 2011; Jørgensen et al. 2011) and learning the sociocultural ideologies that attribute specific features with certain languages as well as the indexical nature of specific features. The use of features from different languages facilitates language learning by providing clues for speakers when unfamiliar features are used (Moore 2004).

People above age twenty-five are generally the most multilingual since those below that age generally do not have knowledge of Mbum. There exist tiers of knowledge based on age. A notable difference exists between the way one speaks with an adult and with a child. One young man, while instructing children to increase the size of a fish dam, used the Vute term *rrrrrám* 'big' rather than the usual term *dʒíri*. He explained that it is the same language, just different words and a person builds on their language until they know the 'true' Vute. In eliciting species names, consultants under about twenty years of age use 'children's language', whereas those above twenty are more likely to give several names covering all age groups. Children usually do not access features adults use, even though they may be aware of them and have access to such resources. Children may refer to a branch in Vute as *ŋgái kuní* 'hand of the tree', whereas adults tend to give the monomorphemic *taàm* 'branch'. One seventeen-year-old was naming internal organs in Vute and gave the name *ndʒɔ̃* 'liver' as *ním ndʒéin* 'house bitter'. When an older man heard the term, he said the young man had misused *jú* 'house' as *ním* because of his age and would later learn to speak like *les grands* 'older people'. Not only had the young man used a variant of 'house', but also gave a descriptive construction. Many defer questions to *le père* 'father', a sixty-two-year-old man (62MV) in the village who holds a vast amount of knowledge and act as a bridge between the past and the younger generations. One young man said the way he speaks "*casse la tête seulement*" 'rattles your head', meaning one must pay attention to the way he speaks since he uses older registers and styles, and mixes words from other dialects.

Motivations in individual repertoires are influenced by a complexity of factors, with one of the main motivations being affiliation and access. Multilingualism creates multiple affiliations and access to social networks. The makeup of an individual's repertoire partly depends on a person's language attitude and ideologies. One consultant, whose father is Vute and mother is Gbaya, mentioned that he knew Vute stories from his paternal grandparents but did not know as many Gbaya stories because he knew his maternal grandparents less. His father had always emphasised the importance of being and speaking Vute and gave less importance to Gbaya

language and culture. Repertoires are deliberately shaped and continuously added to, and much of these processes are influenced by language attitudes and ideologies.

2.3.5 Language ideologies

> It is argued that the documentation of these contexts cannot be achieved independently of an understanding of the language ideologies at work, as they influence what is presented as linguistic practice, and that arriving at a holistic description and documentation of the multilingual setting of Africa and beyond is central for advancing linguistic theory in sociolinguistics, psycholinguistics and contact linguistics. (Lüpke 2016a: 1)

Like so much already discussed, language ideologies in Nyanjida are vastly complex and multi-layered. "Language ideologies are beliefs, or feelings, about languages as used in their social worlds...typically multiple, context-bound, and necessarily constructed from the sociocultural experience of the speaker (Kroskrity 2009: 496)." They are only briefly introduced here in their implications for linguistic practices, multilingualism, and lexical variation. Language ideologies reflect individual and group conceptualisations of the interrelationship of language and the social world. Ideologies create identities and languages, actively constructing these and other categories. Local perceptions of language features come from seeking extensions of the world around them in language. For example, one consultant explained the differences in Vute tones of *suúm* 'snake species' and *súm* 'wine'. The snake species has a mid then high tone because the snake swims along in water and then climbs into trees, while 'wine' has a high tone because those who drink wine speak in higher, elevated voices. Analysis of attitudes and ideologies gives a more realistic view than breaking down the categories of ethnicity or culture, providing "an alternative for exploring variation in ideas, ideals, and communicative practices (Kroskrity 2009: 496)." Ideologies shape the conceptualisations and construction of ethnicity, culture, and language. Language ideologies mark social distance (whether inclusion or exclusion) and index identities. Many examples will be given in this thesis on how language indexes group affiliation, also practiced in northwest Cameroon (Di Carlo 2018, 2016). "Languages do not express identity in essentialist fashion, as in Western language ideologies. Rather, languages are used in indexical fashion and multilingualism is a social strategy that enables speakers to index different identities to different stakeholders (Lüpke 2016b: 48)." In Nyanjida, language ideologies exist at the local level with individuals and groups, inter-village levels, and beyond to regional and national levels. "Ideologies are viewed as complexes that operate in different shapes and with different modes of articulation at a variety of levels on a range of objects (Blommaert & Rampton 2011: 11)." They are multi-layered, built from clusters of converging dimensions, including individual and

group attitudes, and varying awareness of others (Kroskrity 2009). Ideologies are laden with contradictions, with incongruencies between local and national language attitudes (Cobbinah et al. 2016; Goheen 1995), mismatches between ideological assertions and actual practices (Cobbinah et al. 2016; Lüpke 2016a, 2016b; Singer & Harris 2016), and the multiplicity of ideologies in varying individual and collective identity constructions (Di Carlo et al. 2019).

Ideologies are multi-scalar, changing depending on the level of referencing and analytical level. Adherence to certain languages follows scaling processes, in which people orient to certain languages, whether local, regional, or national, to index affiliation, the range and scope of which changes depending on an individual or group's indexing intentions (Blommaert et al. 2005). Multiple ideologies become possible in that "the same practices, things, and people can count as instantiating one side of the axis when judged from one comparative perspective, and embodying the other side when judged from another (Gal 2016: 98)." In Nyanjida, local language ideologies differ from regional and national ones. Languages are not conceptualised in the same ways. The rural, isolated location of Nyanjida maintains a dissociation from national ideologies and contributes to the formation and maintenance of local ideologies. Cameroon recognises two official languages, French and English. National ideologies prioritise these two languages and promote bilingualism. When talking to people throughout Cameroon, it is quite common to hear the statement, "Cameroonians are bilingual." and when asked further, people will mention that they also speak their *patois* 'dialect(s)', which contrasts with *langue(s)* 'language(s)'. One gets a sense that the national bilingual ideology persists and that other languages are just add-ons for social and family purposes. There exists a linguistic nationalism which creates an "institutional and ideological pressure to choose one language (Gal 2016: 104)," meaning either or both of the national languages. Claiming bilingualism adheres to nationalistic mindsets that promote unification and gives value to the two national languages. Calling all other languages "dialects" demotes them, as if they hold less value than national languages. Such ideologies are prevalent in urban areas. At a workshop on multilingualism in Cameroon, one participant acknowledged the value of local languages in her repertoire by commenting, "It's like I have gold. And you are making me see gold (Atanga 2014)."

Language ideologies in a small, rural village like Nyanjida operate quite differently compared to urban areas. Multilingualism and flexible repertoires are highly valued locally, as in other small-scale settings in Cameroon (Di Carlo 2018, 2016; Moore 2004) and Senegal (Lüpke 2016a).

> Multilingual speakers of village-based patrimonial languages are often very accommodating and see multilingualism as an integral part of their identity; these traits are shared across the region and create a particular language attitude prizing multilingualism irrespective of the exact repertoires. This mutually shared ideology

> fosters reciprocal repertoires. Speakers socialised in different settings often find it hard to adapt to this attitude. (Lüpke 2016b: 51)

The influence of attitudes and ideologies in the formation and valuing of repertoires is sensitive to perception and scale. Local language ideologies value local languages, but socialisation and exposure to nationalism and national language ideologies adds another dimension to these local language ideologies, placing value on French. Nationalistic ideologies are symbolic strategies that have come about relatively recently due to colonialism and co-exist with local ideologies, "enabling them to enact different aspects of identities in versatile fashion (Lüpke 2018a: 3)." In Nyanjida, French is used symbolically to index education and contact with urban areas and speakers actively alter their French. It is common to hear people, especially children, call each other in French *villageois(e)* 'villager', an insult calling out their non-standard French or behaviour.

The complexity and variability of ideologies contribute to mismatches between assertions and actual practices. Understanding the complexity of these mismatches requires careful evaluation of what a person says and what they do.

> That investigation will require moving beyond the mere recording of informants' explicit statements of sociolinguistic norms, for beliefs and ideational schemes are not contained only in a person's explicit assertions of them. Instead, some of the most important and interesting aspects of ideology lie behind the scenes, in assumptions that are taken for granted – that are never explicitly stated in any format that would permit them also to be explicitly denied. (Irvine 2001: 25)

Unravelling ideologies involved not only asking a person what they believe, but also understanding their ideologies through observation and metalinguistic discussions, while understanding that ideologies change according to context and interlocutors. "People move physically between the local and the translocal Frontier; and they move ideologically between the two areas of language use and language attitudes associated with them, bringing them in proximity through their mobility (Lüpke 2018a: 19)." Throughout the research project, not only were there mismatches between assertions and actual practices, but when discussing observation of an actual language practice, individuals often denied their actions and if they were recorded, individuals would explain it away as an error or if talking about another individual, would attribute it to that person's competency level. Observing children's and adolescents' behaviour toward each other was instrumental in understanding ideologies, identities, and norms as they called each other out on how to speak or behave, shaking their heads with a tsk and telling me, "Il ne connaît pas." 'He doesn't get it.'.

"Meaning takes shape within specific places, activities, social relations, interactional histories, textual trajectories, institutional regimes and cultural ideologies, produced and construed by embodied agents with expectations and repertoires that have to be grasped ethnographically. (Blommaert & Rampton 2011: 10)." This complex interplay of ideologies defines what it means to be a Vute, Gbaya, Fulbe, or Mbum person and group, as well as which features comprise each socioculturally constructed language. For example, a number of people who claim a Fulbe identity also affiliate as Mbum (Hino 1978) and have "fulbeised" (Burnham 1996) to change their social status and affiliations. Within these 'ethnic' and 'language' categories there exist variations and continuums which are distinguished by ideologies. "Ideologies do not only frame how we define a category and its members, they also influence its scales, i.e. which contrasts we assume between categories. Different perspectives (as males, females, Europeans, outsiders, elders, shrine holders...) result in different categorisations of varying granularity, and often lacking referentiality (Lüpke 2017b: 13)." The Fulbe are not a homogenous group in Cameroon; varying identities and perceptions exist with regional and intergroup variations. Different groups share an "ideational scheme" (Irvine 2001) that sets them apart from others. There exist continuums and variations within settled Fulbe as well as within pastoral Fulbe (Mbororo). Settled Fulbe present themselves as superior to nomadic pastoralists and pastoralists consider themselves invaluable due to others' reliance on their cattle (Virtanen 2003). Differences in language exist between pastoral and village Fulfulde. Pastoral Fulfulde employs more consonantal alterations and the noun and pronoun system is more complex. Pastoral Fulbe place emphasis on linguistic and social performativity, with one of the main modes of performance as code-switching between pastoral and village Fulfulde (Virtanen 2003). Opposing Fulbe groups use linguistic forms to express heterogeneity and impart attitudes towards language variation and to perceptions of others. For example, pastoralists refer to village Fulbe as *huya'en* in its pejorative sense 'scavenger dogs of the towns' (Burnham 1996: 180). People categorise others in relation to 'languages' through stereotypes that are used to create sameness through difference (Jørgensen et al. 2011). Fulbe in urban centres of the north are considered to speak pure Fulfulde, called *Fulfulde lamnde*[15]. This 'us and them' is seen also between groups through labels. Fulfulde spoken by others is called *Kambariire* 'language of an illiterate' (Taylor 1953: xiii). The pidginised variety of Fulfulde mentioned above, *Bilkiire*, is derogatorily referred to as "language of an imbecile" (Noss 1979: 175). This term is used by Fulbe to refer to the Fulfulde spoken by others, considered 'impure'.

The same ideologies can produce homogeneity and heterogeneity. Ideologies of distinctiveness like the ones above distance others, while at the same create the illusion of homogeneity within

[15] From the verb *laaɓi* 'be clean, clear, pure, innocent' Noss (1979: 173).

a perceived category (Irvine 2001). These multiple points of view go beyond Gumperz's (1982) “we code” “they code” as placement in a hierarchy. It is not simply a “we” vs. “they” contrast, but a complexity of juxtapositions involving numerous conceptual schemes (Irvine & Gal 2000). Contrasts and distinctiveness are made real through ideologies (Gal 2016) and these ideologies are recursively reinforced.

> Members’ language ideologies mediate between social structures and forms of talk. Language users’ ideologies bridge their sociocultural experience and their linguistic and discursive resources by constituting those linguistic and discursive forms as indexically tied to features of their sociocultural experience. These users, in constructing language ideologies, display the influence of their consciousness in their selection of features of both linguistic and social systems that they do distinguish and in the linkages between systems that they construct. (Kroskrity 2009: 507)

Ideologies contribute to conceptualisations and constructions of language and language purity. “Linguistic divergence is an important social construct upheld in linguistic practice (Lüpke 2016b: 53).” People practice erasure (Irvine 2001) in their ideologies, paying attention to certain characteristics and linguistic features, while rendering others invisible. “Correctness is a social convention about the characteristics of specific linguistic features (Jørgensen et al. 2011: 30).” Languages are viewed locally as something to be consumed, as one young man said, “*Je n’ai pas mangé assez en Fulfulde*.”, literally ‘I have not eaten enough in Fulfulde’, reflective of his ideology of Fulfulde competence and that he is not yet ‘full’. Ideologies of language purity and categorisation are recursive, where distinctions are applied again and again, reinforcing ideologies that depend on perspective (Gal 2016). Perceptions of ‘pure’ language represent tokens of a type (Irvine 2016: 98), where languages and dialects are interpreted scalarly, with one language or dialect seen as the purest and others perceived as less pure, depending on a speaker’s perspective and ideologies. Certain features contribute to ideologies of pureness through scales created by speakers. Differences are erased to create a constructed standard considered to be ‘pure’, the best example, creating ideologised categories and relationships. This correlates with the concept of prototypes, discussed below in the theoretical chapter, section 3.2.1 on language conceptualisation.

Language purity is a shared, mutual understanding of constructed correctness and interlocutors use this correctness to negotiate and understand belonging. People often refer to certain language varieties as the *vrai langue* ‘true or real language’, while pointing out the individuals and groups who speak ‘true Vute’, ‘true Gbaya’, ‘true Fulfulde’, or ‘true Mbum’. People categorise languages through scalar projections, assessing language features by degrees of encompassment. They apply language ideologies based on scale and perspective, assessing

language purity through measures of ideological constructions based on dimensions of correctness (Gal 2016). The Vute in Nyanjida assert that their way of speaking Vute is the authentic one. They claim that the Vute spoken further south in Yoko has too much Ewondo and that spoken to the northwest in Banyo mixes too much with Fulfulde. A young man referred to the Vute in Yoko, "*Ils sont un peu sauvage. Ça n'est pas cent percent*." 'They are a bit wild. It's not one-hundred percent'. Those in Nyanjida believe the way they speak Vute is the purest, with no mixing and is more difficult and complex. There exist names for authentic language, such as in Mbum *lík.mbûm* 'true Mbum' (Hino 1978: 325) and names for mixing other languages, as in Vute *vɨ̀té malààtú* 'mixed Vute'. Older people assert their ideologies of purity by correcting those younger on the features they use. One of the oldest men in the village shared his perception of competence in Vute, "The young men do not know. I know. The ancient Vute." Young men reciprocated, often calling the man 'professor' and referring to him for questions about the language.

Speakers hold these ideologies of purity, associating certain features with this ideal, while ignoring others through processes of erasure, but in actuality do not follow this in practice. Actual practices reflect individual and group ideologies of permissibility in language use. Knowledge of prototypical features associated with a language does not mean a speaker will use them. Younger speakers use language creatively, often accessing features of other languages that sets them apart, through practices such as crossing (Rampton & Charalabous 2010), where using features of another language is not restricted, but mixing it with Vute might not be viewed favourably by older speakers who hold different views of permissibility. In other words, speakers can access any feature from their linguistic repertoire, but the usability may be restricted (Jørgensen et al. 2011). Young speakers use terminologies that are non-prototypical and perhaps restricted by ideologies of others. For example, one young man used the Vute verb *ʤùknɨ́* 'eat' while joking with friends rather than the standard *tàŋnɨ́*. His explanation was that Vute is a dynamic language which can be deliberately changed so that others cannot understand. Such use of non-prototypical features of language are used as markers of social distance and identity. In this example, a group of young men disregard mainstream ideologies of language purity and choose terms that are shared by their community of practice. In a sense, practicing lexical variation acts as a frontier process, where they break away from a larger group to form their own group through linguistic choices, while at the same time maintaining connections and ideologies with the larger group.

Ideologies of language purity play a role in acceptance and identity. The way one of the Gbaya women in Nyanjida speaks Vute is perceived as unique and idiosyncratic, reflecting her background and the way she learned Vute in the village. It does not adhere to prototypical Vute,

perhaps purposely as a way to maintain her affiliation as Gbaya, but also in speaking Vute she gains acceptance as a member of the village. Ideologies of language purity parallel conceptualisations of language ownership. In Nyanjida people will often say they do not know Gbaya well, "*Ça n'est pas mon patois.*" 'It's not my dialect'. This comes from people who have Gbaya mothers and speak it on a daily basis but reflects ideologies of pureness and ownership. They assert that they know Vute well, as that is the language of the village, whereas other non-identity languages do not fall within such a conceptualisation of ownership.

I now turn to the historical background, which offers a context for current linguistic, social, and cultural practices.

2.4 Historical background

The historical background of Nyanjida and surrounding areas connects to much of the background discussed this far. The histories are shaped by perspective and wrought with contradiction. In order to understand the current situation of this region, socio-historical factors must be considered. People in this region may self-report as Vute, Fulbe, Gbaya, Mbum, or other identity labels, yet each individual's complex identity reflects the region's multi-layered history, making cultural, social, ethnic, and language boundaries not clearly delineated. Historically, the area has experienced constant flux through Frontier processes. People have been and continue to be highly mobile and adaptable in this region, creating a contact situation of multiple, complex social and linguistic backgrounds. Major influences include the influx of Fulbe, the colonisation of the area by both Germany and France, missionaries, and itinerant Hausa traders, all of whom instituted major changes that had considerable social, cultural, and linguistic impacts. Multiple systems of exchange have and continue to exist. Historical and current trade have considerable influence on the interconnectedness of the area and beyond, making it impossible to consider languages and groups of people as homogenous entities. "Oral histories claiming homogeneous and monolingual groups do not remember the past; they create the past (Lüpke 2018a: 16)."

Nyanjida is situated in an area that has experienced continuous social upheaval, with one of the most significant influences starting with the arrival of the Fulbe 150-200 years ago (Gausset 2010). The *jihad* of Usman dan Fodio was extended into Adamawa in the 1830s (Burnham 1980: 10). This brought ever-lasting change to the region with the presence and power of the Fulbe. Their political dominance facilitated the spread of Islam, instituted through installing *mallams* in certain villages and by taking key leaders of the conquered populations to Ngaoundéré for incorporation. They established permanent colonies of Muslim traders throughout the Adamawa

Region, which included Fulfulde and Hausa speakers. The influences of Fulfulde and Hausa come through other languages in borrowings of Fulfulde and Hausa titles, such as *jauro* 'chief'. Interestingly, the titles were borrowed, but the roles and power did not transfer (Burnham 1980). Ngaoundéré became a centre for Fulbe dominance, a central location for the exchange of slaves and goods. Their networks and practices allowed for both direct and indirect control. They enslaved some groups and impelled others to form alliances against raids (Hurault 1998), which contribute to the present social, cultural, and linguistic mosaic. The joining of many people from different language background for the sultanate's army must have had linguistic, cultural, and social effects as well as influencing identities and ideologies. Some groups such as the Mbum were quickly transformed into allies within a generation, with many of their leaders incorporated into the Fulbe lamidates (Burnham 1980). Others, such as the Vute and Gbaya fled and maintained relative independence from the Fulbe incursion, although some did not.

Germans officially ruled the area starting in 1901 and exploited the area and populations for trade goods (Burnham 1980: 47). They used existing Fulbe power structures and centralised dispersed populations into more-easily controllable villages. Much of this was often by violent force, a memory that carries through to present generations. The French took over in 1916 (Burnham 1980: 49) and also ruled indirectly through Fulbe and Hausa connections and continued to centralise populations. Christian missionaries started coming regularly to the area around 1924 (Burnham 1980: 61), which also had a considerable impact on local religion, language, and culture.

Expansive exchange networks existed before the Fulbe, German, and French arrivals. Itinerant Hausa traders had been in the area for centuries, as traders before and during the Fulbe arrival, and as intermediaries between local groups and the French (Burnham 1980). The Fulbe, Germans, and French all used existing networks and pushed dispersed populations to centralise to better facilitate the control of goods and taxes. In the 1930s, the French instituted a policy of *regroupement*, in which populations were further required to centralise along main roadways, often instituted with considerable force. During the *regroupement*, the designation of a chief was necessary for French administrative and political needs. The segregation of *quartiers* 'neighbourhoods' within some present-day villages reflects the dispersed patterns of groups in the past. The Fulbe incursion and colonisation by Germany and France impelled people to form dense, multiple networks, as described by (Lüpke 2018a: 9) in Senegal:

> Difference and othering were necessary in order to rationalise the participation in slave raids, kidnapping, and warfare targeting close neighbours and group members. At the same time, through the practice of regular exchanges, difference was also needed in order to create the affinities (resulting in sameness) that were based on symbolic ties

> between perceived different entities and that resulted in being protected from attacks. The necessity of small differences does not only entail that identities are multiple and contextually index difference aspects in order to invoke particular bonds or negate them.

Pre-colonial population structure was much different than today. People were organised in numerous dispersed, acephalous, and politically-independent groups (Burnham 1980) that formed alliances with each other to form local political units. Little documentation exists on the historical language situation; however, these types of multilingual small-scale societies are thought to be the norm in human history (Evans 2013; cf. Lüpke 2018a; Singer & Harris 2016). This pattern followed Frontier processes of fluctuating, continuous patterns of mobility and change, contributing to the diversification of languages and current dialect continuums, where links were maintained, often never permanently broken (Kopytoff 1987). This fluidity has permeated cultural, linguistic, and social actions throughout the Fulbe incursion and French and German occupations and contributed the social and political cohesion and tight, far-reaching social networks that continue to exist today. Frontier processes existed long before these periods. Vute were strong warriors who migrated southward beginning in the sixteenth century, incorporating conquered groups or in turn pushing others to flee (Mohammadou 1986a), creating a complex contact situation. Gbaya came from the Central African Republic within the last century (Burnham 1980). “Gbaya cultural and dialectical variations tend to shade gradually into each other (Burnham 1980: 2).” The continual flux makes pure homogeneity non-existent, but convergences and divergences along with maintenance of difference and sameness created a constructed sense of homogeneity with ethnic and language labels. Burnham (1980: 56) describes the mosaic-nature of this region in his description of the Kwanja, a Mambiloid group in the Adamawa Region:

> One cannot talk about the Kwanja’s social organisation and identity without reference to the Fulbe, who have exerted a tremendous influence over their lives and culture. There is a danger, however, when analysing conflicts between Kwanja and Fulbe, that we construct them as the result of essentialist antagonisms and dichotomies. The danger exists for pre-colonial conflicts, as well as for contemporary agro-pastoral conflicts. Both the Kwanja and the Fulbe have developed essentialist discourses presenting things in terms of unbridgeable oppositions...Yet, behind these essentialist discourses, both Kwanja and Fulbe informants also tell about the complexity of the issues, the intermarriages, political and military alliances, friendship ties, joking relationships, economic interdependencies, cultural and religious syncretism and grey zones of all sorts.

Gausset (2010) also discusses the contradictions between artificial dichotomies and reality, noting that interconnections between groups run very deep. “Political reality is defined and redefined in seemingly contradictory ways as one moves from one context to another (Kopytoff 1987: 60).” Collective, official stories of history exist, but are belied by personal stories, private versions of history (Kopytoff 1987). In Nyanjida, official stories of village history exist, but when asked in detail, quite different personal histories exist alongside these, which are passed down through families, ensuring children know them. Group identities have been formed through erasure of history, of parts of history that do not conform to the group’s ideology of who they are. Groups draw on parts of history that make them firstcomers. Vute claim a “principle of precedence” as firstcomers to the area, with Gbaya and Fulbe considered latecomers, erasing the previous existence of other groups, a paradox of simultaneously being firstcomers and latecomers (Kopytoff 1987).

In the past Nyanjida was much larger and more diverse. Not only Vute and Gbaya lived there, but also Mbum, Pygmies, and other groups. The village used to be more economically prosperous and had an active chief who welcomed strangers. Some of the relatives of current residents were blacksmiths in the past, who spoke an occupational register also attested in other Mambiloid languages (Connell 1998). The historical background of the area has had considerable impact on languages. A detailed, large-scale analysis of language features would likely reflect many of the historical periods and factors mentioned previously (Beyer & Schreiber 2013) and patterns of language use could be historically and spatially anchored (Blommaert et al. 2005: 200). Different power structures would have accelerated or inhibited language convergences and divergences (Watson 2018). “In the process of populating this region, these Gbaya came into closer contact with the Mbum groups already inhabiting the area. Although the exact modalities of this cultural intermixture are unclear, it seems that numbers of Mbum may have been absorbed into Gbaya society. Mbum influences are still apparent in various domains of Gbaya language today (Burnham 1980: 44).”

I now turn to the ethnobiological background, also a product of historical and Frontier processes.

2.5 Ethnobiological background

2.5.1 Introduction

Cameroon is a large country with wide-ranging geographical diversity that hosts a remarkable range of fauna and flora. At least 237 plant families are known to occur in Cameroon, split into 1779 genera and about 8500 species, of which around 3000 are known to be useful (Onana 2010: 557). The Adamawa Region is one of the most geologically diverse regions in Cameroon

and supports agricultural practices. Granite slabs and boulders dot the hillsides and reddish-brown laterite soils fill the valleys. The landscape is highly anthropogenic, reflecting the historical human presence and use of ethnobiological resources. The Adamawa Region is markedly underdeveloped; people rely on the diversity of ethnobiological resources for subsistence and health. Nyanjida is situated within an ecotone, a transition area between the Sudano-Guinea savannas of the north and the forested south, which enrichens the breadth of ethnobiological lexicons. Lush forested corridors cradle waterways, elegantly called *galleries forestières* 'forest galleries' in French. There exist two seasons: the rainy season from May through September and the dry season from October until April. Social practices and mobility structure around agricultural practices in accordance with these seasons. Landscapes within and around Nyanjida are actively managed cyclically, forming a patchwork of semi-wild landscapes, agricultural fields, and forest fragments. Managed areas are burned yearly and dominated by fire resistant trees which are subsequently used medicinally. The environment provides subsistence and health, and the intimate relationships of people and land are reflected in language and social structure.

2.5.2 Ethnobiology

People in Nyanjida depend on ethnobiological resources in their daily lives. They practice subsistence agriculture, relying on cultivated and wild food. The fertile soils allow for a variety of crops and the forests and savannas provide an abundant amount of sustenance. Most people rely on traditional plant medicines since health clinics are far and not affordable to most. Children are intimately connected to their landscapes, relying on self-harvested wild foods as an important source of nutrition, making them knowledgeable of plants and animals and their lifecycles from a very young age.

The ethnobiological world is an interconnected web of relationships and hierarchies in which social and cultural systems are projected onto environmental and biological systems, and vice versa. For example, some species exhibit sign metonymy, indicating the presence of other species or signalling seasons, thus guiding agricultural and wild harvesting practices. The presence of the male cricket *Brachytrepes membranaceus,* Vute *ndʒàŋne*, announces the season of the edible termite *bìì* (Guarisma 1978: 125) while the female cricket, Vute *ndõ̋õ̋*, announces the season of working in the fields (Guarisma 1978: 111). Ethnobiology is woven into everyday life through the use of extension, such as the Vute term *ndʒáàb* 'bear fruit, pay' (Thwing 1987: 19) where the ethnobiological concept of producing fruit extends to the economical concept of reimbursement. Children use many plants as toys, often extending their conceptualisation of the world onto or from ethnobiological species. For example, they collect the latex sap of *bwàkɨ́*

(Vute) or *gbàrà* (Gbaya), a shrubby, vining plant (*Landolphia owariensis*) for bouncy balls or playful seed heads that pop. They name toys after species from which the toys are made, such as their play guns, in Vute *jaaŋ more* and in Gbaya *sòsò bùl*, both literally 'gun of the more tree', *Annona senegalensis*.

(7) Vute

more	
jaaŋ	*more*
gun	tree.species
'gun'	

(8) Gbaya

sòrè	
sòsò	*bùl*
tree.species	gun
'gun'	

Ethnobiological knowledge is for the most part a shared, collective system in which knowledge, like languages, is not symmetrically distributed throughout the population. Some people know more than others and people are generally aware of others' knowledge, accessing it as needed, making a collective system. Knowledge is accessible in such a small village of extended family, where everyone is aware of the distribution of knowledge and who to go to. Participants in the ESS often asked to participate as a group, as they were not always comfortable participating alone. Ethnobiologists distinguish types of knowledge as knowledge encoded in language, or lexical knowledge (Ellen 2003: 48) and knowledge gained from practical experience, called practical knowledge (Reyes-García et al. 2007: 194). For example, males and female's lexical knowledge of one forest plant, *Brillantasia patula*, are congruent in the Vute name *naŋkə́ dùrù* (literally 'baboon's couscous'), yet their practical knowledge differs in that an adolescent girl referred to the leaves as a delicious sauce and touted their medicinal and witchcraft protection value, while an older man referred to the leaves as useful cord for hunting. So much of ethnobiological knowledge extends beyond the lexicon, embedded in stories and cultural practice surrounding plants, animals, and agricultural ways of life. This research primarily concerns lexical knowledge and includes practical knowledge as necessary. Compared to the number of species in the world, a relatively small portion of them are named. Much more knowledge lies in practical knowledge, making that which is encoded lexically even more interesting linguistically and cognitively. In general, the naming of species involves cultural salience and the expertise and interest of an individual (Turner 2015: 48). Like linguistic repertoires, those who have an interest and need expand their ethnobiological knowledge, making it very individual, as one man put it, "*Cela dépend de la personne*" 'It depends on the person.' Documenting and measuring ethnobiological knowledge is difficult in that some people know uses, but not names and some know names, but not uses. Additionally, practical knowledge varies greatly, driven by social and demographic factors. Individual knowledge in

such a small village of extended family forms a system of knowledge in which knowledge sharing is multidirectional, although some is guarded and learned as a factor of age and position.

Ethnobiology is a domain in which the referent usually remains the same, acting as a constant from which to study multilingualism and lexical variation, and is an interesting domain to examine language and cultural praxis as ways of maintaining group identities and boundaries, as described for the Maaka of Nigeria:

> What the case of Maaka as a language spoken by an extremely multilingual community with similarly extremely fluid "ethnic" identities demonstrates, thus, is that speakers are able – even in this "chaotic" context – to distinguish between the epistemic systems of different languages. Knowledge is conceptualised in different ways in the different languages that all form part of a speech community's repertoire. And the speakers use these individual languages of their respective repertoires in special contexts, so that truth or knowledge as encoded in Maaka has a different seat in life than knowledge in Hausa, Kanuri or Bole. This answer also implies that multilingual speakers are not only rich in linguistic choices and means of expressing themselves in different environments and contexts, but that they are also rich in ways of perceiving the world, mentally organizing knowledge, and evaluating truth: multilingual people have several pairs of glasses through which they look at life. (Lüpke & Storch 2013: 252)

Individuals in Nyanjida, through their multilingual repertoires, have access to different epistemic systems of ethnobiological knowledge. The field research for this thesis is biased towards Vute, therefore it lacks a complete understanding of the full relationship of multilingualism and ethnobiology. The naming of species differs across languages, although, some species share the same name across languages. Borrowing and calquing are common. As different groups migrated to this region, they brought their own ethnobiological knowledge and held some of this knowledge, while also adopting local knowledge. The constant Frontier processes and impacts of colonisation in changing group dynamics had to have influenced ethnobiological knowledge similarly to language, as people maintained sameness or difference and systems converged or diverged. Languages hold vocabularies reflecting common practices of a group of people and reflect histories. Some ethnobiological domains have extensive, detailed vocabularies. The Fulbe have vast vocabularies concerning cattle and have knowledge of ethnoveterinary medicine, which have been adopted by non-Fulbe who raise cattle. Gbaya migrated from the Central African Republic and have detailed knowledge of hunting, reflected in the vocabulary of the Gbaya language. Vute have a large vocabulary concerning war, reflecting their warrior past. Guarisma (1978) lists numerous Vute vocabulary concerning bows.

The world of the Vute is relational; physical objects are extended to other physical objects as well as the supernatural. They hold a kincentric belief system, in which "all life forms and other environmental entities are seen to be relatives of humans and of each other (Turner 2015: 300)." They also employ anthropomorphism, a way to make sense of the natural world by applying human characteristics to species. The Vute world is an interconnected web of relationships and hierarchies in which social and cultural systems are projected onto environment and biological systems and vice versa. Ethnobiological terms in Vute extend their references for synonymous terms, such as *kóhè*, meaning 'bark' and 'shell' (Guarisma 1978: 135). Calling river mud used for fish dams *naŋ* 'fufu' extends a highly salient physical object (fufu) to another object (mud) in an important cyclical practice of fishing. Peoples' physical appearances, especially children's, are commonly talked about in relation to animals, often with insults, examples of which are given in section 2.2.2.

The body in Vute, Gbaya, and Mbum extends to other objects like plants and vice versa. Plant partonyms are congruent with parts of the body. In Vute, *dʒũŋgu* 'veins', are referred to as the 'roots of the body'. *Dʒũŋgu* may also be used interchangeably for *gwàáŋ* 'root'. 'Vein' and 'root' are also synonymous in Fulfulde as *ɗaɗol*. Vute refers to 'branch' with two variants, *taám* and *ŋgái kuní*, literally 'hand of the tree'. In Gbaya, *'ér* designates both 'hand' and 'branch'. Similarly in Mbum, *ndɔ̀k kpù* designates 'branch', literally 'hand of the tree' and *ŋgàŋ kpù* designates 'bark', literally 'skin of the tree'.

Ethnobiology extends into social and cultural realms. Vute hold three animals sacred, *ndʒane* 'tantalus monkey', *wùúm* 'viper', and *ndúkú* 'patas monkey', also known as *ndʒane mvórə* 'toothless tantalus monkey'. Social taboos prohibit killing or eating these species. This comes from historical times of war, when the monkeys, who live near the village, would signal and protect the village. The monkeys also cleared vegetation around the village, creating an environment for *wùúm* 'viper', who bit trespassers. In local French, *wùúm* is called *viej père*[16] 'old man', reflecting its habit of staying near the village. The three species names are extended into grammar through semantic shifts, as shown in Table 1. People say "*ndʒane*" as a response to sneezing. *Ndʒane* also stands as a component in phrases indicating the gravity of a statement. *Míwá ndʒane-bà* marks something bad and when a statement is much graver, speakers use the variant of 'patas monkey', *ndʒane mvórə*, meaning 'toothless tantalus monkey', extending the severity of a toothless monkey to mark a terrible situation. The suffix *-bà* 'sure, very' is added to n*dʒane* and *wùúm* to create a veridical marker affirming a speaker's validation of a statement. The use of these phrases is learned and permitted at certain ages. Young children readily

[16] A wordplay on French *viper*.

respond to a sneeze with *ndʒane* and appropriate use of the other phrases are learned in time. Only older adults above about age fifty who know and respect Vute traditions are permitted to use the epistemic phrase *wùúm-ɓa* 'really'.

Table 1 Ethnobiology extensions

Vute	**Context**
ndʒane 'tantalus monkey'	response to sneezing
míwá ndʒane-ɓà bad monkey-sure 'not good'	when something is bad
ndʒane mvórə monkey toothless 'terrible'	when it is really bad
ndʒane-ɓà monkey-sure 'really'	sure of statement
wùúm-ɓà snake sp.-sure 'really'	sure of statement

The ethnobiological lexicon reflects knowledge of the natural world and the behaviour of species. Some animal names, especially insects and birds, are sound symbolic. The morphological breakdown of *tɨ́hãã́* 'donkey', reflects a meaning 'the one who carries baggage', from the common prefix *tɨ-*, usually referring to humans, meaning 'the one who" and *hã* 'baggage' (Thwing 1987: 42–43).[17]

Some variants in ethnobiological terminology have powerful indexical value and involve scaling processes. In the above examples, people younger than about age fifty are not permitted to use the term *wùúm-ɓa* 'really'. Using such a term as a younger person is a "movement across scales of social structure (Blommaert et al. 2005: 200)", an individual, situated act to place themselves within a scale of social structure in which they do not yet merit. As I will show in Chapter five, lexical choices in the ethnobiological lexicon indexically mark affiliations and characteristics of individuals.

[17] In local etymology, people say it reflects the sound the animal makes.

3 Theoretical background

3.1 Introduction

This research follows a theoretical framework grounded mainly in Linguistics but also in Ethnobiology. I first outline the linguistic framework, then the ethnobiological framework. The linguistic framework details how this research conceptualises multilingualism and language(s), focusing on linguistic ecologies and repertoires. The multilingualism section defines key concepts and research that frame my research and analysis. This is followed by a section introducing relevant cognitive research. The next section describes relevant concepts in sociolinguistics, particularly variationist sociolinguistics, communities of practice, and social networks. The final theoretical section outlines relevant research in Ethnobiology, particularly other research in Africa and the relevance of Ethnobiology to multilingualism and lexical variation.

3.2 Linguistics

This thesis follows a model of language use that views language as dynamic and fluid, a social phenomenon that is context-dependent, with speakers as agents, drawing on sets of resources that are ideologically constructed as languages. It takes both a sociolinguistic approach, focusing on the contexts of language use, and a psycholinguistic approach, focusing on the individual (García & Wei 2014) and mental processes. It follows "a view of language as a set of resources which circulate in unequal ways in social networks and discursive spaces, and whose meaning and value are socially constructed within the constraints of social organisational processes, under specific historical conditions (Heller 2007: 2)."

The research methods used in this thesis incorporate an ethnographic approach, as used by others in rural African settings (Beyer & Schreiber 2013; Moore 2004). "More ethnography means more complexity. It is both the greatest merit of ethnography and its major curse: an ethnographic inspection of seemingly straightforward phenomena and processes invariably leads to a diagnosis of multiplicity, fragmentation, layering–a diagnosis that thus almost inevitably entails a forceful empirical critique of established views and institutional doxa (Blommaert 2011: 294)." This thesis reconceptualises traditional ideas of multilingualism and draws on the "pioneering work of linguistic anthropologists Gumperz, Hymes, Silverstein, the foundational rethinking of social and cultural theorists like Bakhtin, Bourdieu, Foucault, Goffman, Hall, and Williams (Blommaert & Rampton 2011: 3)" to analyse and understand multilingual practices.

The following section discusses how language is conceptualised in this thesis, followed by a discussion of traditional concepts and their applicability to the small-scale multilingual setting in Nyanjida.

3.2.1 Language conceptualisation

There exist many ways to conceptualise language and languages, varying by research framework as well as by perspective, whether that of the researcher or local, regional, or national perspectives. This section outlines a conceptualisation of language and languages that seems the most applicable to the multilingual setting in Nyanjida and the following section discusses the applicability of traditional concepts concerning multilingualism and language contact.

In the Lower Fungom area of Cameroon, local ideologies associate one language with one village, defined with regards to social and political structures, as well as spiritual life, whereas outside linguists classify the languages differently (Di Carlo et al. 2019; Di Carlo 2016; Di Carlo & Good 2014b). Much of how we perceive language(s) derives from Western conceptualisations of language(s) and multilingualism, which are still "based on fictional monolingualism and maximal language separation and on prestigious standard varieties enforced through powerful language management mechanisms (Lüpke 2016b: 39)." Conceptualisations and terminology from Western situations do not aptly translate to a small-scale multilingual situation like that in Nyanjida. Presupposed terms such as 'native speaker', 'mother tongue', 'first/second language', and 'ethnolinguistic group' hold ideological force, but

> research instead has to address the ways in which people take on different linguistic forms as they align and disaffiliate with different groups at different moments and stages. It has to investigate how they (try to) opt in and opt out, how they perform or play with linguistic signs of group belonging, and how they develop particular trajectories of group identification throughout their lives. (Blommaert & Rampton 2011: 5)

Even seemingly innocuous terms like 'language' and 'dialect' prove difficult to define when examining actual practices, making them "very incompatible in terms of acknowledging and parameterising variation and inventorying and comparing multilingual settings (Lüpke 2010b: 4)." Language(s) and dialect(s) are metapragmatic labels given according to different perspectives on the parameters delineating language.

This thesis takes the ontological position of (a) language(s) as an ideological, sociocultural construct. Jørgensen (2008: 161) distinguishes "between *a* language and language. The former is

an ideological construct, while the latter is observable everyday behaviour." Conceptualisations of a language(s) are ideologically defined (Jørgensen 2008), an "ideological artefact with very considerable power (Blommaert & Rampton 2011: 4)." Creating and naming languages has purpose; it sets up boundaries, consolidates power and people, and excludes others. A language(s) and the people who speak it are imagined as homogeneous. Variation is disregarded through the process of erasure, whereby any features or actions not considered a part of the ideologised language are ignored (Irvine & Gal 2000). Taking the perspective of languages as constructs makes it near impossible to count or categorise them (Jørgensen 2008; García & Wei 2014; Heller 2007; Pennycook 2010). "Named languages are changeable socio-political constructs, not objective entities (Lüpke 2016a: 2)." The delimitation of languages varies greatly, depending on perspective and scale. As mentioned previously, the categorisation or conceptualisation of a language can vary with regards to local, regional, national, even international scales and along these scales there also exist changing perspectives. Languages "are thus social categorisations, not naturally given relations, and certainly not a consequence of the nature of language (Jørgensen et al. 2011: 36)."

This research is socially oriented. Comprehensively understanding multilingualism and variation in Nyanjida necessitates a focus on the social setting and multilingual spaces (Blommaert et al. 2005). "Understanding language as a set of ideologically-defined resources and practices constructs language as a fundamentally social phenomenon (Heller 2007: 2)." Social circumstances regulate the linguistic resources speakers draw on (Blommaert & Rampton 2011; Heller 2007; Jørgensen et al. 2011). Connell (2009), when researching multilingual practices at a market in a Mambiloid-speaking area, found that context drives language choices. The spaces and the speakers become the research focus when we examine actual language use.

> If we think of language as practice, and put the speakers, not the system, at the centre of our analysis, we have then to wonder why we need a concept of autonomous linguistic system at all....if we replaced the idea of code with the idea of linguistic resources which are socially distributed, organised certainly by speakers individually and collectively, but which do not necessarily ever have to correspond to some closed and wholly describable system. (Heller 2007: 8)

Language practices in Nyanjida are heteroglossic[18] (Bakhtin 1981), meaning a diversity of linguistic resources are simultaneously used, without regard to 'distinct languages' as conceptualised by standard multilingualism research. "Heteroglossia takes as its starting point

[18] Comes out of Bakhtin's term *raznorechie*, which roughly translates as 'the social diversity of speech types' Bailey (2007: 257)

the social and pragmatic functioning of language (Bailey 2007: 262)." Bakhtin (1981) pointed out the heteroglossic nature of monolingual settings, that speakers access features based on their unique social experiences (Woolard 2009). The concept considers how speakers position themselves in their social world and accounts for the sociohistorical associations of forms and signs (Bailey 2007).

Multilingual settings like Nyanjida call for a reorienting our research away from privileging autonomous language structure and towards conceptualising the structure of language

> as just one (albeit important) semiotic resource among a number available to participants in the process of local language production and interpretation, and it treats meaning as an active process of here-and-now projections and inferencing, ranging across all kinds of percept, sign, and knowledge. (Blommaert & Rampton 2011: 5)

Focusing on the processes and practices that create unique spaces gives a holistic understanding of small-scale multilingual settings. Process brings in a view of multilingualism as a whole system, rather than several language-specific systems working together. "The aim is to move discussions of bilingualism away from a focus on the whole bounded units of code and community, and towards a more processual, and materialist approach which privileges language as social practice, speakers as social actors, and boundaries as products of social action (Heller 2007: 1)."

The research for this thesis involved eliciting species names in five named languages, which treated them as autonomous structures during elicitation sessions, but does not necessarily reflect actual language practices. The elicitation task followed the "ancestral code" model (Woodbury 2011, 2005) of eliciting in each language mode, which captures speakers' ideologies of the ethnobiological lexicons associated with each language. Speakers do hold ideologies of what constitutes separate languages (Cobbinah et al. 2016; Singer & Harris 2016), but in actual speech ethnobiological vocabularies are not kept so rigidly separate. "Standard languages as reifications are always abstract constructs without a direct equivalent in speech (Lüpke 2016b: 40)." Analysis of elicitation responses reveals that it is impossible to treat the languages as autonomous. Rather, the responses reveal contact phenomena, social and political influences, individuality, and indexicality, all of which reflect the processes and unboundedness of languages, making it difficult to conceptualise languages as discrete systems, a sentiment shared by other researchers (Heller 2007; Jørgensen 2008; García & Wei 2014; Cobbinah et al. 2016; Blommaert & Rampton 2011; Lüpke 2016b; Auer 1998; Jørgensen et al. 2011; Woodbury 2011). Conceptualising languages as discrete entities serves research, institutional, and political purposes. The ESS responses reflect "highly multilingual and fluid linguistic contexts where

language use is organised around multilingual repertoires rather than 'native' languages (Childs et al. 2014: 169)." In my research there exists a contradiction between examining languages as discrete entities while also conceptualising them as part of an unbounded, fluid system. Analysis of the ESS addresses these different perspectives. In the ESS, languages are treated as objects of study, but understanding the relationship between the lexicons involves also conceptualising language as a system made up of resources that can be ideologically attributed to named languages, "a phenomenological perspective, languages or codes can only be understood as distinct objects to the extent to which they are treated as such by social actors (Bailey 2007: 258)."

> The nation-state order is a cultural formation that thus functions on the assumption of translatability across denotational codes, note, implying a certain equivalence of each code to all the others from which it can be differentiated, and thus, as well, a certain differential equivalence of each group of people for whom such a code is the norm. Here we see the underlying program of ethnolinguistic separatism and nationalism which, conforming to semiotic expectation, essentialises and naturalises each denotational norm, each 'language', as a kind of psychic patrimony of ethnolinguistic identity. (Silverstein 2015: 15)

Creating distinctions through labels and naming, in turn creates contrast and identities, and languages are constructed around these contrasts, ideologising sets of characteristics to produce "an imaginary native speaker ideal (Lüpke 2016b: 39)" or ethnicity, while erasing similarities. Multilingual language use transcends the "two solitudes" assumption (Cummins 2007) that keeps languages rigidly separate. "African multilinguals do not stack several fully-fledged monolingual repertoires onto each other (Lüpke 2016a: 24)." Conceptualising multilingualism as combining languages comes from European nation-building ideologies (Auer 2007). A person speaking several languages is not the equivalent of several monolinguals in one person (Jørgensen & Juffermans 2011; Grosjean 1982). Terminologies contribute to ideological conceptualisation of language. Even using the terms 'bilingual' and 'multilingual' categorises speakers as having a repertoire of countable, discrete languages and contributes to a monolingual bias that views bi- and multilingual speech as composed of distinct monolingual language modes.

In this thesis, language and multilingualism are conceptualised as "sets of resources called into play by social actors, under social and historical conditions which both constrain and make possible the social reproduction of existing conventions and relations, as well as the production of new ones (Heller 2007: 15)." This thesis presupposes language use as an act, as social behaviour, whereby speakers engage in languaging (García & Wei 2014).

> A languaging perspective sees language in actual practice not as bounded, countable entities that are given in the world, but as dynamic, creative potential to produce meaning through the use of arbitrary signs. A languaging perspective conceptualises language as a verb (as practice or behaviour), rather than as a noun (a thing or object) and place the activity and the agents (languagers) in focus rather than the linguistic system (languages). (Jørgensen & Juffermans 2011: 1)

Languaging is everyday language behaviour (Silverstein 2015) and "humankind is a languaging species (Jørgensen et al. 2011: 20)." A languaging perspective allows language use to be perceived as access not to a language, but to linguistic resources, or features (Jørgensen et al. 2011; Mufwene 2001), sets of which are socioculturally associated with languages, dialects, sociolects, and registers (Jørgensen 2008; Jørgensen et al. 2011). "Speakers use features and not languages (Jørgensen et al. 2011: 28–29; Jørgensen 2008: 166)." Features are more applicable analytically for explaining language use, rather than analysing separate, bounded languages. Features exhibit a range of fluid and negotiable associations, including association with just one language or multiple languages, as well as beyond the boundaries of ideologised languages. Features are associated with languages and languages are associated with features (Jørgensen et al. 2011). "Languaging is individual and unique in the sense that no two persons share exactly the same set of linguistic features (Jørgensen & Juffermans 2011: 1)." Interlocutors are brought together through languaging, which unites those with different linguistic repertoires. Asymmetric repertoires correlate through languaging, where speakers are unified through reciprocal use of features.

This thesis follows a model of language use which analyses "languages" at the level of features. A feature-based approach more aptly facilitates an understanding of multilingualism, languages and dialects, registers, and lexical variation in this research setting. Languages are sociocultural constructions with labels such as 'French', when in reality the French spoken in Nyanjida differs from that of larger towns, which differs from the capital city, which differs from standard French as conceptualised in France. Different features in French are used to index education and associations with places beyond Nyanjida. A features perspective accounts for the dynamic, creative potential in languaging (Jørgensen & Juffermans 2011) and helps to explain the complexity of multilingual language use and diversity of repertoires. "It is crucial to understand that the use of features from different sources is something we all do. We just have access to a smaller or wider range of different sources and therefore our behaviour involves less and more varied features (Jørgensen 2008: 170)." Features are not chosen randomly by speakers (Jørgensen 2008) and have social and cultural associations (Blommaert & Rampton 2011). This thesis analyses lexical variants as features. The asymmetrical distribution of features across

individuals helps identify variation and uniquely shared features identify groups of speakers that form communities of practice.

Speakers select features as the standard that represents their ideological perspective on what comprises a language. This holds for lexical variation as well. Speakers associate specific variants as the most representative, or prototypical (Rosch 1978). Languages themselves can be conceptualised as categorical prototypes, where features are schematically perceived as central to a named language (Cobbinah et al. 2016). "Standardising language also means enregistering particular linguistic features as normative; selecting particular phonemes, morphemes, words, syntax, etc. as normal, as the norms for *the* language while designating all variation to those norms as substandard, dialect, or even deficit language (Jørgensen & Juffermans 2011: 2)." The features constituting a language are perceived along a scale, with central features, on one end of the spectrum, and others peripheral that may not be typically associated with that language. The same holds for lexical variation, where one variant is usually considered prototypical through cultural consensus, while all other variants are not considered standard and have explanations as to who uses them. "The concept of any specific language is prototypical, i.e. it focuses on clear central characteristics, but at the same time allows vague borders (Jørgensen 2008: 165)." Treating languages (and lexical variation) as category reveals features that are more central and emblematic, whereas traits at the margin are more ambiguous (Cobbinah et al. 2016). Each individual has their own dynamic perspective on prototypicality, based on their background and experience. Language (and lexical) prototypes are both individual and collective, where, like a Venn diagram, closed curves represent interlocutors and the overlapping expresses shared features, indicating the language (or lexical) prototype (Cobbinah et al. 2016). Likewise, closed circles can represent languages in a multilingual setting where shared features of the languages are represented by overlapping. Speakers may activate prototypical features or those more peripheral for specific social needs (Cobbinah et al. 2016).

> Depending on which speakers, texts, and features are selected, and whose metalinguistic knowledge and perspective is applied, different prototypes emerge. Language prototypes allow visualising language use as shaped by two simultaneous opposed forces. The first force is one of convergence and unification, resulting in a conventionalised core. The second force is one of divergence, produced through the frequency of particular patterns in an individual's changeable social network and through innovation. (Lüpke 2017b: 11)

Multilingual speakers have available a tremendous amount of choices that can be used indexically with social meaning (Silverstein 2003) or not, along a scale from prototypical features to those more peripheral to those not associated with any code. Speakers actively and creatively

exploit the “fuzziness” of code boundaries (Garrett 2009). In Ecology, the boundaries and transitions between different ecosystems, called ecological edges, often comprise overlapping species from adjacent ecosystems, creating high diversity and species unique to these transition zones (Turner et al. 2003). Similarly, boundaries between languages create unique social spaces that contribute to diversity and expand the range of resources available to a speaker. Conceptualising languages as prototypical allows us to examine these areas created in multilingual praxis. Like the ecological edges, these boundaries between languages exhibit features from the languages of the speakers’ repertoires as well as forming unique features not attributable to specific languages. Cobbinah et al. (2016) found that prototypicality is highest in noun classification and some parts of the phonological system and lexicon. They also found that noun class systems converge in the intense contact situation but sustain differences as well. Noun classification was useful for my research because it acts so differently in the languages and was a way to distinguish language boundaries.

Conceptualising language as described above coincides with the concept of linguistic repertoire. Blommaert & Backus (2011) proposed the term to include the set of resources available to an individual. Speakers are viewed as “versatile and competent users of repertoires rather than of discrete, hierarchically distributed languages (Lüpke & Storch 2013: 77).” Linguistic repertoires incorporate different dialects, registers, and styles and account for the dynamic, continually changing nature of language practices (Blommaert & Rampton 2011). Conceptualising language use in terms of repertoires disregards the need for talking about competence and as such this thesis avoids assessing levels of linguistic competence for individuals. Competence in such a multilingual setting depends much more than on knowing one language as compared to another. Linguistic spaces determine the resources that a speaker may use (Blommaert et al. 2005) and each is unique, depending on too many factors for an outside researcher to fully “understand the semiotics of the place (Blommaert et al. 2005: 207).” Certain spaces compel certain features. Assessing competence is situation-based, changing with each new one, making expectations of uniformity unrealistic. Competence is not a static notion, nor solely pertaining to an individual’s abilities (Blommaert et al. 2005). Ideas of competence relate to prototypical instances of language, so if an individual uses a peripheral lexical variant, it does not align with the standard concept of competence. The use of a variant instead shows a person’s ability to navigate spaces and use variants to orient themselves along a scale.

Now that the conceptualisation of language has been detailed, some of the key concepts in multilingualism and contact linguistics are discussed.

3.2.2 Multilingualism

This section discusses traditional concepts of multilingualism and language contact, and outlines some of the difficulties of moulding the way these are traditionally conceptualised to fit the small-scale multilingual setting in Nyanjida. This does not intend to discount the invaluable research in language contact or standard models of multilingualism, but rather calls for a reconceptualisation with regards to rural African contexts. “Speech becomes so fluid and ephemeral that it is misleading to talk about language contact or even trans- or polylanguaging, as this would presuppose two separate systems (Lüpke 2016b: 40).”

“Bilingualism has brought us to question the nature of the concept of language itself (Heller 2007: 9).” Current paradigms for understanding multilingualism are insufficient for this type of small-scale multilingual setting. Overall, data on actual multilingual language use in rural Africa is limited (Di Carlo et al. 2019) and is further limited by the lack of descriptive work that integrates the type of language conceptualisation laid out in previous sections. “The lack of work on multilingual language use in rural Africa is partly attributable to the fact that most of Africa’s languages still lack basic descriptive materials, a lacuna that undermines researchers’ abilities to transcribe and analyse conversational data (Di Carlo et al. 2019: 24).” Multilingualism research in Africa tends to focus on languages of former colonisers and often within an urban context. At this point it remains an empirical question as to what is actually occurring within the linguistic ecologies of small African communities that have constantly been in flux. Cobbinah et al. (2016) call for a new epistemological approach which holistically examines multilingualism by acknowledging ideological dualisms and is not anchored in western ideologies. Because the view of multilingualism in this thesis differs from standard perceptions of multilingualism, a number of terminologies need to be introduced, first of which is the definition of multilingualism.

3.2.2.1 Definition

“Multilingualism–the use of several languages within a given group (Lüpke & Storch 2013: 77).”

Multilingualism can be defined on two levels, that of the individual and that of the community or societal level. “The term “multilingualism” can be used to refer to a person’s ability to use more than one language or it can be used to refer to the fact that more than one language is used among a group of people (Singer & Harris 2016: 166–167).”

> The term multilingual is often used to mean knowing and using more than two languages. The Council of Europe has proposed that the term plurilingual be reserved for the individual’s “ability to use several languages to varying degrees and for distinct purposes (Council of Europe 2000: 168),” whereas the term multilingual be used only in

> relationship to the many languages of societal groups and not of individuals. Despite their different emphases, the terms bilingualism, multilingualism and plurilingualism have one thing in common–they refer to a plurality of autonomous languages, whether two (bilingual) or many (multilingual), at the individual (bilingual/plurilingual) or societal level (multilingual). (García & Wei 2014: 11–12)

In this thesis, the term "multilingualism" is used to refer to both individual and societal multilingualism, unless otherwise specified. "Traditional notions of bilingualism and multilingualism are additive (García & Wei 2014: 12)," a perception that is not applicable to a setting like Nyanjida, where languages are learned simultaneously, albeit asymmetrically. The dominant views on multilingualism come from conceptualising monolingualism as the norm. "Multilingualism should not be understood as 'full competence in different languages' (Blommaert et al. 2005: 199)." This does not fit with the type of multilingualism in Nyanjida. García & Wei (2014) propose a dynamic view of multilingualism as one linguistic system of disaggregated features. The varying definitions and conceptualisations of multilingualism do not aptly apply to linguistic practices in Nyanjida.

3.2.2.2 Concepts transcending multilingualism

Several concepts exist that transcend the standard conceptualisations of multilingualism, including polylingualism, polylanguaging, and translanguaging. Jørgensen (2008) uses the term polylingualism to move beyond the conceptualisation of multilingualism as the combination of separate languages. In polylingualism, "language users employ whatever linguistic features are at their disposal to achieve their communicative aims as best they can, regardless of how well they know the involved languages; this entails that the language users may know – and use – the fact that some of the features are perceived by some speakers as not belonging together (Jørgensen 2008: 163)." Rampton & Charalabous (2010) refer to polylingualism as the use of "fragments of language" that a speaker does not "speak proficiently", again coming from a conceptualisation that privileges "full" command of a language. "Polylingual behaviour can be analysed more directly as combinations of features than as combinations of languages (Jørgensen 2008: 169)."

Another concept concerning multilingualism is polylanguaging, which moves beyond the standard conceptualisation of multilingualism as the command of multiple languages (Jørgensen et al. 2011), but still views languages as separate entities. Polylanguaging is "the use of resources associated with different "languages" even when the speaker knows very little of these (Jørgensen et al. 2011: 27)."

Translanguaging is similar to polylanguaging, but instead of conceptualising repertoires as comprised of autonomous languages, treats features as part of one linguistic repertoire, the use of which is the unmarked, normal mode (Wei 2011). “Translanguaging differs from the notion of code-switching in that it refers not simply to a shift or a shuttle between two languages, but to the speakers’ construction and use of original and complex interrelated discursive practices that cannot be easily assigned to one or another traditional definition of a language, but that make up the speakers’ complete language repertoire (García & Wei 2014: 44).” Translanguaging is an ongoing process that accounts for fluid practices and the agency of speakers with different histories. Translanguaging conceptualises language practices as “going both between different linguistic structures, systems and modalities, and going beyond them (García & Wei 2014: 24).”

These terms in and of themselves still promote the conceptualisation of languages as separate entities and still do not quite accurately capture linguistic practices in a setting like Nyanjida.

3.2.2.3 Di- and polyglossia

Multilingualism in Nyanjida equates to more than just using one language in one situation and another in a different situation. Influential models of multilingualism compartmentalise languages based on hierarchical relationships and domain specialisation, referred to as diglossia (Ferguson 1959), or polyglossia (Wolff 2015). Diglossia “refers to a type of societal bilingualism that is relatively stable and involves two codes that are historically related but hierarchically differentiated by domain and function (Garrett 2009: 53).” These types of models do not accurately portray language use in Nyanjida. “Local languages are neither valorised based on some external notion of prestige nor consistently assigned to a specific social domain (Di Carlo et al. 2019: 22).” As mentioned previously, French does attract some prestige in Nyanjida as emblematic of education. “In many multilingual settings world-wide, polyglossia has been recently introduced through colonial languages and their role in official contexts (Lüpke 2016b: 46).”

Language practices in Nyanjida merit a model of multilingualism that is much more complex than di- and polyglossia. A model that moves beyond social domains and looks to social spaces that involve a complexity of factors more aptly applies to Nyanjida. Social domains imply stability, whereas social spaces reflect the ephemeral nature of situations. “Multilingualism is structured and regimented by spaces and relations between spaces (Blommaert et al. 2005: 205).” Certain spaces delimit what can and cannot be done, what resources can and cannot be used or accessed (Blommaert et al. 2005). “Knowledge of language is rooted in situation and dynamically distributed across individuals as they engage in practices (Blommaert et al. 2005: 205).” The

concept of space in Nyanjida differs from the urban context where Blommaert et al. developed it. I interpret the concept as a place where individuals engage, and those individuals and their relationships validate those spaces. In this way language regimentation is still social and individual-based, but the spaces that are formed between individuals also regiment linguistic choices and behaviour. People engage in spaces throughout their daily lives. In Nyanjida, people wake up early and engage in spaces of greeting. Throughout the day the engage in familiar spaces. When they visit each other, the locations for this are familiar spaces where individuals comfortably engage.

3.2.2.4 Language contact

The dynamic multilingual setting in Nyanjida exemplifies a continuous intense contact situation, making linguistic systems naturally susceptible not only to convergence but also fostering processes of divergence and maintenance of linguistic boundaries. These contact phenomena reflect socio-historical processes, creating a complexity common in language contact settings all over the world (Beyer & Schreiber 2013). The frontier processes that have contributed to the formation and reformation of current societies have also shaped the language contact situation through diffusion, mixing, and syncretism. Areal diffusion commonly occurs, where unrelated languages share common features. Lüpke (2016b) found that languages in Senegal converge structurally, yet maintain distinct lexicons due to language ideologies and attitudes. Societies and languages change at the margins, where "outcomes of language contact are too dynamic to be reified as codes at all and must be conceptualised as processes or practices (Garrett 2009: 49)." The very name 'language contact' imbues a sense of separate, distinct languages. Language contact research follows an inherent monolingual bias, assuming the separability of codes and that languages have recognisable elements of separation, linked to distinct cultures and social structures. "Language contact occurs whenever and wherever two or more human groups with different languages – and in most cases, different cultures and worldviews as well – encounter one another and attempt to engage in linguistic communication (Garrett 2009: 48)."

In Africa, much of the language contact research focuses on the influence and roles of colonial languages and even less so on the role of individuals.

> Research to date has focused on studying the impact of language contact on lexica and grammatical structures of the languages involved in a more abstract and schematic fashion....The roles of bilingual (and even more so multilingual) speakers as individual agents and of the dynamic configurations of the multilingual societies in which they are actors have not been systematically taken into account. (Lüpke 2016b: 38)

The multilingual setting in Nyanjida requires a reconceptualisation of language contact, focusing on the social settings, language behaviours, and the agency and sociolinguistic profiles of individuals (Lüpke 2016b).

> The development of an integrated model to account for contact-induced language change that takes all the different aspects of historical and social factors into account is a very ambitious task. We are, however, convinced that research on the relationships between the social tissue of speech groups and language change will help us to get closer to the long-term objective of an integrated model of language contact. (Beyer & Schreiber 2013: 132)

It seems more apt to analyse these types of intense contact settings in terms of linguistic areas so as to account for both internal and external language factors (Lüpke 2010b). In such settings it is difficult to differentiate contact and genealogical phenomena (Lüpke 2016b), especially in closely related language varieties (Lüpke 2010d).

> Although typology necessarily reduces the wealth of variation within and between individuals, research on sociolinguistic typology and sociolinguistic parameters in language contact draw attention to the centrality of the composition of speaker communities. The degree of intensity of contact with other languages and the degree of childhood bilingualism vs. adult language learning are factors correlated with different consequences for language structure that require a detailed investigation of different groups within a given population. In addition, different patterns of language acquisition and socialisation, individual movement and migration patterns and different types of social networks in an individual's life span are all known to have a strong impact on the nature of multilingual language use, leaving different traces in language structure. (Lüpke 2016b: 39)

Language contact phenomena influence the shaping of the multilingual ethnobiological lexicon. As I will show in Chapter five, cross-linguistic influences are apparent at lexical, grammatical, and conceptual levels. Analysis of the ethnobiological lexicon as a system facilitates an understanding of language contact beyond the dichotomy of languages coming together, to show the flexibility of multi-faceted language contact processes. The analysis in this thesis does not address language contact directly, but rather indirectly through the description of lexical and conceptual similarities and dissimilarities across languages. It also demonstrates the relevance of understanding the social factors involved in language contact.

3.2.2.5 Borrowing

In an area of intense language contact and the influence of multiple scales of Frontier processes, borrowing is pervasive across languages. This thesis does not analyse borrowing extensively, as it is beyond my current expertise and is only mentioned when pertinent to ethnobiological lexicons. Types of borrowing include insertion, where words may be borrowed to fill a conceptual gap, replacement, where a word completely replaces another word in the recipient language, and coexistence, where a word is added and used interchangeably in the recipient language (Haspelmath & Tadmor 2009b). A few examples of the types of borrowings are mentioned here. Borrowed words are often altered to fit the sound patterns of the recipient language. Thwing (1987: 50) gives an example of Vute borrowing of *kalati* 'book' from Ewondo, where the lexeme is integrated to fit Vute phonological patterns, creating *káàtà*. Borrowings can come from languages not commonly spoken in the area. For example, Vute borrows the English term 'match' as *mátʃîs*. Noss (1979: 176) describes the influence of Gbaya phonology on the length of vowels in Fulfulde. In Gbaya, short vowels permit only open syllables, so Gbaya speakers tend to shorten Fulfulde vowels, as in Fulfulde *laamiiɗɗo* becomes *lamiɗɗo*. A number of Gbaya lexemes concerning ethnobiology have been borrowed from Mbum, examples of which include *ndáí* 'cow', *sámí* 'sheep', and *kìrà* 'woven grass fencing' (Hino 1978). Borrowing is used to fill conceptual gaps, such as the pervasive use of Fulfulde *fakat* 'for a fact' in Vute and Gbaya. Vute and Gbaya speakers borrow French numbers in their speech, especially when talking about money. French numbers coexist alongside numbers in other languages.

It proves difficult to distinguish borrowing from code-switching or code-mixing without an in-depth linguistic investigation (Lüpke 2010d). Binary distinctions such as these are almost futile for a sole researcher in this type of multilingual setting. Determining whether the use of French numbers in conversation is French or Vute and whether it is borrowing or code-mixing proves difficult. Although useful for other multilingual settings, these distinctions are not necessarily realistic for Nyanjida's multilingual setting, where languaging most aptly portrays the conceptualisation of language use, thus eliminating the need to make these distinctions. When asked, a speaker may state that the numbers are French, but in practice are the normal way of speaking, at a different level from strict code-mixing or borrowing. The directionality of borrowing also proves difficult without an in-depth cross-linguistic analysis, and although interesting, is mostly avoided in this thesis. For example, the pervasive discourse marker *tô* 'well' in Vute also occurs in Hausa and Fulfulde, making it difficult to ascertain the donor language, a sentiment expressed by others in intense contact settings (Beyer & Schreiber 2013).

Analysis of lexical borrowings provides insight into historical and current linguistic, cultural, and social relationships, as the Frontier processes of small groups forming and reforming at the

peripheries of larger groups facilitate borrowing. A newcomer population to an unfamiliar ecosystem may likely borrow local ethnobiological terms for unfamiliar species. These populations also bring species with them, maintaining the lexemes connected to where the species originated and borrowed into local languages. In a region like Adamawa, where adaptability and mobility are high, ethnobiological terms and concepts are likely easily borrowed but at the same time some languages are less permeable to borrowing. In the ESS, calquing is common, where the semantic concept of a species was borrowed into a recipient language, in some instances as an on-the-spot gap filler and in others a fixed, stable expression.

Haspelmath & Tadmor's (2009a) loanword database measures the borrowability of words, revealing insights such as body part terminology is not likely to be borrowed, while terms for new artefacts are. They identified two factors primarily responsible for lexical borrowing, social and attitudinal factors and grammatical factors. Multilingualism both facilitates and hinders borrowing. Knowledge of other languages influences rates of borrowing and borrowability. For example, if a small number of a multilingual population speaks a language, terms from that language are less likely to be borrowed, rather the recipient language will accommodate through neologisms and meaning shifts. Contrastingly, if a language is more widely known like Fulfulde, the likelihood of borrowing is increased. Tadmor (2009) hypothesises that small speech communities like Nyanjida are more amenable to lexical borrowing, due to the fact that a borrowed term may more easily spread across the entire community. Most languages tend to borrow lexemes from the same types of fields, making some fields such as body parts more resistant to borrowing (Haspelmath & Tadmor 2009b). In their loanword database, basic vocabulary like body terms which have a borrowing rate of 14.2% (Tadmor 2009: 64). In contrast, semantic fields concerning ethnobiology, such as agriculture and vegetation (30%), food and drink (29.3%), hunting (27.9%), and animals (25.5%), hold higher borrowing rates. These are concepts not usually universally named in languages, but are language specific, opening up the possibility of borrowing.

3.2.2.6 Code-switching and code-mixing

Code-switching and code-mixing comprise concepts of language use that have been developed to account for the use of more than one language. Simply defined, “code-switching can be defined as an individual’s use of two or more language varieties in the same speech event or exchange (Woolard 2009: 73–74).” Auer (1998) also refers to it as language alternation or code-mixing. I follow Lüpke (2016b: 43) in using “the term code-mixing for cases where codes co-occur within an utterance and reserve code-switching for cases of larger blocks of monolingual speech that alternate between two or more languages.” Code-switching and other behaviours

were traditionally viewed as deviant from the monolingual "norm", stepping out of their normal language mode or a reflection of incompetency. Code-switching later came to be understood as more than just the alternation between languages, but that it can be socially meaningful. Analysis in this thesis does not address code-switching since it involves conversational data, but it is included in this discussion as it relates to code-mixing, which also involves conversational data, but has implications in understanding the ethnobiological lexicon.

Considering the conceptualisation of language laid out thus far, labels such as code-switching and code-mixing no longer seem apt for most cases of multilingual language praxis in Nyanjida. Conceptualisations of code-switching do not account for the simultaneous cognitive activation of languages or features not associated with any specific code. For example, an ethnobiological lexeme like *gateau ndèìn* for *Piliostigma thonningii*, literally meaning 'cow's cake' combines French *gateau* 'cake' and Vute *ndèìn* 'cow'. Two languages are simultaneously activated to signify a tree species. This goes beyond code-mixing. Even though in a speaker's mind they are speaking Vute, they are using features from several resources conceived as languages. "In many settings...even where precise boundaries may be in question, the contrast between language systems is psychologically real and ideologically meaningful to speakers, and remains a resource they can mobilise in interaction (Woolard 2009: 83)." Heteroglossia "allows a level of theorising about the social nature of language that is not possible within the confines of a focus on code-switching (Bailey 2007: 258)." Speakers in Nyanjida employ heteroglossia in their language practices, meaning they access a range of linguistic resources and features, sets of which are socioculturally ideologised as languages or associated with certain languages, which could then be interpreted as code-switching or code-mixing, some of which can be deliberate and meaningful but in most instances these conceptualisations do not capture the practices in Nyanjida. "A code-switch is the juxtaposition of features associated with different codes when both producer and recipient of the resulting complex sign are in a position to understand this juxtaposition as such (Jørgensen et al. 2011: 33)." Use of language features side by side does not always purposefully juxtapose the two (or more) but uses languages alternately as resources. In the above example, French *gateau* 'cake' captures a specific concept not lexicalised in Vute or Gbaya. It cannot be assumed that linguistic resources available to speakers are symmetrical, that they form a speech community with synchronous repertoires (Auer 2006; Rampton & Charalabous 2010). Code-switching behaviour in Nyanjida comes from familiarity with interlocutors and code-switching and code-mixing are cues which can be used to interpret other aspects of speech. It becomes a way of speaking and may not always be deliberate. "Western language ideology that privileges intentionality, and that such a view misrepresents the dynamics of code-switching in non-Western societies that do not share such an ideology

(Woolard 2009: 83).” Code-mixing is a resource, especially in ethnobiological lexicons, where accessing features from more than one language offers more explanatory and classificatory power in naming and describing species. “The more frequently code-switching occurs, the less salient it becomes, as a consequence, the potential for using it in locally meaningful ways is diminished (Auer 1998: 12).” In Nyanjida this holds, where reciprocal multilingual practices facilitate code-mixing. It may not be the juxtaposition of languages that is important, but the juxtaposition of features that serve as an expansive repertoire of resources. Multilingual practices in Nyanjida continually cross language boundaries as a normal way of speaking.

> Code-switching...often frequent, intra-sentential, and unmarked...serving as a form of unmarked, discourse contextualisation or serving no identifiable function at all. By failing to treat two or more languages as a meaningful opposition in certain contexts, such social actors effectively erase the boundary that constitutes the two languages as distinct. (Bailey 2007: 259)

Models of code-switching still stem from the conceptualisation of “full command” of languages and how that dictates the type of code-switching. Auer (1998) gives a continuum of code-switching behaviours, labelled code-switching, language mixing, and fused lects, which he links to different levels of proficiency and competence. He also attributes age to code-mixing behaviour–younger speakers tend to insert features, whereas older speakers alternate codes. He also points out the existence of constraints on code-switching behaviour and calls for attention to practice, that code-switching behaviours are interactionally meaningful. “A fuller theory of indexicality might enhance our understanding of codeswitching (Woolard 2009: 81)” and show how it is used to signal group identity (Auer 1998). Code-mixing in ethnobiological lexicons is not always intentional to index group affiliation but is rather a case of a lexeme indexing characteristics and reflective of a group’s behaviour and experiences.

> There is greater ambiguity and indeterminacy, less strategy, and perhaps even less meaning and less skill in some forms of code-switching than have so often been attributed...perhaps speakers are not switching between two distinct and clearly bounded varieties after all? It has always been difficult for analysts to distinguish codeswitching from other language contact or translinguistic phenomena. Where to draw the line between codeswitching and borrowing, interference, and/or emerging new contact varieties has long been the subject of discussion...fuzziness of language systems involved in codeswitching and bilingualism. The most recent work is characterised by more fluid visions of the linguistic structures themselves and of their social significance as they are mobilised by bilingual speakers. (Woolard 2009: 82)

Rampton (1995) proposed the term “crossing” as a type of code-switching in which speakers access features associated with languages, from which a speaker may know only a few features or use of which may not be permissible. It involves metaphorical movement across and beyond social and linguistic boundaries (Blommaert et al. 2005; Rampton & Charalabous 2010). “In crossing, people foreground the socio-symbolic connotations/indexical values of particular linguistic forms, implying that they have special relevance to some aspect of interaction in the here-and-now (Rampton & Charalabous 2010: 2).” Crossing is so pervasive in this type of multilingual setting that each code-mix cannot be attributed to an intentional choice but may be perceived more aptly as accessing the best fit from all linguistic choices. Crossing can strengthen or weaken social and linguistic boundaries and be used to affiliate and disaffiliate (Auer 2006), often used by youth as a form of agency and group-bounding device (Woolard 2009).

Code-mixing is highly common and pervasive in most speech in Nyanjida. Code-mixing is recognised by speakers and even named, which can exhibit identity-related functions (Auer 1998). Vute has a term for when speakers mix languages or dialects, *malààtú, un mélange des langues* ‘mixing languages’. Fulfulde also lexicalises code-mixing as *raaytugo* and labels people who code-mix as *kamnbariijo (Parietti 1997: 262)*. Language use reflects metalinguistic knowledge of shared language features, where boundaries between languages are not so clearly defined. Playing cards demonstrates this multilingual language praxis, an example of accessing features from multiple languages. Players, often young adults and children, use a mix of Vute, French, Gbaya, Fulfulde, and even some English (‘stop’, ‘play’, ‘ten’, ‘go’), even though none of core people in the village speak English or Pidgin English–an example of crossing linguistic boundaries even when speakers do not know a language in the traditional sense, but still access its features. French seemed to predominate (*Allons y!* ‘Go!’). French and Vute are used interchangeably for counting. Table 2 lists a sample of the multilingual vocabulary used to denote suits as calqued extensions of ethnobiological and astronomical environments.

Table 2 Multilingual card playing

Suit	Vute	Gbaya	French	Fulfulde	English
♠	*mɨkàbà*	‘ɔ̀mbɛ́	*macabo*	*tandawre*	‘coco yam’
♦	*káŋjerè*	sɔ́ɔ́rá	*étoile*	*hoorre*	‘star’
♣	*másù*	(gbà)zòkò	*arachide*	*biriiji*	‘groundnut’
♥	*ndʒwàǎ́*	ɲúm	*coeur*	*kubbi*	‘heart’

The multilingual ethnobiological lexicon comprises lexemes that seem best understood when examining the lexicon as a system not of distinct languages, but of an integrated system. This makes concepts such as code-switching and code-mixing seem less applicable, but not insignificant, to describing multilingual practices in setting like Nyanjida. It seems more comprehensive to complement these types of concepts concerning multilingual practices with how the lexicon is stored and produced in the mind, where languages are resources, activated simultaneously.

3.2.3 Cognition

Cognitive research helps to inform our understanding of linguistic practices and the multilingual lexicon. The data in this thesis concerns the mental lexicon, also called lexical memory, and is defined as "the words, and all sorts of information about them, stored in memory (Taylor 2005: 1773)." Comprehensive cognitive research on the multilingual lexicon in small-scale multilingual settings like Nyanjida is practically non-existent (to my knowledge). Existing research tends towards psycholinguistic and western perspectives, focusing on processing and storage in staged settings, rather than actual multilingual use with varying contexts and interlocutors. The concept of language suggested thus far in this thesis makes it challenging to neatly place the processes involved in small-scale multilingualism within existing research frameworks. A central question in bilingualism research involves language selectivity, whether speech production is language selective or nonselective. This concerns whether other languages are involved when speakers perceive themselves as speaking in monolingual mode. Bilingual research shows that languages are simultaneously activated in the conceptual and lexical systems (Grosjean 2013b). As Chapter five will show, ESS data suggests that speakers' elicitations are language nonselective, meaning other languages are involved in the process. The ESS data comprises stimuli that mostly involve normal, everyday ethnobiological knowledge as a way to understand cognitive processes involved in small-scale multilingualism.

This thesis conceptualises a multilingual speaker's languages as part of one system, a gestalt, where one language does not operate without influences from others. It is assumed that multilingual practices that access features from several languages requires advanced language skills (Jørgensen 2008) and the indexical use of language requires elevated conscious control and monitoring (Blommaert & Rampton 2011). Cognitive research shows that mental structures of bilinguals differ from monolinguals (Cummins 2007). In addition to differences between bilinguals and monolinguals, "there is strong evidence that multilingual interaction is dramatically different from bilingual interaction (Lüpke 2016b: 42)." Neuroimaging shows differences in the brains of monolingual and multilingual speakers (Abutalebi & Green 2016). It

has often been assumed that languages occupy separate cognitive spaces, but research points to one system, although even this research does not shed monolingual biases and views of language separability. Green & Abutalebi's (2013) research shows that in dense code-switching contexts, languages operate cooperatively, whereas in single and dual language contexts, they operate competitively. Research on gesture repertoires in bilinguals demonstrates that gestures combine to become one unified system (Gullberg 2012, 2013). Further evidence of one system comes from features not attributed to any language, where "speakers in a dense code-switching contexts opportunistically use joint language activation to create novel mixed-language utterances (Green & Abutalebi 2013: 526)." Also, research on language organisation in bilinguals suggests that the brain applies similar operations in both languages concerning lexeme categories and semantic and conceptual processing are similar in bilinguals who learn the languages early or know both languages well (Costa 2017).

Models of how languages interact portray multilingualism as the activation of each language (Green & Abutalebi 2013), where the selection of features depends on interactional and contextual factors (Grosjean 2004). Green's (1998) model proposed language inhibition rather than activation. Language inhibition does not account for the rapid change of languages nor does it account for interferences from other languages; both these reasons support the language activation perspective (Grosjean 2013a). García & Wei (2014) transcend the language-mode perspective, "there are no two languages that are cognitively activated or deactivated as the social and contextual situation demands, but rather, as we have proposed, a single array of disaggregated features that is always activated (García & Wei 2014: 15)." This thesis takes the point of view of languages as part of an integrated system in which languages can be simultaneously activated (de Groot 2011; Kroll et al. 2015). It also conceptualises the ethnobiological lexicon as one system comprised of multiple languages and conceptualisations operating cooperatively rather than competitively, thus expanding the resources and depth of knowledge of a multilingual speaker.

There has been debate on whether lexica are stored separately or as one lexicon. Research on this has mainly involved bilinguals who differ greatly from the type of multilinguals in Nyanjida. Shared conceptualisations and semantic priming amongst languages support the idea of one lexicon (Taylor 2005). Taylor (2005) suggests that different types of tasks and words promote the one-lexicon and two-lexica (or multiple-lexica) hypotheses. Word types such as cognates, concrete, culturally shared, and frequent words along with tasks such as meaning processing, semantic categorisation, and conceptually driven tasks favour the one-lexicon view. Word types such as non-cognates, abstract, culturally distinct, and infrequent words, along with tasks such as form or association processing, and data-driven tasks favour the two-lexica view. These

generalisations of course come from settings not at all congruent with the small-scale multilingual setting in Nyanjida. The ESS supports the view of one lexicon, where ethnobiological knowledge comprises one lexicon, with some aspects having fewer connections and network activation.

Weinreich (1953) originally proposed different types of multilingualism based on the cognitive mapping of concepts and lexemes. When language-specific lexemes are mapped to one conceptual representation, it is of the compound type. When lexemes are linked to separate conceptualisations, it is of the coordinate type, involving compartmentalisation of languages. In a third type, subordinative, the weaker language maps onto a concept via a lexeme of the stronger language. These types of multilingualism act conjunctively. The applicable aspect of Weinreich's research is that different types of representations coexist in bilingual memory. The ESS showed that speakers in Nyanjida primarily comprise the compound type, with some instances reflecting the subordinative type, as evidenced when ESS participants said a lexeme in one language to prime a lexeme in the targeted language mode. However, the multilingual setting in Nyanjida proves much more complex than the limited explanatory power of these labels.

Bilingual research shows that acquiring a second language reconfigures the entire language system and neurological effects of bilingual practices occur before behavioural effects become apparent (Bobb & Kroll 2018), evidencing the plasticity of the brain to quickly adapt to the flexibility and adaptability required by multilingualism. Research on neural switching costs in balanced bilinguals, meaning the two languages have been learned on nearly the same level, shows that the cost of switching is similar in both languages. When languages are not balanced, the cost of switching is asymmetrical; the greater difference in language proficiency causes a greater difference in switch cost (Costa 2017). It remains a question how this bilingual research applies to the type of multilingual speakers in Nyanjida. The cost of switching helps to understand the ESS data in cases where certain language modes permit more code-mixing than others; this will be explored more in Chapter five.

Multilingual speakers exert cognitive control on multiple levels. Research shows that language is a part of a larger system of executive control and integrated into other cognitive systems (Hayakawa & Marian 2019). A multilingual speaker in Nyanjida is not only producing and processing language, but also incorporating various social information, which entails accessing multiple, integrated cognitive systems. With this in mind, the psycholinguistic approach in this thesis complements the sociolinguistic approach.

3.2.4 Sociolinguistics

Sociolinguistic factors play a significant role in the formation and use of the multilingual ethnobiological lexicon. Research in small-scale multilingual settings points to the lack of and need for increased attention to the social, cultural, and geographical settings. In these settings, the concepts mentioned previously can only be understood holistically by including analyses of extralinguistic features, with attention to social settings and individual agentivity. "The agentivity and creativity, and the social meaning speakers attach to language at an ideological level and at the level of linguistic practice, are crucial for an understanding of multilingual speech (Lüpke 2016b: 38)." Sociolinguistic research in Africa has mainly focused on urban contexts and the influence of colonial languages. When rural local languages are studied, it is more often the case they are mentioned in relation to colonial languages. Social processes that foster multilingualism are also essential in its maintenance and since diverse repertoires require high cognitive demands (Green 2011; Green & Abutalebi 2013), it makes it likely that the motivations for maintaining multilingualism are social (Lüpke 2018a). The importance of sociolinguistic analysis in multilingual settings is attested in the fact that language ideologies and attitudes affect different parts of language systems (Lüpke 2016b).

Much of the social significance of multilingualism concerns space and context. "Whenever we focus on space as an agentive force in sociolinguistic processes, we involve issues of scale. Every human interaction develops situationally, at a microscopic scale of social structure. Yet, it is always embedded in larger patterns – linguistic, social, cultural, historical – and draws meaning from these larger patterns (Blommaert et al. 2005: 203)." Multilingual practices are built and maintained through spaces and the boundaries between. These meaningfulness of these spaces comes from how speakers draw boundaries, depending on context and interlocutors, scaled along multiple social axes (Carr & Lempert 2016a). These spaces become spaces of relationships (Irvine 2001). The concepts of 'frame' and 'footing' (Goffman 1986; 1981) contribute to spatial analysis as metaphors for describing how speakers interact within linguistic spaces (Blommaert et al. 2005). These concepts add meaningfulness to interactions, showing how speakers organise their situations. Frames are pre-existing spaces which compel certain features and provide a lens or point of view, also referred to as ideological frames (Gal 2016). Speakers frame situations as a means of control, a part of the "dynamics and flux of implicit and explicit spatial boundary marking as part of the monitoring and mounting of activities, often with short- or long-lived relationships of inclusion and exclusion as a result (Blommaert et al. 2005: 207)." Frames can be extended to the ways speakers construct language boundaries, where prototypical features fall within a frame, creating language purity ideologies through processes of inclusion and exclusion. Frames are changeable, thus lexical variation can be viewed as a reframing of ethnobiological

knowledge. Variants exemplify the various ways of framing ethnobiological knowledge through language. Framing constitutes a type of Frontier process as spaces are continuously framed and reframed, altering the peripheries and centres of the frame. Footing as first proposed concerns alignment between interlocutors and has since been applied to the positioning and monitoring within multilingual spaces (Blommaert et al. 2005). Footing also changes as interlocutors position and reposition themselves within spaces, and speakers position themselves with multiple footings. It will become apparent in the data analysis sections of this thesis that frames and footing in Nyanjida are not necessarily about placement within social categories, but more about alliances and affiliations. The concept of languaging relates to frames and footing as interlocutors flexibly access multiple linguistic resources within multilingual spaces; they align with one another through familiar shared frames and employ footing to align (or misalign) with others.

Ideologies are deeply interwoven into sociolinguistic spaces and the use of features within these spaces reflect those ideologies in meaningful ways.

> It has become a commonplace in sociolinguistics that linguistic forms, including whole languages, can index social groups. As part of everyday behaviour, the use of a linguistic form can become a pointer to (index of) the social identities and the typical activities of speakers. But speakers (and hearers) often notice, rationalise, and justify such linguistic indices, thereby creating linguistic ideologies that purport to explain the source and meaning of the linguistic differences. To put this another way, linguistic features are seen as reflecting and expressing broader cultural images of people and activities (Irvine & Gal 2000: 37).

Speakers in the Lower Fungom area of Cameroon choose particular languages in order to affiliate oneself with the village that claims that language, a way of indexing identity, a relational identification (Di Carlo et al. 2019). Analysis of the ESS reveals how the ethnobiological lexicon indexes individuals and several different communities of practice along with people affiliated with those groups. General responses in the ESS and lexical variation reflect the stratification of participants, not only by categories, but more so by characteristics and affiliations. Communities of practice and social networks influence the linguistic forms speakers employ (Lüpke & Storch 2013). The lexemes become not only denotational, but also a fusion of sociolinguistic circumstances, thus encoding relationships, identities, and ideologies (Woolard 2009). Meaning goes beyond denotational, referential meaning to a range of interpretations that are not symmetrically shared across a community, but do systematically pattern in an interpretable way (Blommaert & Rampton 2011).

Style plays into all of this, where speakers, as agents, negotiate and evaluate their positioning in sociolinguistic spaces (Irvine 2001). Speakers in Nyanjida employ various styles as they engage in varying sociolinguistic spaces. Speakers are guided by an ideological system that permits access to certain features and denies access to others. Style is a tool to portray distinctiveness and it is the interstitial frontiers, the oppositions and relationships between styles and the differentiating processes involved that are important (Irvine 2001). In ideology, access to certain styles are restricted, but in actual practice, styles can be accessed by everyone. Styles are driven by ideologies and carry social meaning. The use of style in Nyanjida is most apparent in young males as they flexibly and creatively navigate language meanings and boundaries. Style is integral to lexical variation through its role in the processes of linguistic and social distinctiveness.

3.2.4.1 Lexical variation

This section offers a brief history on variation research, outlining key concepts and ideas pertinent to the setting in Nyanjida. Variation is a part of human life and language is no exception to this. Variation falls within the field of sociolinguistics and is referred to as variationist sociolinguistics (Tagliamonte 2012) or variationist linguistics (Walker 2010). Variation can occur at the phonological, morphological, lexical, syntactic, pragmatic, and discourse levels and concerns three major factors: social, cognitive, and structural (Kiesling 2010). The fields of Linguistics and Ethnobiology both tend to downplay variation. It is frequently treated as an inconvenience, as an outlying issue often excluded in linguistic description and analysis (Milroy & Gordon 2003). Variation of course has always been recognised, as evidenced by Sapir's (1921: 38) well-known quote on the irregularity of language, “Unfortunately, or luckily, no language is tyrannically consistent. All grammars leak.” Variation contributes to linguistic diversity, creating an array of choices within the lexicon and reflective of the fluid dynamic nature of language.

Variation research comes from the past fifty years and emanates from a Western perspective, often conducted in urban, monolingual contexts. Weinreich et al.'s (1968) pioneering work maintained that language exists within a community of individuals and variation is predictable and patterned, what they termed “orderly heterogeneity”. Much of their general principles on the structural and social constraints acting on language remain valid today. One in particular, “Not all variability and heterogeneity in language structure involves change; but all change involves heterogeneity and variability (1968:188)” applies to this research in that it focuses on variation within ethnobiological repertoires but does not take it a step further to analyse change. “Although there is no language change without variation, linguistic variation is an opaque area, a blind spot, for most contact-induced language change studies (Léglise &

Chamoreau 2013: 6).” The small-scale multilingual setting in Nyanjida proves difficult to understand the multivariate nature of variation.

> Explanations for social patterns come from understanding what variants symbolise for different speakers in a speech community, how history, ideologies, and practices imbue the variants with meaning, and why a variant is a desirable way of speaking for those speakers who use it. So these patterns trace people’s and communities’ lives–their practices, networks, markets, and ideologies about language – and the explanations will need to relate to these lives, and their everyday use of variation. (Kiesling 2010: 89)

This thesis examines local dynamics of lexical variation and focuses on the significance of word choice in multilingual ethnobiological lexicons. It views variants as juxtaposed sets, which allows that a person may choose more than one variant for the same context. The research applies several methods and approaches, including communities of practice and social network. These frameworks have contributed to the overall understanding of variation, each as a tool with its own function. With these frameworks, the social significance of variation becomes the focus. Variation in its most basic sense means different ways of saying the same thing. This definition is much too simplistic, as variation goes beyond a denotational value to involve a layering of social meaning and ideologies (Eckert 2012), a conceptualisation which has emerged through different waves of variationist research.

3.2.4.1.1 Three waves of variation

Eckert (2012) categorises variationist research into three waves. The first wave corresponds to early research on variation, which demonstrated that variation carries social meaning and that patterns in variation exhibit regularity. These studies examined macrosocial categories such as economic class, ethnicity, age, and sex. Labov (1972: 111), in his view of “language as a form of social behaviour”, pioneered methods of observing and describing linguistic variation and change and developed the concept of the linguistic variable. He analysed actual language use in its social context and identified groups influencing linguistic innovation and language change. These early studies linked individual stylistic variation to inter-group variation (Irvine 2001). The studies were based on surveys conducted from the perspective of an outside researcher. Labov and others provided a foundation for variationist studies that would become more refined and detailed, giving a more complex model than just macro-sociological categories. The early waves of variation research focused on gender stratification, which was actually more likely attributable to other factors that reciprocally correlate with macro-social categories.

The second wave incorporated ethnographic methods to consider local perspectives and continued to interpret variation as marking social categories. This wave sought to understand local categories involved in variation and attributed variation to linguistic pressures and individual's attention to speech. Research outcomes interpreted variation as deliberate use of language features. "What the outsider sees as almost unpredictable variation becomes a communicative resource for members (Gumperz 1982: 69)." Early research treated variation as a by-product of speech interactions, while later research treats it as an essential part of language (Eckert 2012).

The third wave incorporated stylistic practices, shifting the focus from static macro-social categories to characteristics. Early research was quantitative, while later research examined variation qualitatively, asking why people choose certain variants. The third wave builds on Silverstein's (2003) concept of indexical order to reflect the dynamic nature of variation:

> The meaning of variables are not precise or fixed but rather constitute a field of potential meanings – an indexical field, or constellation of ideologically related meanings, any one of which can be activated in the situated use of the variable. The field is fluid, and each new activation has the potential to change the field by building on ideological connections. (Eckert 2008: 453)

Variation came to be understood as an indexical system, meaning variables index stances or characteristics, further emphasising language as social practice. An indexical system emphasises speaker agency as they position themselves in linguistic spaces through stylistic practices (Eckert 2012). Indexical orders go beyond indexing a category associated with a speaker to indexing the kind of speaker within that category, giving more complexity and detail to the meaning of variation. Indexical orders provide a way to link microsocial practices with macrosocial categories. Silverstein (2003) organises indexical systems: a first-order index involves indexing membership, while a second-order index marks characteristics, of which the indexical value can be recursively reiterated and reinterpreted in a fluid indexical field (Eckert 2008). First-order indices are usually agreed upon due to their indexing simplicity, while second-order indices depend on evaluation and perspective, creating differences of evaluation across a population. This interprets speakers as having agency through the use of variation as they make "ideological moves" or "ideological orientations" (Eckert 2008), which take place in multiple directions as part of the indexical field and depend on context. In this regard, speakers engage in stylistic practices, "reinterpreting variables and combining and recombining them in a continual process of bricolage (Hebdige 1984) (cf. Eckert 2012: 94)." Bricolage gives a sense that speakers use whatever features are available. However, speakers have many stylistic resources available yet

selectively choose (or not) certain ways of speaking, often with purpose, adjusting behaviour by choosing features that converge or diverge with interlocutors (Jørgensen 2008).

3.2.4.1.2 Riding the waves

The three waves of variation provide a platform from which to incorporate other sociolinguistic concepts to deeply analyse variation.

> The very fact that the same variables may stratify regularly with multiple categories – e.g. gender, ethnicity, and class – indicates that their meanings are not directly related to these categories but to something that is related to all of them. In other words, variables index demographic categories not directly but indirectly (Silverstein 1985), through their association with qualities and stances that enter into the construction of categories. (Eckert 2008)

Variation operates on many levels. In Nyanjida, variation does not always index the same types of variables as in the monolingual settings of early variationist research. Variation has not been studied in detail in small-scale multilingual settings. This thesis treats it as more than an object, looking at processes of differentiation (Irvine 2001). Multilingualism and variation create access; individual stylistic repertoires and social agency create many possibilities for communication. In Nyanjida, lexical variation acts as an indexical resource (Eckert 2012). Speakers perform "acts of identity" (Le Page & Tabouret-Keller 1985) through linguistic choices, which are not always indexing group or category memberships, but smaller acts that fall within a relational web linking smaller practices to multiple larger categories. Speakers do not only employ meaning, but produce and reproduce it (Eckert 2008), thus operating on many levels.

Three processes help to explain ideologies of linguistic distinctiveness, referred to as iconisation, recursivity, and erasure (Irvine 2001; Irvine & Gal 2000; Gal 2016). These processes tie into the patterns and consistency of variation driven by local language ideologies. "Iconisation is a semiotic process that transforms the sign relationship between linguistic features and the social images to which they are linked. Linguistic differences appear to be iconic representations of the social contrasts they index–as if a linguistic feature somehow depicted or displayed a social group's inherent nature or essence (Irvine 2001: 33)." Differing linguistic behaviours iconically represent social relations. It will become apparent in Chapter five that certain lexical variants or features index specific social groups and become iconic representations of them. Features used by participants in the ESS involve a process of iconisation in which the feature is linked to a community of practice's social distinctiveness. This corresponds to Silverstein's (2003) second-

order index, whereby the use of linguistic features index social features and affiliations (Di Carlo 2018).

Recursivity involves the creation of opposition and the distinctions applied again and again (Irvine 2001). This involves varying levels of contrast, from microlevels of contrast to broader oppositions, creating meaningful distinctions, through the recursive application of multiple levels of oppositions. Gal (2016) refers to these processes as fractal recursivity, in which qualities are bundled into contrast and complementary sets and distinctions applied repeatedly, further creating levels of contrasts which are then also incorporated into the recursive process. This corresponds to prototypes in that recursivity is a scalar practice, creating degrees of encompassment. Speakers engage in recursive practices to assess and organise features and to solidify ideologies on multiple scales. A set of features is projected as having qualities that the other does not, creating ideological frames, where "each contrast repeats a distinction within itself, as geometric fractals do (Gal 2016: 97)." Language purity ideologies subscribe to this type of recursive process, continually reiterating language distinctiveness and dichotomies, choosing prototypical features of a language and reiterating the distinctiveness.

This ties into erasure, where non-prototypical features are ignored or downplayed. "Erasure is the process in which an ideology simplifies the sociolinguistic field. Attending to one dimension of distinctiveness, it ignores another, thereby rendering some sociolinguistic phenomena (or persons or activities) invisible. So, for example, a social group, or a language, may be imagined as homogenous, its internal variation disregarded or explained away (Irvine 2001: 34)." Erasure helps to explain incongruencies in language ideologies and applies to local, regional, national, and even to a researcher's own ideologies.

The processes of iconisation, recursivity, and erasure contribute to the formation of social and linguistic boundaries. They contribute to understanding how ideologies organise the relationship between linguistic features and social factors (Irvine 2001). All of these relationships, affiliations, and connections between the micro and macro are scalable. So many things in our everyday lives are scalar, meaning the relational practice of scale can be applied for comparison and evaluation. Scale is used as an epistemological metric (Irvine 2016) that applies to many of the concepts throughout this thesis and is an invaluable heuristic for bringing them all together for a unified analysis. Scale applies to people, language(s), linguistic differentiation, variation, social phenomena, and beyond. "Matters of size, extent, encompassment, and degrees of interconnectedness have all been called "scale" (Gal 2016: 91)." Scale places concepts, behaviours, ideologies, and experience amongst wider or narrower relational fields (Irvine 2016). Scale relates to space in that spaces involve interactionally framed practices and the processes of framing are scalar in nature. "The notion of scale precisely emphasises the idea that spaces

are ordered and organised in relation to one another, stratified and layered, with processes belonging to one scale entering processes at another scale (Blommaert et al. 2005: 203)." The scope and range of linguistic and social meanings are scalar and the scalar nature depends on perspective. We use language as a way to scale the world around us (Carr & Lempert 2016a). Language(s), dialects, registers, and styles all involve scalar processes, perspectival measures of organising and analysing. Scales involve positioning and provide a way to frame perspectives and ideologies (Gal 2016). In this sense, scales are constructed and alterable, which ties back into the processes of iconisation, recursivity, and erasure. Scalar distinctions and scalar orientations become shared through these processes. Lexical variation involves scalar practices, in which people share variants that have come about through scaling the ethnobiological world. People aggregate around these variants based on perspectives and ideologies. "The study of scaling reveals the multidimensionality of cultural [and sociolinguistic] life, the idea that the *same thing* can be approached and understood in many different ways (Carr & Lempert 2016a: 20)."

3.2.4.2 Community of practice

As the waves of variation research progressed, researchers looked beyond traditional variables to the significance of relationships, behaviours, and characteristics, not only of individuals, but of groups. Eckert (2000) observed that individual social networks and social attributes cannot fully explain socially based practices and promoted the community of practice model, first conceptualised by Lave & Wenger (1991) and elaborated in Wenger (1998). The concept is defined and introduced in the above background section 2.2.2.3. The definition is repeated here for convenience: "an aggregate of people who come together around mutual engagement in an endeavour. Ways of doing things, ways of talking, beliefs, values, power relations—in short, practices—emerge in the course of this mutual endeavour (Eckert & McConnell-Ginet 1992: 96)." The community of practice concept was adapted into sociolinguistic analysis by Eckert & McConnell-Ginet (1992) to analyse language and gender.

The concept offers a level of analysis that helps to understand different types of cohesion within the larger social structure of Nyanjida. Analysis of ESS data shows that ethnobiological knowledge patterns with social structure. The analysis identifies two communities of practice whose members' responses often correlate with each other and these correlations are often distinct from other participants. The communities of practice identified by the ESS data and introduced in section 2.2.2.3 hold sets of knowledge developed through mutual engagement in learning and growing up together. Their cohesiveness is visible through their shared use of linguistic resources, social behaviour, and ways of understanding the ethnobiological world.

The community of practice concept seems better suited to labelling the ways people come together than 'speech community', 'language community', 'kin group', or 'group of interest'. Early ethnographic frameworks such as the ethnography of communication, advanced by Hymes (1961), emphasised the way language is patterned and organised within a community at societal, group, and individual levels. The concept of speech community has also been an important ethnographic framework. Speech community focuses on language and consensus, with the central idea of shared linguistic norms and ties between community members. Speech community implies homogeneity across a population as a group of people orients towards shared norms (Silverstein 2015). Defining a speech community is based on broad categories and focuses on groups, leaving out individuals. Determining who comprises the speech community proves challenging and involves complex relationships beyond the simplistic conceptualisation of community (Childs et al. 2014). Applying conceptualisations such as this continues colonial perspectives and serves national political purposes. Concepts such as speech community or language community are better suited to settings where languages are hierarchical or domain-specific (Lüpke 2016a). These concepts do not account for the asymmetrical patterning of linguistic repertoires in Nyanjida or the complex, multi-layered relationships. Community of practice "does away with the idea of a homogenous group, as at the interior of every group, different sets of members will share different and only partly overlapping practices that shape their linguistic interactions (Lüpke 2016b: 60–61)." The community of practice concept does not replace the speech community approach, but rather complements it by further defining the shared actions and practices of a community, while also acknowledging individuality. The concept institutes a social theory of learning, involving practice, community, identity, and meaning. Membership in a community of practice goes beyond a social category to include interactions and participation. A community of practice accounts for more than just consensus, but also oppositions and differences (Irvine & Gal 2000).

Wenger (1998: 73) identifies three dimensions inherent in a community of practice: mutual engagement, a joint enterprise, and a shared repertoire. Mutual engagement entails doing things together. A joint enterprise is a collective process, not necessarily explicitly stated, but defined through participation. A shared repertoire involves shared actions, discourses, styles, stories, symbols, gestures, and concepts. A repertoire is a resource from which members draw on to produce meaning. Wenger (1998: 125–126) lists indicators that characterise these three dimensions:

- sustained mutual relationships – harmonious or conflictual
- shared ways of engaging in doing things together
- the rapid flow of information and propagation of innovation
- absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
- very quick setup of a problem to be discussed
- substantial overlap in participants' descriptions of who belongs
- knowing what others know, what they can do, and how they can contribute to an enterprise
- mutually defining identities
- the ability to assess the appropriateness of actions and products
- specific tools, representations, and other artefacts
- local lore, shared stories, inside jokes, knowing laughter
- jargon and shortcuts to communication as well as the ease of producing new ones
- certain styles recognised as displaying membership
- a shared discourse reflecting a certain perspective on the world

These dimensions and indicators define the communities of practice identified by ESS data and will be elucidated in Chapter five. The communities of practice are formed through everyday experiences of growing up in a small rural village and daily reliance on ethnobiological resources. Their community of practice is visible through their mutual engagement on how they view, interact, and interpret the ethnobiological world around them. One of the key indicators of a community of practice concerns shared learning; their mutual engagement is sustained over a long period of time growing up together and this involves collective learning. The community of practice provides a locus for negotiating who they are and how they should behave and speak, overall, how to position within the larger social structure. The core community of practice members develop and maintain their identities through participation in the practice. "They work together, they see each other every day, they talk with each other all the time, exchange information and opinions, and very directly influence each other's understanding as a matter of routine. What makes a community of practice out of this medley of people is their mutual engagement (Wenger 1998: 75)." Learning produces the social structures that form from mutual engagement. Engagement in practices produces meaning. Meaning comes out of relationships and the processes inherent in developing meaning.

Communities of practice are not inherently stable but change through continuous and discontinuous processes. Meanings are negotiated and renegotiated through emergent processes. The fluidity of communities of practice ties in with the theme of this thesis, that of constant flux. ESS data identifies communities of practice and highlights the multiple, changing nature of affiliations. These affiliations are further detailed by social networks.

3.2.4.3 Social Networks

As introduced in section 2.2.2.4, people in Nyanjida maintain complex social networks. Ethnobiological knowledge concerns social networks. People access ethnobiological knowledge of experts inside the village through loose far-reaching networks. Local tight social networks equip individuals with knowledge of how ethnobiological knowledge is distributed. Individuals gain ethnobiological knowledge from those with whom they frequently spend time. This thesis does not formally apply a social network approach (SNA) but rather superficially applies the approach due to its explanatory power and significance for sociolinguistic practices and ethnobiological knowledge in Nyanjida.

After Labov's (1972) ground-breaking research, variationists looked beyond social groups to the relations between individuals, drawing on social network approaches. Milroy (1987, 1980) pioneered the use of the social network approach, studying phonological variation in monolingual, urban settings and determining the influence of social networks. This and later work (Milroy & Milroy 1985) studied language use in its social setting, correlating linguistic variables and social factors. The studies showed how social ties, network density, network position, and intensity of relationship can influence language and are indicators of an individual's propensity for language variation and change. Milroy (1987: 59) correctly presumed that villages like Nyanjida are typically multiplex and dense, where most people know each other, and "the volume of exchanges and therefore of shared knowledge within the network is great." Milroy also proposed that highly dense networks, specifically the clusters within them, produce homogeneity of norms and values.

A few studies of social networks in Africa have been conducted (Beyer 2010; Beyer & Schreiber 2013; Schreiber 2009; Lüpke 2014-2018). Schreiber (2009) gives a thorough overview of the application of social network approach in an African context and relays the importance of establishing categories relevant to the context of the research project. Beyer (2010) conducted a study to determine the effectiveness of using a SNA to study language change in a rural, multilingual community in Africa. He found it to be informative for both language-internal and contact-induced variation and found its explanatory power to be greatly enhanced when combined with a qualitative analysis. He also exemplifies that a SNA does not impose presupposed categories, allowing flexibility relative to the local context. Lüpke (Lüpke & Storch 2013: 235–237) attributes variation in noun class assignments and agreement markers to social networks. Elicitation of 'crab' showed inter- and intra-speaker variation, where one individual assigned different noun class and agreement markers to the same root on different occasions. She linked the variation to shared communities of practice and strength of social ties.

Early variationist research showed that gender and age play a significant role in lexical variation. Much of what we know about gender and variation comes from research in urban, industrialised societies. Research in language and gender has shifted from using sex as a variable to thinking about gender as a socially constructed concept (Eckert & McConnell-Ginet 1992). Most social network research has addressed gender differences indirectly, as something that is revealed in the data, but no studies have specifically investigated women's networks in relation to lexical variation, although broad overviews on language and gender exist (Eckert & McConnell-Ginet 2013). Milroy (1987) found significant differences between men's and women's personal networks, both in density and multiplexity.

Chapter five applies aspects of SNA to help describe the relationships of ESS participants. Data shows the strength of social ties and intensity of relationships significantly correlate with shared lexemes between participants. To conclude the linguistic theoretical background, I now turn to linguistic diversity and language vitality, which have relevance to multilingualism and ethnobiological knowledge.

3.2.5 Linguistic diversity and language vitality

The relationship of small-scale multilingualism to linguistic diversity and language vitality in rural Africa is not well understood or studied. Cameroon is very linguistically diverse, and a number of languages spoken there have been marked as endangered. Mambiloid languages, which include Vute, have been marked as particularly vulnerable, with several already no longer spoken or speakers are shifting to other local languages or dialects (Connell 1998; 2001b). Ethnologue (Simons et al. 2018) lists the endangerment status of both Gbaya and Vute as 'developing', although this refers to the languages as a whole. Attia (2006) classifies the Banyo dialect of Vute as endangered and stresses the concern of speakers increasingly shifting to Fulfulde. Vute themselves consider the dialect spoken in Nyanjida (*Nɨganì*) to be vulnerable as comparatively few speakers of that dialect exist. Global discourses on language endangerment coming from situations in North America and Australia do not aptly describe African situations, which are disproportionately represented in the global language endangerment discourses (Lüpke 2009). Further detailed research will help us to understand not only what endangers languages, but also what factors cultivate vitality and diversity in these small-scale multilingual settings and will help to alter the rhetoric, making it more representative of these settings.

> Language endangerment and death is seen as a process that operates world-wide. The metaphors used to describe the situations of language change and shift captured under this umbrella term cast them as a human tragedy of the largest imaginable scale. Yet,

> when shifting our gaze to Africa, stories of resilience and adaptivity, of mobility, multilingualism and creativity flank stories of disappearance and extinction. (Lüpke 2017b: 1)

Language endangerment in rural Africa is not well understood (Lüpke 2017b; 2015a, 2009; Lüpke & Storch 2013) and endangerment discourses tend to focus on the traumatic loss of languages rather than on language vitality (Lüpke 2017b; Lüpke & Storch 2013; Mufwene 2017). Endangered language research tends to focus on one language without regard to multilingualism, linguistic repertoires, and natural speech. Assessing language endangerment in small-scale multilingual settings poses difficulties and current assessments and scales (Wurm 1991; UNESCO 2003; Fishman 1991; Edwards 1992; Simons et al. 2018) are not easily applied to African contexts (Lüpke 2009; Lüpke & Storch 2013). Endangered language discourses extensively apply measures of scale, where researchers "select a particular metric as the relevant one...who counts as a speaker...and what counts as a language (Irvine 2016: 217)." Scale-making selects what is standard for a language, often ignoring extralinguistic factors, variation, and multilingual practices, making it difficult to assess endangerment. Metrics that are applicable to American and Australian endangerment settings may not be applicable to rural African contexts. Additionally, western conceptualisations of language competence do not aptly capture the linguistic competence of a multilingual individual in rural Africa, where it is difficult as an outsider to assess the vast linguistic resources available to individuals and draw a neat line between speaker and non-speaker. Competence is "a theoretical construct about the knowledge attributed to an ideal speaker-hearer in a homogeneous speech community...Instead, we must begin with the actualities of practice, in situations of hierarchical scale and changeable framing (Blommaert et al. 2005: 211)." In small-scale multilingual settings it seems more apt to conceptualise competence in terms of activation and deactivation (Green 1998). One older man, who spent time in Yaoundé when he was young and spoke some of the languages there, explained that he used to have active use of those languages, but now that he is no longer in that environment, those language have become inactive for him.

It proves quite difficult to assess language endangerment in Nyanjida, where speakers use multiple languages in every conversation. The Vute language on the whole comprises a lot of variation and continuums. Evaluating its endangerment based on the amount of code-switching, language mixing, and lect fusing (Auer 1998) proves near impossible in multilingual language use, where speakers often access multiple features. In some areas of Cameroon, Fulfulde accords high prestige (Fakuade et al. 2003), contributing to language shift, yet in Nyanjida this is not the case. To me it remains unclear whether Fulfulde is responsible for language

endangerment. When a researcher arrives in a village for a quick fieldtrip and assesses endangerment with a monolingual bias (Auer 2007) using questionnaires and quick assessments, it does not capture the complexities of multilingualism in practice and the use of languages like Fulfulde might be misunderstood in certain contexts. "The Western focus on 'endangerment' may be somewhat problematic since it shifts focus away from the hundreds of 'medium'-sized languages which may not be vulnerable but are still in need of documentation and support, and, indeed, supporting these languages in the 'middle' may be key to maintaining an overall language ecology that allows small languages to flourish as well (Childs et al. 2014: 181)." 'Middle' languages like Fulfulde (and its many varieties) are often overlooked[19]. Concerns for language endangerment should be extended to multilingualism itself ((Di Carlo 2016; Di Carlo & Good 2014a) and linguistic diversity (Woodbury 2011). World-wide multilingualism is "usually presented as "endangering" rather than "endangered" (Di Carlo 2016)." When we move away from a monolingual bias, we see that small languages survive in multilingual settings, and perhaps it is these settings that are endangered (Lüpke 2016b). "Codification does not maintain languages but creates them (Lüpke 2018a: 16)." Understanding language diversity and vitality involves more than just assessing the use of one language, but understanding the settings, communication contexts and interlocutors, social dynamics (François 2012), and individual trajectories and backgrounds. "Sociolinguistic contexts are more fragile than lexico-grammatical codes, and, therefore, intrinsically more endangered (Childs et al. 2014: 172)." This prompts a need for understanding the complexities that foster the maintenance of multilingualism and language diversity in these small-scale settings that can be so subtly different. A shift away from the alarming term 'endangerment' to a reconceptualisation focusing on language ecologies and vulnerability (Lüpke 2018b) will help us to understand the vitality and changeability of these settings and how such multiplex configurations of multilingualism are sustained.

A complexity of factors fosters language vitality in Nyanjida. The language ecology of the adaptive, small-scale setting constitutes a supportive environment that nurtures language use "in their wider environment while also providing social contexts for using those parts of the repertoire only shared among smaller communities of practice (Lüpke 2017a: 277, 2017b: 15)." Practices such as exogynous marriage, child fostering, child socialisation, receptive multilingualism, the absence of a lingua franca, and diversity of individual repertoires strengthen multilingualism and diversity in Nyanjida[20]. In other areas of Cameroon lingua francae exist, such as Cameroonian Pidgin English in Lower Fungom, which is displacing local language use (Di Carlo 2016). Another factor that strengthens multilingualism is the association of Nyanjida as a Vute

[19] See also Lüpke & Storch (2013) for a discussion of that scenario.
[20] See also François (2012), Lüpke (2017a, 2015), Moore (2004), and Singer & Harris (2016) for further discussions of these factors in fostering multilingualism.

village. Having languages nominally associated with each village sets certain expectations and ideologies for language praxis (Singer & Harris 2016). Because Nyanjida is considered a Vute village, Gbaya women who come through exogynous are expected to learn Vute, children are expected to grow up knowing Vute, and Vute is perceived as a common language for inhabitants of the village. Ideologies of difference also foster linguistic diversity (François 2012). In Nyanjida, social, cultural, and language ideologies are upheld through maintenance of boundaries, which create both heterogeneity and homogeneity, which in turn foster diversity.

3.2.5.1 A focus on setting

The relationship of language vitality and ethnobiology in Africa differs from other settings. Language loss resulting in the loss of ethnobiological knowledge has been highly publicised world-wide; however, few studies have examined the relationship in multilingual communities where language shift does not involve a language of a former coloniser. Multilingualism in rural Cameroon acts as a buffer to loss of ethnobiological knowledge. In a multilingual setting like Nyanjida, when speakers move between and amongst languages, ethnobiological knowledge is carried through. If speakers shift to other local languages, their ethnobiological knowledge remains intact. Ethnobiological knowledge loss occurs across Cameroon as development and technologies improve people's lives, not because linguistic diversity is decreasing. Centralisation, road improvements, and increasing availability of goods all contribute the loss of certain ethnobiological practices. Pre-colonial practices are disappearing across Africa and this change causes specialised lexicons to be the most vulnerable. These lexicons are often linguistically interesting. For example, ethnobiological terms can be semantically interconnected to the lexicon in general, as in the extension of *óóŋ* 'nest' in Vute to indicate closed objects. In Nyanjida, children learn ethnobiological practices more directly from their grandparents than their parents, making it imperative that ethnobiological knowledge be recorded now. In the past in Nyanjida, the fruit of a shrub was frequently consumed like coffee and abundantly grew around the village. Only a few shrubs now remain, and it has fallen out of use, causing a loss of terminology, only known by a few older people, now only referred to in French, *café de la brousse* 'bush coffee'.

Many small-scale multilingual settings like Nyanjida remain undescribed (Lüpke 2018a) and as the factors that nurture multilingualism and diversity rapidly change, so too will the language ecologies and ethnobiological knowledge of these rural contexts. "In many multilingual settings world-wide, polyglossia has been recently introduced through colonial languages and their role in official contexts. In these situations, other, more fluid, multilingual configurations continue to exist and remain largely undescribed (Lüpke 2016b: 46)." Language ecologies are always open to

change and as the politics and economy of Cameroon change, so too will linguistic diversity and multilingualism. Any of the languages can count as vulnerable because of external socioeconomic factors such as rural exodus, political instability, and civil unrest threatening them to a much larger extent than elsewhere (Lüpke 2009). Depopulation of Nyanjida has led to a shift in language practices and linguistic repertoires; differences can now be seen across age categories. People who identify as Mbum have left the village. Now Mbum is no longer a part of children's repertoires. Mbum was previously perceived as a necessary part of the village repertoire, but the relocation of people who identify as Mbum has diminished children's exposure to the language, resulting in a reduction in the diversity of individual repertoires. This has likely been the norm for small villages in this area where Frontier processes create change and reconfigurations of social structures and linguistic repertoires, that will in turn be reconfigured in the future.

The adaptability of these small-scale multilingual societies make them "hosts of vitality, not endangerment (Lüpke 2017b: 14)." These small-scale societies tend to show a greater support for diversity (François 2012), making it "necessary to assume a stronger position that causally links small population size to a high degree of linguistic diversity and language vitality (Lüpke 2017a: 276)." Nyanjida's small population maintains linguistic diversity and language vitality through multilingual practices and these practices will continue to sustain ethnobiological knowledge.

3.3 Ethnobiology

This section briefly details relevant theories and research in Ethnobiology. The discipline concerns the dynamic relationships between people and their natural environments. Linguistic and ethnobiological knowledge are inextricably linked, although few researchers bridge the gap. Language documentation often takes place in areas where ethnobiological practices constitute daily living. It seems that linguistic documentation could benefit from more detailed ethnobiological information and recursively, ethnobiological research could benefit from detailed linguistic analysis. This points to a need for multidisciplinary teams in language documentation.

Dictionaries and other references commonly list species in broad terms such as 'species of bird', making analysis and cross-linguistic comparison difficult and can lead to misunderstanding language endangerment. This omits the richness that ethnobiological documentation offers. Plant and animal names reflect more than referential meanings; they reflect belief systems and the multivariate ways people organise and scale their natural world. Language is an entry point

into the complexities of ethnobiological knowledge. People have a natural propensity for naming plants and animals, the study of which is referred to as linguistic ethnobiology. “Through language humans manage their relationships with the cultural and natural things they encounter (Hunn & Brown 2011: 319).” Drawing on the concept of languaging, a multilingual ethnobiological repertoire could be conceptualised as one system, not autonomous knowledge systems working together. This will become apparent in the analysis of the ESS in section 5.6.

One of the underlying goals of this thesis is to exemplify the interconnectedness of ethnobiological knowledge and language. Ethnobiology does not have deeply embedded theories like Linguistics. Despite theoretical progress, research in Ethnobiology tends to be descriptive. One of the biggest shortcomings of Ethnobiology is the lack of attention to gendered plant knowledge due to the fact that researchers often work with older male consultants (Howard 2003). Research also tends to focus on an “omniscient informant”, when normally, ethnobiological knowledge and variation in naming can vary widely across a population and between individuals. The following sections discuss ethnobiological classification, which has been theorised the most, and multilingualism and lexical variation, which have not had cohesive research strategies applied, therefore lack any theories.

3.3.1 Ethnobiological classification

Ethnobiological classification concerns how people categorise and name the biota in their environment. “Biological classification is fundamental to human thought (Casagrande 2004: 351).” Ethnobiologists and anthropologists have debated the foundation of biological classification and nomenclature, whether they concern universal principles involving hierarchical, mutually exclusive taxonomies (Berlin 1992) or culturally specific involving social relations (Ellen 1979; 1993). Casagrande (2004: 353) summarises perspectives on classification into four patterns: (1) universal cognitive predispositions, (2) the objective taxonomic structure, (3) culturally relative interpretations, and (4) merely artefacts of our methods. To my knowledge, few studies exist that examine ethnobiological knowledge with regards to complex multilingual settings. Early ethnobiological research overly focused on the comparison of ethnobiological classification to Linnaean classification, rather than focusing on the local names in their own right, which can be approached in different ways, such as from a linguistic perspective analysing noun class systems (as exemplified in Cobbinah 2013) and from an ethnobiological perspective through methods such as triads and pile sorts (Puri 2010) that reveal local classification systems. Ethnobiological classification is a social phenomenon and language is used as a way to uphold standardisation of categories. Classification schemes are not stable, but rather vary depending on perspective. Erasure plays a role in forming classifications, where some features are ignored,

and others amplified. The universality of Berlin's (1992) principles based on hierarchical, mutually exclusive taxonomies are applicable to a certain extent to the multilingual classification scheme presented in this thesis. Other cultural and social criteria influence classification schemes (Ellen 1986). Examining the social and cultural influences of classification is a "move beyond asking *how* humans classify biological items ... [to] now asking *why* (Casagrande 2004: 361)." For example, complex lexemes are thought to hold more cultural importance (Casagrande 2017), so, for example, 'white oak' not only indicates a type of oak, but also symbolically signifies the cultural importance of that species.

3.3.2 Multilingualism

Ethnobiological studies concerning bilingualism focus on relations to a former coloniser language. One researcher who integrates multilingualism, Turner (2015: 168), correlates ethnobiological knowledge with multilingualism and contact in Canada: "Periodic contacts and exchanges with neighbouring peoples—even peoples considered distant—allowed ideas, products, techniques, and terms to overflow the confines of a given language and cultural group, helping to feed innovation and support the overall biological, cultural, and linguistic diversity of the region." She also discusses the linguistic effects of convergence and divergence; culturally important and salient species maintain their names as languages diverge.

Methods from the field of Ethnobiology have their merits and their drawbacks. Focusing on single variables fails to consider other variables, the interactions of variables, and the integration of qualitative data. For example, Balée & Moore's (1989) study on plant naming in five languages correlates lexical similarity across languages with intensity of management yet does not consider that the similarity of managed plant names may also be due to the intensity of exchange practices, multilingualism, or the likelihood that these species are more frequent in conversation.

3.3.3 Lexical variation

Since Berlin's (1992) ground-breaking research in ethnobiological nomenclature and classification, several studies concerning lexical variation have followed. Most tend to take a non-linguistic approach that simplifies lexical items, where the heuristics of lexical similarity and difference are often subjective, ignoring the richness that variation offers. The existing literature mostly focuses on variation in plant names; perhaps due to ease of data collection since plants often play a more significant role in daily lives. Few studies examine the ethnobiological lexicon

on the whole, which is unfortunate since plant and animal naming can be quite intertwined (Stepp 2002).

The field of Ethnobiology does not have standards for collecting data on lexical variation, which has resulted methodologically incompatible research. Methods for eliciting plant names vary and are dependent on research goals. Ethnobiology has been criticised for its list-generating methods and lack of evidence-based data with comprehensive analysis. Ethnobiological studies and methods tend to emphasise cultural consensus (Romney et al. 1986) and cultural salience, which erase lexical variation. Research that assesses variation often looks to the referent for explanation, most often plants and explains variation based on degree of management, utility, plant morphology, species abundance, and geographical distribution, yet no ethnobiological research correlates sociolinguistic factors with lexical variation specifically.

Research that does study variation concerns plant names and shows high numbers of variation. Berg's (2004: 16) analysis of lexical variation within and between Tzeltal and Tzotzil Mayan languages revealed averages of twenty-seven and thirty-three variants per species. She concluded that greater cultural consensus correlates with less lexical variation. Collins & Liukkonen (2002: 620) report similarly high numbers of variation per plant species, with response averages between eight and fifteen variants. They also found that plants with more use exhibit less variation. Turner (2015) argues that culturally important plants are named with more detail, often with specialised terminology. She also points out that variants can offer information about people’s relationship to the species. Stepp (2002) offers one of the few studies analysing animal names. He found eighteen percent of plant names are derived from animal names.

This section gave a brief overview of relevant research in Ethnobiology and reflects the fact that the field of Ethnobiology has not focused on ethnobiological knowledge as part of a multiplex multilingual setting. There exists much to be garnered from interdisciplinary research in multilingual settings like Nyanjida. The inextricable link of language and ethnobiological knowledge offers different perspectives of analysis that inform the fields of Linguistics and especially Ethnobiology.

4 Methods

4.1 Relationship to community

I spent a total of ten months in Nyanjida spanning two fieldtrips. I had planned to go to a different part of Cameroon where I had previously conducted research on Wawa, but potential

dangers from an extremist group necessitated changing locations. Therefore, I arrived in Cameroon not knowing exactly where I would conduct research, just that I needed to be in a Vute-speaking village, since my funding was changed to documentation of Vute, a language closely related to Wawa. I visited several villages considered Vute and chose Nyanjida for its location, small size, and rapport. On arrival I barely spoke French and spent the first few months improving my language skills and getting to know the village by participating in daily life. The small village size allowed me to get to know everyone and better understand their individual linguistic repertoires and social and demographic backgrounds. The length of time spent in the village and the small size made a significant difference in being able to understand and interpret peoples' responses and individual ways of speaking during elicitation sessions. The small-scale setting allowed a detailed, nuanced look at the distinct sociolinguistic parameters influencing multilingualism and language contact (Lüpke 2016b) that can be compared to similar small-scale multilingual settings.

4.2 Data collection

Data collection involved several methods from Linguistics and Ethnobiology. For linguistic data I used a combination of qualitative and quantitative methods to best understand multilingual practices and lexical variation. Much of the research involved participant observation, where I joined daily activities, many concerning ethnobiology. This facilitated an understanding of social and ethnographic factors, what Di Carlo (2016) refers to as a "phenomenological approach", a bottom-up approach focusing on observation in natural settings and documentation of communicative practices rather than one bounded language. Being in the field for a long time facilitated this approach. Having had to change the initial research location and agenda, primary observation was important. Data collection over a longer period of time allowed the data to speak for itself rather than arriving in the village with a set research agenda and corralling data to fit the agenda. In order to best understand multilingualism, it was necessary not only to use methods such as observation to understand actual language practices, but also methods that treat languages as discrete, separate entities to understand how language and languages are conceptualised locally. Recording data followed Himmelmann's (1998: 185–186) "three-way distinction of distinction of communicative events": observed communicative events (OCE), staged communicative events (SCE), and elicitations. Staged events and elicitations tended to focus on Vute but in actual practice were never completely monolingual. Questionnaires and more importantly, observation and conversations or informal interviews with individuals were used to elicit sociolinguistic and demographic information. Triangulating quantitative data with qualitative assessments helped to understand the mismatch between what a person says and

actual practice (Goodchild 2016), something that was quite commonly encountered and contributes to the multi-perspectival nature of this thesis. Focus groups with males and females based on communities of practice elicited qualitative data on lexical variation and multilingual repertoires. Video was used in focus groups to document non-verbal aspects of ethnobiological practices. I ensured stratification across social categories and communities of practice. Children were not omitted in this project, as they are an important age group, especially for eliciting variation and understanding multilingual repertoires across age groups.

Spending ten months in the village was important for documenting ethnobiological knowledge, since the presence and use of plants and animals fluctuates seasonally throughout the year. Species' names were documented using several methods with individuals as well as groups. One was to elicit species' names in situ by going on walks in the forest and savannah with two to four people. This involved photographing species, taking plant specimens, and recording names and uses in all languages known. I would then bring the plant specimens back to the village to confer names with older consultants, which also resulted in eliciting variation. I collected about 175 wild and semi-wild plant specimens. Domestic plant species were identified in the field; taking specimens of these was unnecessary. Plant specimens were identified by scientific name in the field and verified in collaboration with botanists at Cameroon's National Herbarium and the Royal Botanic Gardens, Kew, where they were deposited as a permanent record. A GPS was used to mark all plant collections, an essential step in documenting ethnobiological knowledge, especially of plants, not only to record the context of the plant, but also as a permanent record of the location at a specific time. Field guides[21] were also used to elicit species' names, but responses were not as accurate and reliable as with in situ elicitation.

Much of the data in this thesis comes from an ethnobiology stimuli set (ESS) that I developed. It comprises 144 stimuli, consisting of 35 plants and 109 animals. The plants represent wild, cultivated, and semi-cultivated species. Animals include monkeys, snakes, deer, fish and other aquatic species, birds, insects, and animal homes. Species in the set were selected to span a range of familiar and less familiar species to understand the differences in naming culturally salient species and those that may have less known or specialised names. The ESS was used to elicit species' names in the main languages of a person's repertoire. The target languages were Vute, Gbaya, Fulfulde, Mbum, and French. The ESS was conducted in "language mode" (Grosjean 2008), also called "ancestral code mode" (Woodbury 2005) or "monolingual mode" (Cobbinah et al. 2016). Participants were asked to complete the set in one language at a time. I use the more

[21] Field guides included Arbonnier (2009); Boorman (1981); Cansdale (1961); Chirio & LeBreton (2007); Depierre & Vivien (1992); Holden & Reed (1972); Kingdon (2015); Vivien & Faure (1985); Oates (2010); Schippers (2002); Serle et al. (1977)

general term “language mode” rather than “monolingual mode” to reflect that speakers are never in strict monolingual mode, although from the perspective of the speaker, they maintain monolingual mode. This thesis follows the definition of language mode “as the state of activation of the bilingual’s languages and language processing mechanisms at a given point in time (Grosjean 2013a: 15).” The ESS allowed for analysis of an individual’s repertoire and how each individual conceptualised separate codes through their lexical choices. It was important to assess and understand each individual to be able to understand variation at the community and group levels, but not necessarily to generalise about multilingualism across the village, as it is difficult, if not impossible (Lüpke 2016b), especially in one domain and in an unnatural elicitation context. Much of the analysis in this thesis draws on the elicited lexical data from the ESS.

4.2.1 Procedures

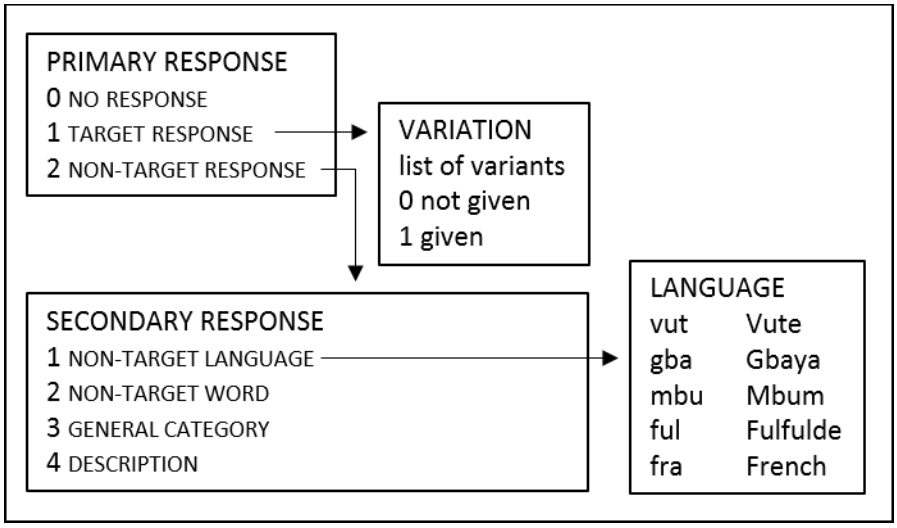
For the ESS, each session began with a demographic questionnaire inquiring the person’s name, age, religion, provenance, years in school, length of time in the village, time spent away from the village, languages spoken, languages spoken by mother and father, and self-reported primary affiliations of mother and father. With the help of two male assistants[22], the ESS was recorded one language at a time in each of the five target languages. Participants determined the language order and were asked to say the names only in the designated language mode. This played into their perception of what it means to be in monolingual mode, to speak Vute, Gbaya, Fulfulde, Mbum, or French. Most people preferred to complete every language in one session, although some completed the set in several sessions spanning several days. Attempts were made to not have others present, but that proved nearly impossible, although those who had not yet participated were prevented from hearing others’ responses. All sessions were audio recorded. Each stimulus was given a number and randomly presented in small sets, such as all deer or all grasshoppers to allow participants to compare species. The researcher or assistant said the number and handed the card to the participant who gave the species’ name in the target language. Participants were also asked to give other names of species that were known to have variable names, to name the male, female, and offspring of pre-selected species (such as ‘dog’ and ‘cow’), and to name partonyms of certain species (such as ‘porcupine quill’) to gauge knowledge and variation of specific terminology.

Most sessions were transcribed at the time of the session by me and later refined, while others were transcribed post-session. The data were then put in order, compared, and coded. Figure 4 depicts the coding scheme. Each response was first coded for whether a response was given and

[22] I sought one male and one female assistant, but there was not a woman available to assist.

if a response was given, whether it was a target or non-target response. Then, if a target response was given, it was also coded for any variants given. If a non-target response was given, it was then coded for whether it was a non-target language and which language, an incorrect word in the target language, a general category, or a description. These categories are hereafter presented in all capitals for ease of reading. The data coding was then inputted into Microsoft Excel for analysis.

Figure 4 Coding scheme for ESS



To demonstrate how the responses were coded, the following describes coding for 'village weaver', a yellow bird with red eyes common in villages. It weaves nests in trees adjacent to houses. Each language mode is coded separately. In Vute mode, a '1' was coded for participants who gave the TARGET RESPONSE *mɨdʒó*. If any variants were given, these were inputted. A '2' was coded for NON-TARGET RESPONSE and a '0' for NO RESPONSE. If a NON-TARGET RESPONSE was given, then the response was coded into four categories that came naturally out of the data. For example, in Vute mode, one participant gave *súmbùlá*, the Gbaya lexeme. This was first coded as '2' to denote NON-TARGET RESPONSE, then coded as '1' to specify NON-TARGET LANGUAGE and marked as Gbaya. Likewise, in Gbaya mode, one participant gave the Vute lexeme *mɨdʒó* so this was specified as '1' for NON-TARGET LANGUAGE and marked as Vute. If a participant gave an incorrect lexeme while maintaining language mode, such as naming a different bird, it was specified as '2' to denote NON-TARGET WORD. In Vute mode, several participants gave *gàti*, the general lexeme for 'bird'. This was specified as '3', to denote GENERAL CATEGORY. In French mode, one participant gave *oiseau jeun* 'yellow bird'. This was specified as '4' to denote DESCRIPTION.

4.2.2 Data management

Data was also collected beyond the ESS as part of my Vute documentation project. During plant and animal data collection, detailed information on each species was recorded. For plants, names were recorded in all languages as much as possible, along with the scientific name, collection number, GPS coordinates, vegetation type, habitat type, abundance, use(s), part(s) used, frequency of use, processing tools and practices, and relation to folk taxonomy. This data was inputted into Microsoft Excel while in the field. Ethnobiological lexicons and practices are interlinked with photos, audio, and video. ELAN was used to transcribe, annotate, translate, gloss, and code for languages, and was also used to code linguistic variables and certain extralinguistic variables. Descriptive metadata was continually recorded, including important ethnobiological information and administrative data to track workflow and access permissions. Primary and analysed data have been archived with ELAR (Endangered Languages Archive). Analysed data include a sketch grammar of Vute; translated, annotated and interlinearised audio and video recordings using ELAN; multilingual thematic encyclopaedia; GPS data; and sociolinguistic data. The thematic encyclopaedia covers the domain of ethnobiology and follows an ethnographic approach (Pawley 2011) to include culturally relevant features. It was produced collaboratively for the local school, with drawings by an artist in the village. The encyclopaedia is grouped by semantic fields of culturally salient subdomains, including partonyms, along with referent images.

4.3 Issues and limitations

The research project, like all research projects, has issues and limitations, some of which will be mentioned here. Data collection revolved around a complex interplay of ideologies, both my own and those in the village, which shaped my research methods and outcomes, resulting in multi-scalar, multi-perspectival analyses. My own pre-research ideologies were formed from Western, essentialist ideologies in multilingualism literature and the standard discourse on global language endangerment stemming from situations in Australia and North America. I had to unlearn to learn. The concept of scale (Carr & Lempert 2016b) reflects some of the issues and limitations of research. My academic background and understanding of multilingualism and language endangerment were pre-scaled so that I arrived in Nyanjida with assumptions that influenced my research agenda, something that I had to be mindful of to best understand multilingual praxis and lexical variation. “Methodologically, we therefore engage the study of scale as a reflexive endeavour. For only when we keep careful track of the scalar dimensions embedded in our own habits of analysis can we identify the degree of congruence and tension between our own and others’ uses of scale (Carr & Lempert 2016a: 11).” Scalar practices limit

the actual amount that I could know and understand in one research project. It was essential to disentangle my own ideologies as well as local ideologies and understand actual practice, an issue researchers in Senegal also grapple with: “In our own research practice we experienced how difficult it is for us as researchers to free ourselves from the assumptions stemming from our own Western language ideologies. This is made even more difficult by encountering language ideologies that superficially match them (Lüpke 2016a: 19).” People in the village understood my main goal was to document Vute, which promoted the concept of bounded languages from the start and created an atmosphere where people felt they had to speak ‘pure’ Vute and leave out all other languages, when this is not the norm.

Beyond the challenges of navigating and elucidating various ideologies, one of the biggest challenges to the research was that it was conducted in another country and involved several languages, about which in the beginning I knew little. Although it is one of Cameroon’s official languages, English is not commonly spoken in the area and no one in the village spoke it. Research was conducted in French, which itself took time for me to improve. The multilingual nature of the research poses issues with one sole researcher examining five languages, several of which have relatively little information available. Working on several languages that lack full documentation contributed to this difficulty, also noted by Di Carlo et al. (2019). Researching understudied languages such as Vute also poses several issues. When little linguistic material exists on a language, it intensifies the amount and breadth of data to elicit in order to understand the language and provide a comprehensive characterisation of lexical variation and the multilingual situation. It proved a daunting task in discerning languages and language varieties, intra- and inter-speaker variation, and the boundaries between (Lüpke 2010a). Additionally, being a woman had its benefits and limitations. It enabled access to women’s knowledge and perspectives that are often neglected in research. On the other hand, being a woman in a male-dominant society also proved to have its own difficulties affecting the research. A researcher’s role in the community inevitably affects research outcomes and it is nearly impossible to avoid the observer’s paradox (Labov 1972). My presence as an outsider and foreigner, surely affected the research, but positive research outcomes outweighed any disadvantages, providing insights that one might not notice as a person who grew up in Nyanjida. My own perceptions were constantly changing, a continuous education to the complexities of multilingualism and variation within this context.

Completely capturing the complexities of variation is nigh impossible; this research provides generalities of factors involving variation. One of the biggest methodological issues concerns the depth of categorising and finding a balance in determining relevant factors and minimising reductionism. “The analysis of linguistic and social covariation still can only be as good as the

variables it has to manipulate (Wolfram 1993: 202).” Being an outsider makes it more difficult and time consuming through triangulating and navigating ideologies and actual practices to best understand the community, especially things like local norms and social practices, the multi-scalar nature of many of the factors in this research, and the multivariate nature of some of those factors such as self-reported primary affiliation.

Eliciting meaning posed challenging (Haviland 2006, Matthewson 2004); documenting the semantic complexities of a lexeme was done with the help of research assistants and consultants, which sometimes resulted in only recording approximate meanings. This brings up the translation issues, especially the difficulties of translating ethnobiological terms into French or English which may lack equivalent terms. For this reason, it was important to connect each elicitation to a referent, usually a photo of the species and scientific name. Another concern lies with distinguishing code-switching from borrowing (Matras 2009; Lüpke 2010d), which in some cases proved nearly impossible, especially in determining the original language. As will be explained in the theoretical chapter, code-switching and borrowing depend also on perspective, whether that of me as a researcher or speakers’ perspectives. One person may view a lexeme as belonging to a certain language, while I may determine it as belonging to another. The analysis tends to avoid determining the direction of borrowing, unless it is relevant to the research aims.

The prescriptive nature of the ESS provided a lot of useful, detailed data and was instrumental in understanding individual repertoires, the general distribution of ethnobiological knowledge, and individuals’ perceptions of language boundaries, yet it did have a few drawbacks. One of the biggest issues with the ESS was the fact that people had limited time to participate in the ESS. Most people opted to do all their languages in one session, which by the fifth language was fatiguing for everyone involved. Some of the photos were not completely clear to older participants, making it difficult to elicit exact names. This exacerbated participant confusion, making results for certain stimuli not ideal and difficult to analyse. Other species were not easily recognisable, such as ‘anteater’, which produced a range of results like ‘mouse’, ‘pig’, and ‘rabbit’. Another main issue was the difficulty in isolating participants, where “communication takes place outdoors, and people walk in and out of each other’s conversations (Lüpke 2016a: 22).” It was often unavoidable to have others present, especially children. Although attempts were made to complete the set with everyone in the village, with some people, especially women who have little extra time, it was difficult to complete every language. Therefore, some of the data is skewed. As well, several older people in the village did not participate due to eyesight issues, making it difficult to identify the stimuli. Some were provided with glasses to assist them. This elicitation task was not ideal for capturing variation in depth. The large number of stimuli limited the amount of time participants had to think about each species and respond

with variants. For example, participants only gave a few lexical variants in both Vute and Gbaya for a plant genus (*Aframomum*) that has considerable variation. Likewise, responses for 'hammerhead stork' were few, which did not aptly capture the distribution of its numerous variants. This made it important to follow-up with more in-depth and less-staged elicitations of lexical variation. For example, the ESS revealed six variants for 'hornbill', then two others were revealed through two recordings of natural speech. Additionally, follow-up discussions of variants for this bird species elucidated more detailed sociolinguistic information. Variants surfaced most easily through natural recordings not specifically eliciting variation. For example, one two-minute recording in Vute regarding honey collection revealed three variants for 'axe'.

The sociolinguistic and demographic questionnaire conducted before the ESS had limitations, providing only a general background to participant biographies. For example, when asking time spent away from village, the responses did not accurately capture mobility, as people are highly mobile from the time they are quite young, and it is common to seasonally spend time away from the village. In general, people frequently come and go, making it difficult to accurately quantify time away from the village. Also, asking a person's provenance does not always result in knowing a person's full background. I gained more useful information just by getting to know people informally and asking about others' backgrounds. These difficulties are expounded in Lüpke (2015b: 98):

> Surveys and similar instruments are a big illusion–there is no quick and easy way to understand the complex and nested historical, social, religious and economic factors at work in these settings to create, maintain, or change particular patterns of language use. Detailed sociolinguistic and ethnolinguistic research needs to precede and flank linguistic description and documentation if language is not just to be seen as structure, but as social practice. One way of achieving this is getting away from the notion of a target language but approaching language as situated use, by starting out from unedited, non-purist, non-prescriptive speech in its social context.

The ESS does not fully capture ethnobiological knowledge. It cannot account for the fact that some people are just not good at recall and does not account for passive knowledge, such as when a child hears the terms that adults know, they know the species, but do not yet fully grasp specific naming. Knowledge is circular with use and language expression; many people might know a species but might not be able to produce the name on the spot. One ten-year-old girl (10FV) could explain the frequent habitats of an owl and roosting sites but had forgotten the name for the moment. In fact, the ESS was accidently conducted twice with two of the participants, which upon comparison revealed that participants vary in their responses at different points in time. Thus, the ESS provided much valuable information, but that information

must be taken as generalities and not exactly reproducing a person's ethnobiological knowledge. The ESS captures a person's knowledge at a moment of time, which can be influenced by many factors, such as fatigue and interest in the task. I regret having a large number species for the ESS. It would have been better to refine the species set to a smaller number and conduct it more slowly and thoroughly, asking about the species more in depth and allowing time for participants to think about variants. Doing the sets quickly, however, captured participants' true, instantaneous responses.

Reliance on two assistants was critical for managing the ESS. Although it was very helpful to have the assistance, some errors in the data come from how the ESS was presented to participants. Completing the ESS with a large sample size relied on assistants' availability and motivation to do the work. The set was not always consistently conducted for each participant. Numbers were not always read off correctly, causing confusion in transcribing. The assistants were at times impatient, not allowing enough time to elicit important data such as naming of variants and of male, female, and offspring of certain species, resulting in incomplete data. The assistants' presence as males also had an impact on younger girls, who seemed more hesitant, resulting in their responses not accurately reflecting their knowledge. Another issue came with translating audio and video recordings, where assistants insisted on replacing words, giving a purist view, but this also provided valuable input for perceptions and reifications of language (Lüpke 2016a).

The methods and analysis in this thesis have limitations and issues, yet the outcomes and insights far outweigh them. This research takes as its starting point languages as entities and a focus on the individual. The focus on the individual makes patterns of multilingualism and variation apparent, revealing communities of practice. Because individual repertoires are so different, it is almost impossible to extrapolate characteristics to larger groups (Lüpke 2016b). Eliciting the ESS from an extreme monolingual perspective was an invaluable heuristic (Lüpke 2017b) that advanced the understanding of language ideologies. Blommaert et al. (2005: 205) discuss starting points:

> There is still emphasis on skill and competence as properties of individuals. A person is said to know this or that set of languages; to have varying degrees of competence with a repertoire of codes, to have control over a particular kind of multilingual set of linguistic resources. Such statements presuppose the individual and his or her knowledge or skill as a stable entity and a secure starting point for analysis. The study of multilingual groups is still the analysis of groups of individuals who are varyingly multilingual. Problems with multilingualism are presented as problems of individuals, whose linguistic repertoires are assessed as to their degree of fit with norms, rules and expectations. We propose a different starting point: that knowledge of language is rooted in situation and

> dynamically distributed across individuals as they engage in practices. This position begins from an old sociolinguistic insight: that how people use language is strongly influenced by the situation in which they find themselves.

My research analyses the individual respective to their ideologies of language boundedness and then expands on this base to understand multilingual spaces and natural use of language, especially those concerning ethnobiology.

4.4 Ethics

The most important part of the research was maintaining a good working relationship with the community, respecting their goals regarding the research, and maintaining openness about my research goals and content. Data was carefully handled, and protections placed where necessary to avoid misuse of information and respect community rights. All research complies with SOAS's Research Ethics Policy and the Data Protection Act. Some ethnobiological data had accessibility restrictions, therefore ethical and legal implications such as bio-piracy and the commercialisation of traditional knowledge were kept in mind. The collection of ethnobiological information follows the Economic Botany Collection Standards (Cook 1995) and the International Society of Ethnobiology's Code of Ethics. I discussed and was fully transparent with how information would be used and with whom it would be shared, ensuring that sensitive data would be handled accordingly. I explained how audio and video recordings would be deposited with ELAR (Endangered Languages Archive) at SOAS. Each individual was informed that information they give could be anonymous and confidential, but all participants felt it was important to have their name associated with data given. The accessibility of the data was determined by each individual. For eliciting data from children, I obtained prior verbal consent from the child's parent(s) or guardian(s) and fully discussed how data would be used. Participants were remunerated with money or gifts from the local market, equivalent to what they would earn congruent with local wages. Research assistants were paid the equivalent of local wages.

5 Characterisation of the multilingual ethnobiological lexicon

5.1 Introduction

This chapter presents the research data and analysis thereof. First, it provides a characterisation of the multilingual ethnobiological lexicon. Then, the ESS is introduced, starting with participants, then the response categories, and an introduction of lexical variation. Then follows

an analysis of factors involved in multilingualism and lexical variation. Lastly, it is all brought together by applying conceptualisations of multilingual cognition. The chapter concludes with a discussion of the interrelationships of multilingualism, lexical variation, and ethnobiology to language vitality.

5.2 The multilingual ethnobiological lexicon

This section describes how ethnobiological information is packaged and represented in the multilingual lexicon. The multilingual ethnobiological lexicon forms an integrated system not strictly relegated to one language of a person's repertoire but accessing multiple ways of speaking and knowing through different languages. The data analysis suggests that multilingualism and lexical variation function as an expansion of the lexical and grammatical choices available to speakers.

5.2.1 The structure of the multilingual ethnobiological lexicon

This section offers a brief overview of some of the linguistic characteristics of the ethnobiological lexicon, focusing mostly on Vute and Gbaya. Ethnobiological lexemes can be quite specialised and extend to grammatical features of language. In Vute, *luŋmgbúrű̃* 'water in the hollow of a tree', literally meaning 'water valley', semantically extends from *luŋtũ* 'valley' to apply to the hollow of a tree often filled with water. Children apply the semantic image of *luŋtũ* 'valley' to an insult targeting a person's sunken eyes.

(9) *íí* *luŋ-kɨ́*
eye.PL hollow-DEM
'sunken/hollow eyes'

Calquing is a semantic tool commonly used across languages. For example, speakers calque in Vute and Gbaya a plant species whose black fruit resembles excrement, *Mussaenda arcuata*.

(10) Vute
mbɨ́p *sune*
excrement chicken
'*Mussaenda arcuata*'

(11) Gbaya
ɗɔ̀rɔ̀ *kɔ̀rá*
excrement chicken
'*Mussaenda arcuata*'

Speakers calque another plant species, *Bullantasia nitens*, in Vute and Gbaya, which is also an example of the extension of everyday lives to the ethnobiological world. The meaning 'baboon's cold fufu' denotes the undesirability of this plant species, that the baboon does not favour it.

(12) Vute
naŋ-ker *dùrù-ù*
fufu-cold baboon-GEN
'baboon's cold fufu'

(13) Gbaya
gɛ̃̀ɛ̃́ *kàm* *gbàdà*
cold fufu baboon
'baboon's cold fufu'

Ethnobiological species, especially birds and insects, often have sound symbolic names. For example, one fish species is referred most commonly cross-linguistically by its Mbum name *bókbók*, which 62MV reports as onomatopoeic for the noise made when chopping it with a knife. Names for birds and insects often reflect their calls. One type of hornbill exhibits considerable lexical variation in Vute. Two of the variants are sound symbolic, *klèklè*, reflecting its call and *təpɨ̀*, reflecting the sound of its flying. Variant names in Vute for *mɨ́njɛ̃* 'cicada' reflect its call, *ndɛ̀ɛ́ndɛ̀ɛ́* or *ndʒɑ́ɑ́*.

Species names can derive from the names of other species, often invoking a plant-animal relationship or differentiation of habitat. In Gbaya, *bázá* 'eagle' is synonymous with 'oil palm', denoting the eagle's relationship to the palm as a roost. In Vute, two qualities of groundnut are differentiated with the use of other species and the type of environment to impart information, as in (14) denoting its forest habitat and in (15) denoting it as a squirrel's targeted food.

(14) *másù* *káhè-é*
groundnut forest-GEN
'groundnut variety'

(15) *másù* *túgwi*
groundnut squirrel
'groundnut variety'

One of the names in Vute for 'green mamba' takes the general name for 'grass' *úndi* and extends it to the snake's colour, producing *ɲɔ́ɔ́ úndi* 'green snake'. Like example (15) with squirrel's groundnut, dissecting the names of species can impart significant information. Children's name for *Strychnos spinosa*, *jɔ́ ndʒàá* 'beyond buffalo', imparts information about the spiny shrub's strong rooting, that buffalo cannot uproot it. Another example of a name exemplifying a species' characteristics involves Gbaya *mbéléwélé* 'butterfly', synonymous with 'scatter brained' and 'flighty'.

The lexeme for Vute *nɨ́r ŋgɨ́* 'stick insect' extends *nɨ́r* 'lion', imparting the folkloric relationship of the two species.

(16) *nɨ́r* *ŋgɨ́*
lion insect
'stick insect'

Species can be named based on physical similarities, as with 'dragonflies' and 'bee eaters' that are named *ndʒane* in Vute, the same name given to a monkey species that is also fuzzy and grey. An orchid species that grows on trees is named in Vute for its resemblance to an insect in a tree.

(17) *ŋgɨ́-p* *kwɛ́n*
insect-PL tree
'orchid'

Species and varieties often name a prototypical member of the category, with others being named as an extension. For example, in Vute *mɨ̀ŋà:* denotes the scorpion species most prototypical, while two other species are named based on their physical differences with that species (Guarisma 1978: 96).

(18) *mɨ̀ŋà:*
scorpion
'scorpion'

(19) *mɨ̀nà: kam-ni*
scorpion crab-GEN
'scorpion with pinchers'

(20) *mɨ̀ŋà tʃɔ-ɔ́*
scorpion bow-GEN
'long scorpion'

Some ethnobiological terms exhibit semantic transparency that gives information about a species. One interesting example is the difference in naming 'buffalo' in two Vute dialects. Each conveys different information about the species. The Nyanjida dialect's *fù-gamè*, literally meaning 'horn meat', conveys information about the animal's edibility and its horns, while the Yoko dialect's *ndʒàá*, a nominalisation of the verb 'shred', imparts information about the animal's dangerous fierceness.

(21) Vute Nyanjida
fù-gamè
meat-horn

origin:
fèé-gaàm
meat-horn.GEN
'buffalo'

(22) Vute Yoko
ndʒàá
shred

nominalisation of:
ndʒàá-nɨ́
shred-INF
'buffalo'

It is common in Gbaya naming to differentiate species based on size. Species often have *gbà* 'large' added to names, as in the Gbaya name for 'python', *gbà gɔ́k*, meaning 'big snake' and the following example from Burnham (1980: 290) differentiating Amaranth species. *Viridus* acts as the prototypical species; its name *mbúɗɛ̀* extends to the larger *caudatus* species and modified with the adjective *gbà* 'large'.

(23) *Amaranthus viridis*
mbúɗɛ̀
amaranth

(24) *Amaranthus caudatus*
gbà *mbúɗɛ̀*
large amaranth

Size is not just indicated by an adjective; it can also be emphasised by extending the name of a large species, as in Gbaya *kálé-fɔ̀rɔ̀* 'goliath beetle', literally 'elephant beetle'.

These examples are by far not exhaustive but give a sample of the various ways ethnobiological species are named.

5.2.2 The scalar nature of ethnobiological lexicons

Lexical variation parallels multilingualism in that both expand linguistic choices available to speakers. These choices provide tools to navigate and position within and across social and linguistic boundaries. They are a way of scaling. "When we scale, we orient, compare, connect, and position ourselves (Carr & Lempert 2016a: 3)." Linguistic repertoires are scalar in nature, reflecting individual experiences and positioning. Ethnobiological knowledge is a scalar practice, involving the different ways people perceive and position themselves within the natural world. Linguistic repertoires and ethnobiological knowledge are processes built on throughout life, as people rescale, reorient, and reposition. Scale is introduced here as background to the data analysis that follows.

Orientation to the natural world is perspectival, affecting how the relationship is encoded in language, a scalar practice often based on salience and utility. Not all species in an environment are named. Both *Ceiba pentandra* 'kapok tree' and *Elaeis guineensis* 'oil palm' grow throughout

Nyanjida, yet the names for kapok tree are not widely known and the oil palm is readily named in all languages, due to the fact that oil palm has significantly higher cultural salience and utility. Scales of utility dictate what is named and what is not. Nomenclature involves scaling the environment and selecting what should be named. The scalar practice of naming is social, shared by some and not others. The utility of kapok trees was higher in the past, thus only older people know their names and uses. The indexicality of the kapok lexemes has diminished, no longer referencing the utility of the species or the people who use it, thus naming it has been scaled back.

Ethnobiological knowledge is scalar across a population, some have deep knowledge, while others less, depending on individual interest and life experiences. This knowledge is not always encoded in language and lies on a cline of practical knowledge and lexical knowledge. A person may have practical knowledge of a species and lack lexical knowledge. The use of extension in ethnobiological lexicons is scalar, applying the conceptualisation of one object to another, as in the extension of Vute *ndʒáàb* 'bear fruit' to the concept of 'pay'. The action of a species bearing fruit is scaled to apply to producing money for payment.

Speakers engage in scalar practices as they orient and position to languages. When speakers navigate language boundaries, they engage in scaling practices as they widen and narrow control of language-specific features. ESS participants scaled down normal linguistic practices to adhere to strict language mode. Crossing language boundaries involves scalar expansion of available features. Language purity ideologies involve scaled conceptualisations, based on differing perspectives of feature allocation. "Scale never means one thing (Carr & Lempert 2016a: 12)." One person or group may scale features of a language as 'true' Vute, while another person may identify other features. Similarly, specific speakers may designate a lexical variant as the correct lexeme, while others may designate a different variant. Language ideologies create scaled contrasts and comparisons, creating interscalar perspectives that recursively reinforce each other, making them the norm.

Lexical variation is a carefully fashioned way of organising conceptualisations, aggregating people who share these perspectives and perceptions, while leaving out others who do not share the same scalar practices. The use of a variant is socially scaled, meaning it is distributed across a community in different ways. People orient themselves to concepts and the variants they use frame how they perceive the concept, such as the tendency of children to use descriptive phrases, sound symbolism, and transparent lexemes. Lexical complexity reflects the way speakers scale and frame their perception of a concept, creating simplex and complex lexemes.

The concept of scale has been briefly introduced here; its explanatory power will become apparent in the following sections, offering multiple levels of analysis in understanding the nature and distribution of multilingual ethnobiological lexicons.

5.3 Ethnobiology stimuli set (ESS)

5.3.1 Introduction

The ESS was used to elicit species' names in the most commonly shared languages in Nyanjida and to elicit lexical variation. It examines the distribution of lexical ethnobiological knowledge and how personal experiences, interests, and exposure to languages play a large part in shaping a person's multilingual ethnobiological lexicon. The ESS looks at individuals as well as groups as a whole, offering a multiple cross-sectioning analysis. The names of one hundred forty-four ethnobiological species were elicited in language mode. The target languages are Vute, Gbaya, Fulfulde, Mbum, and French. Refer to the Methods section 4.2.1 above for more details on how the ESS was conducted and for a diagram of how it is coded.

I choose 'language mode' rather than 'monolingual mode' to reflect the data, as it shows how speakers, although they perceive themselves in monolingual mode, access other languages, making the label of 'language mode' seem more accurate. Language modes are viewed here as spaces of communication since "language mode can be defined as the state of activation of the bilingual's languages and language processing mechanisms at a given point in time (Grosjean 2013a: 15)." Spaces frame the norms and expectations of how a person should socially and linguistically behave and this involves scalar practices (Blommaert et al. 2005). Language mode acts as an ideologically constructed space in which speakers navigate prototypicality and the categorical use of features. Language purity ideologies are recursive processes, where speakers continually reiterate language distinctions, choosing prototypical features, while at the same time ignoring or down-playing non-prototypical features. ESS participants scaled down their natural heteroglossic linguistic practices and behaviour to engage in strict language mode. The ESS demonstrates the paradoxical nature of language purity ideologies and actual practices.

Crossing language boundaries is a scalar practice, a movement across the space of a language mode, expanding the scale of available features. NON-TARGET responses have much to inform about scale and the indexicality of linguistic forms to relationships and individual characteristics. Research on this usually involves the deliberate use of language and forms, on situated acts in natural conversation. The ESS is an unnatural elicitation task that aimed to inventory what an individual has available, which gives insight into how linguistic forms index relationships through scalar affiliations. "The notion of scale precisely emphasises the idea that spaces are ordered

and organised in relation to one another, stratified and layered, with processes belonging to one scale entering processes at another scale (Blommaert et al. 2005: 203)." ESS responses show that participants move in and out of language modes but often in patterned ways and in reality language modes integrate into one system, categorised in relation to each other in specific ways, thus facilitating or hindering the movements within and across these modes. This allows subtle shifts in space, as when a young boy added the Gbaya prefix *na-* to French *papillon*, to reorient himself to Gbaya mode. Language modes influence what speakers can do in that space and as the data will show, certain language modes facilitate more boundary crossing than others.

The following sections detail the results of the elicitation. Section 5.3.2 details participants and their participation in language modes. Sections 5.3.3 and 5.3.4 present the categories of responses. Section 5.4 introduces lexical variation. These sections present the data, whereas section 5.5 interprets the data and elaborates on the factors involved.

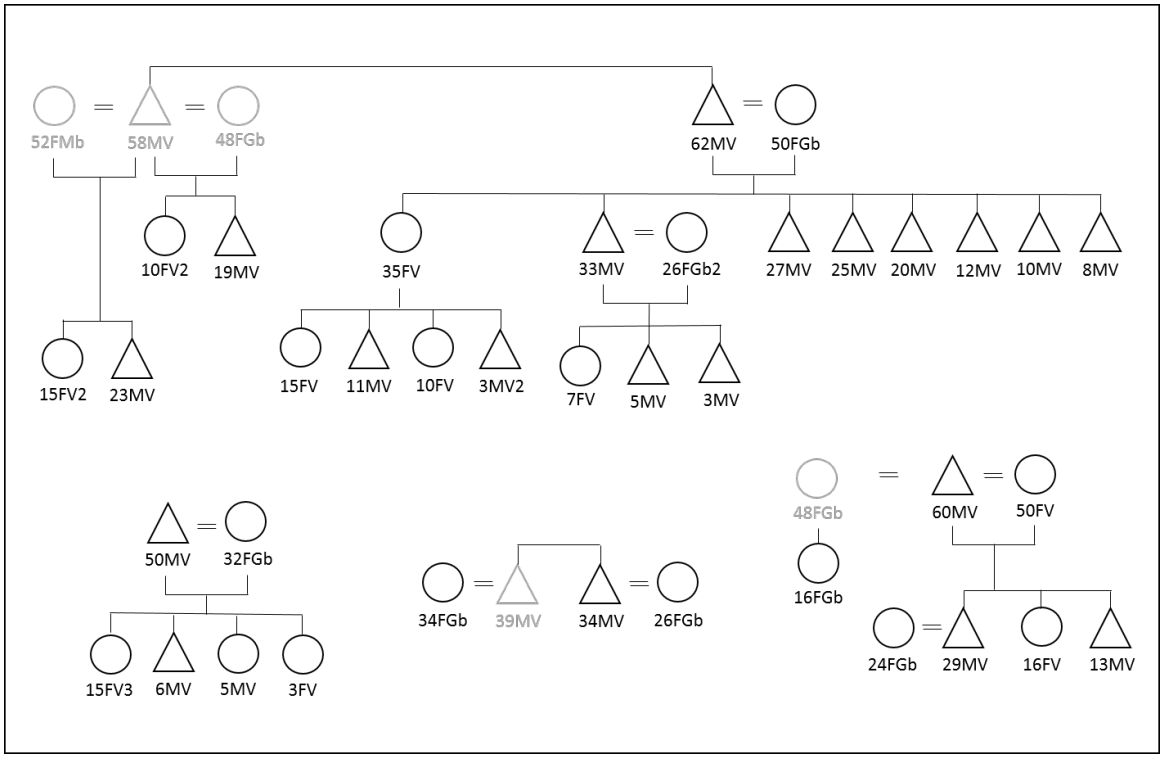
5.3.2 Participants

This section introduces participants based on age, gender, and self-reported primary affiliation. Section 5.5 gives a much more in-depth analysis of participant responses beyond these categories. As mentioned earlier, all participants are referred to with codes representing their age, gender, and self-reported primary affiliation. For example, 62MV refers to a sixty-two-year-old male who primarily affiliates as Vute. 50FGb refers to a fifty-year-old woman who primarily affiliates as Gbaya. 52FMb refers to a fifty-two-year-old woman who primarily affiliates as Mbum.

Figure 5 displays the relationships of ESS participants. Individuals who are lightly shaded did not participate, having been absent from the village or unable to participate, but are included to show relationships. Participants comprise one large family and several smaller families, some of whom are distantly related to the larger family. The larger family is headed by 62MV, who acts as the head of the village in the absence of the chief who lives in Tibati. His wife, 50FGb, primarily affiliates as Gbaya and comes from a Gbaya village. Their children and grandchildren's primary affiliation is Vute. 62MV's brother, 58MV, who no longer resides in the village and did not participate, has married three women (the most recent not shown) with different self-reported primary affiliations, two as Gbaya and another as Mbum. His children primarily affiliate as Vute but hold secondary affiliations through their Mbum and Gbaya mothers. 62MV's daughter, 35FV primarily associates as Vute. Two of her children, 3MV2 and 10FV, have a Vute father. Her oldest daughter, 15FV also has a Vute father, but his language repertoire differs from that of the other two children's Vute father. 35FV's other son, 11MV has a Kwanja father who

lives far away but due to the time spent with his father, 11MV's language repertoire differs from that of his siblings. It was not determined how 60MV, 50MV, 39MV, and 34MV are related to 62MV, but it was reported that they are distantly related.

Figure 5 ESS participant relationships



5.3.2.1 Participation

A total of thirty-eight people in Nyanjida participated in the ESS, ranging in ages three to sixty-two[23]. Figure 6 displays the age range of participants by gender. Gender balance and age stratification were somewhat achieved, with eighteen females and twenty males participating[24]. Females range from age three to fifty and males from three to sixty-two. For reasons unknown, there exists an age gap between the ages thirty-five and fifty for both genders. Another age gap exists for females from age sixteen to twenty-four, likely because young females leave the village to marry elsewhere or live in town for school.

[23] Ages in Nyanjida are often relative and changeable, depending on factors such as the social situation, school entrance, and job prospects.

[24] A few older women and men who have difficulties with eyesight did not participate.

Figure 6 Age range of participants in the ESS

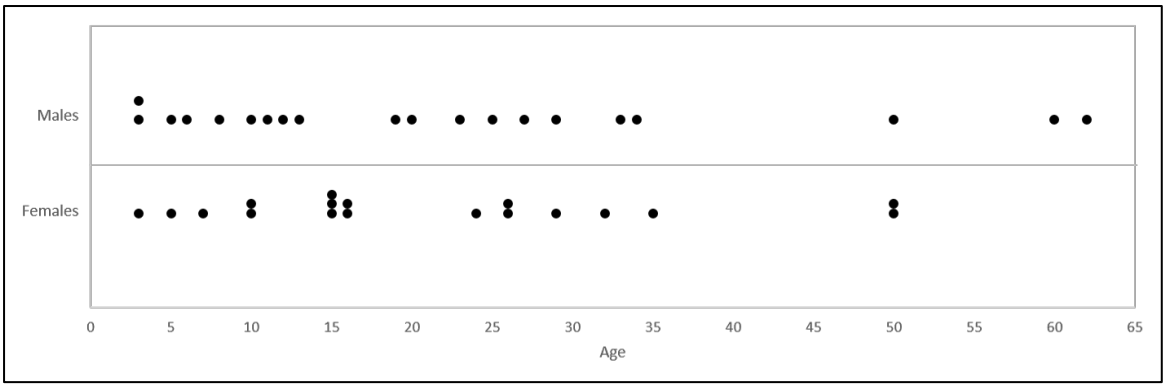


Table 3 shows the self-reported primary affiliation of all participants, with all twenty males identifying as Vute, while eleven females identify as Vute and seven as Gbaya. The Gbaya women live in the village through exogynous marriages and are all above age sixteen. The two Vute women, ages thirty-five and fifty, call Nyanjida their home village, although they have lived in other villages. Personally knowing each individual participant was instrumental in understanding and categorising responses.

Table 3 Participant primary affiliation

Primary Affiliation	Gender	Total
Vute	Female	11
	Male	20
Gbaya	Female	7
	Male	0

Participation in each language mode varies. Table 4 depicts overall language participation, showing participation by total number of languages, ranging from one to five, with the highest number of people (seventeen) participating in four languages. Seven males and one female participated in all five target languages and were all above age nineteen and identify as Vute. Gender is more equal for those who participated in four languages, with eight males and nine females. All the males who participated in four languages identify as Vute and the females split, with five identifying as Vute and four as Gbaya. Ages for participation in four languages ranged from five to sixty-two. More females participated in three languages, numbering six compared to three males. Four of the females identify as Vute and two as Gbaya, with all the males as Vute. Ages for participation in three languages ranged from five to fifty. Just one young boy, 3MV,

participated in two languages. Two other three-year-olds (3MV2 and 3FV), who both identify as Vute, participated in just one language, along with a fifty-year-old Gbaya woman (50FGb) who was not available for further participation even though she knows all five languages well. Variance in participation goes beyond gender and age. The difference between participation in four or five languages comes from effects of exogynous marriage practices, whereby Gbaya females married into the village and those under age fifty do not generally speak Mbum, unless their individual life trajectory fuelled Mbum acquisition. For example, 32FGb speaks Mbum due to her personal life experience.

Table 4 Total language participation by gender

	Number of languages				
	5	**4**	**3**	**2**	**1**
Male	7	8	3	1	1
Female	1	9	6	0	2
Total	8	17	9	1	3

Table 5 displays the total number of participants per language, showing totals for gender and giving the percent of total participants, percent of total participants per language, and percent of male or female participants. Ninety-two percent of all participants completed the set in Vute, eighty-nine percent in Gbaya, seventy-nine percent in Fulfulde, seventy-four percent in French, and just thirty-four percent in Mbum. Participation by language varies significantly by gender. In every language except French, more males participated than females, especially in Mbum, where seventy-seven percent of participants are male and twenty-three percent female. French participation splits equally, with fourteen participants from each gender. All males participated in Vute, while eighty-three percent of females participated. Two of the Gbaya women who came to the village through exogynous marriage within the last two years did not want to participate in Vute and one woman was unavailable. Compared to males, a higher percentage of total females participated in French due to three older males opting out of French, stating that they were not strong enough in the language, perhaps self-aware that their French lexicon does not encompass detailed plant and animal names, even though they speak French. One thirty-two-year-old female (32FGb), two fifty-year-old women (50FV and 50FGb), and four younger children also did not participate in French. Notably, six of the oldest participants did not participate in French, perhaps reflecting its newly applied prestige due to indexing education and ties with larger towns.

For Gbaya, Fulfulde, and Mbum, a higher percentage of total males participated than total females, which suggests that in this village, at this moment in time, males tend to be more multilingual in the languages studied. It is not strictly that males are more multilingual, just that the males in this participant group hold similar trajectories and life experiences in Nyanjida that equipped them with knowledge of more languages. Their linguistic repertoires index their life behaviours and experiences, a scalar practice whereby experiences position individuals to acquisition of specific languages. Follow-up conversations and getting to know the women better revealed that several women speak languages like Hausa that were not targeted in the ESS and were not mentioned at the time in the pre-elicitation questionnaire. Knowledge of Mbum is scaled in that the thirteen people who participated in Mbum were all older than twenty-three and those who did not participate were younger than twenty-three except four of the five Gbaya women not originally from the village. Males and females are most equal in Fulfulde, where eighty percent of total males and seventy-eight percent of total females participated. 13MV proudly claimed he did not know Fulfulde. Others who did not participate were children under four years old and one fifteen-year-old female (15FV) who was not comfortable doing any of the set, possibly because she had spent much of her life in Tibati, making her less knowledgeable in specific, detailed naming. The four people who did not participate in Gbaya were two three-year-olds and a fifty-year-old woman (50FV) and her sixteen-year-old daughter (16FV), both of whom identify as Vute, which does not mean they do not have knowledge of Gbaya, just that they are not willing to participate in a foreign, detailed naming task in that language. 50FV is a co-wife with a Gbaya woman who reciprocally says she does not know Vute and was not available to participate in the ESS.

Table 5 Total participation by language

Language mode	Total participants		Female				Male			
	Total	Percent	Total	Percent of total participants	Percent of participants in language	Percent of females	Total	Percent of total participants	Percent of participants in language	Percent of males
Vute	35	92%	15	39%	43%	83%	20	53%	57%	100%
French	28	74%	14	37%	50%	78%	14	37%	50%	70%
Gbaya	34	89%	15	39%	44%	83%	19	50%	56%	95%
Fulfulde	30	79%	14	37%	47%	78%	16	42%	53%	80%
Mbum	13	34%	3	8%	23%	17%	10	26%	77%	50%
Overall	38		18		47%		20		53%	

I now turn to the ESS response categories.

5.3.3 Primary responses

ESS data is coded for response types. The first set of coding is categorised as primary response and coded for whether a response was given and if a response was given, whether it was a TARGET RESPONSE or NON-TARGET RESPONSE. TARGET RESPONSE are also coded for any variants given. NON-TARGET RESPONSE comprise the second set of coding, labelled secondary response, which are really just specifications of the types of NON-TARGET RESPONSE. They are coded into four categories: NON-TARGET LANGUAGE (and which language), NON-TARGET WORD in the target language, GENERAL CATEGORY, and DESCRIPTION. A schematic for this was given in Figure 4 in the Methods chapter. This and the following section discuss primary and secondary responses, giving an overview of these categories. Then section 5.5 gives a detailed analysis of factors involved.

Table 6 displays the totals for each of the three primary response types, NO RESPONSE, TARGET RESPONSE, and NON-TARGET RESPONSE. I let the data speak for itself by determining categories after elicitation, allowing as natural of categories as possible, rather than predetermining them. TARGET RESPONSE was determined by consensus and follow-up qualitative questioning about responses. Due to the small sample size, consensus was not strictly statistically determined. Consensus was instead determined by comparing responses and when responses did not match, follow-up questioning with several local consultants determined if the anomaly could also be determined a correct response and considered a lexical variant. This triangulating of data allowed insight into individual influences, since many of the anomalies could be explained.

NO RESPONSE totals 16,651. TARGET RESPONSE totals 8,158 and NON-TARGET RESPONSE totals 2,539 for all participants. The high number of NO RESPONSE compared to the other two categories reflects that participants did not feel obligated to give a response for each species, which hopefully creates more accurate data whereby participants did not feel they were obligated to respond by giving a NON-TARGET RESPONSE for a species. It also reflects participants' commitment to language mode; overall, participants chose not giving a response more times than giving a NON-TARGET RESPONSE.

Table 6 Total primary response types for ESS

Type of Primary Response	**Total**
NO RESPONSE	16,651
TARGET RESPONSE	8,158
NON-TARGET RESPONSE	2,539
Total all Response Categories	27,348
Total TARGET & NON-TARGET RESPONSE	10,697

Table 7 gives an overall detailed view of both primary and secondary responses with regard to each language mode. The scalar data in this table reflect the asymmetry of multilingualism and when dissected into detailed analysis, also reflect the complexity of linguistic repertoires and social practices in Nyanjida. The table represents raw data. The left side divides the three categories of primary response, so whether a response was given and whether the response was correct. NON-TARGET RESPONSE are divided into four categories and NON-TARGET LANGUAGE is further divided by the language used. For example, Vute mode shows 1828 NO RESPONSE, 2622 TARGET RESPONSE, and 1019 NON-TARGET RESPONSE. When NON-TARGET RESPONSE is further divided, Vute mode shows 342 NON-TARGET WORD, 265 GENERAL CATEGORY, 35 DESCRIPTION, and a total of 377 NON-TARGET LANGUAGE responses comprised of 189 responses in Gbaya, 55 responses in Fulfulde, 1 in Mbum, and 132 in French.

Overall, all languages received more TARGET RESPONSE than NON-TARGET RESPONSE. Comparing NO RESPONSE to total positive responses (TARGET and NON-TARGET RESPONSE) shows that Vute and Gbaya had more positive responses than NO RESPONSE, while in contrast, Fulfulde, Mbum, and French all had more NO RESPONSE than positive responses, reflecting that Vute and Gbaya are used more concerning ethnobiological practices and participants are more apt to give responses in these two languages, whether TARGET RESPONSE or NON-TARGET RESPONSE.

Table 7 Coding totals for ESS

Primary Response	Secondary Response		Language Mode				
			Vute	Gbaya	Fulfulde	Mbum	French
NO RESPONSE			1828	1933	4047	4662	4181
TARGET RESPONSE			2622	2782	1080	549	1125
NON-TARGET RESPONSE	NON-TARGET LANGUAGE	Vute	-	49	11	13	11
		Gbaya	189	-	19	16	6
		Fulfulde	55	15	-	20	4
		Mbum	1	0	2	-	1
		French	132	120	41	14	-
		Total	377	184	73	63	22
	NON-TARGET WORD		342	394	29	33	19
	GENERAL CATEGORY		265	126	139	56	91
	DESCRIPTION		35	48	103	109	31
	Total		1019	752	344	261	163
Total TARGET & NON-TARGET RESPONSE			3641	3534	1424	810	1288

The coding totals in Table 7 represent raw data that is not exactly comparable across languages because of differences in participation in each language and missing data from several people who were not available to complete all languages in their repertoire. To counterbalance any effects of this, primary response types are recalculated in subsequent tables as a percent of participation per language mode when comparing across categories. For example, when comparing *across a category* such as TARGET RESPONSE, the total for Vute is multiplied by 92% participation rate, Gbaya 89%, Fulfulde 79%, Mbum 34%, and French 74%. However, comparisons *within* language mode are calculated with raw data from Table 7 since different participation rates do not apply.

The following analyses unpack the data from the above table and provide two main levels of analysis: one that examines each response category, comparing language modes within that category and another that analyses the categories within each language mode. Table 8 examines each primary response category and ranks the results of each language mode. This differs from Table 7 in that percent of participation in each language is factored in as explained above. The most NO RESPONSE occurred in Fulfulde (28%) and Mbum (27%), with less NO RESPONSE in Vute (15%), Gbaya (15%), and Mbum (14%). The most TARGET RESPONSE occurred in Gbaya (37%) and Vute (36%), with less TARGET RESPONSE in Fulfulde (13%), French (12%), and Mbum (3%). This reflects the asymmetry of repertoires, that as a community these speakers hold more ethnobiological lexical knowledge in Vute and Gbaya. Interestingly, the most NON-TARGET RESPONSE also occur in Vute (45%) and Gbaya (32%), with less NON-TARGET RESPONSE in Fulfulde (13%), French (6%), and Mbum (4%). This reflects participants' multilingual practices in that most participants, while in Vute and Gbaya language modes, tend to access more of their

linguistic repertoires and cross boundaries, while in other language modes hold stricter boundaries, opting instead for more NO RESPONSE.

Table 8 Comparing primary response categories

NO RESPONSE		TARGET RESPONSE		NON-TARGET RESPONSE	
Language	**Percent**	**Language**	**Percent**	**Language**	**Percent**
Fulfulde	28%	Gbaya	37%	Vute	45%
French	27%	Vute	36%	Gbaya	32%
Vute	15%	Fulfulde	13%	Fulfulde	13%
Gbaya	15%	French	12%	French	6%
Mbum	14%	Mbum	3%	Mbum	4%

Table 9 offers a different level of analysis, comparing primary responses within each language mode, showing which category occurs most frequently in each language mode. Overall, participants in Vute and Gbaya language modes tended to give TARGET RESPONSE for nearly half of all primary responses, with forty-eight and fifty-one percent, respectively. In contrast, participants in Fulfulde, Mbum, and French tended to give higher percentages of NO RESPONSE in each language mode, all nearly more than three-fourths of responses. This shows again that participants tended to choose NO RESPONSE in each language mode over NON-TARGET RESPONSE.

Table 9 Comparing primary response within each language mode

Primary Response	**Language Mode**				
	Vute	Gbaya	Fulfulde	Mbum	French
NO RESPONSE	33%	35%	74%	85%	76%
TARGET RESPONSE	48%	51%	20%	10%	21%
NON-TARGET RESPONSE	19%	14%	6%	5%	3%

Table 10 provides another perspective of positive responses, calculating TARGET and NON-TARGET RESPONSE as percentages of the total of these two categories within each language mode, while omitting NO RESPONSE. The percentages for TARGET RESPONSE show the language in which participants were the most accurate, meaning participants gave more TARGET than NON-TARGET RESPONSE. In contrast, the percentages for NON-TARGET RESPONSE show the language in which participants were the least accurate. This does not account for the fact that a speaker might count a lexeme as a feature of a language in their personal ideological knowledge system, but

overall general consensus does not. Overall, participants show high accuracy, meaning they gave more TARGET than NON-TARGET RESPONSE, with overall percent of TARGET RESPONSE equating to seventy six percent and ranging from sixty-eight to eighty-seven across language modes. Participants were most accurate in French, followed by Gbaya, Fulfulde, Vute, and Mbum. The opposite order applies for NON-TARGET RESPONSE, with inaccuracy percentages ranging from thirty-two to thirteen. The ranking of language and differences in percentages between TARGET and NON-TARGET RESPONSE can mostly be explained by the analysis of the individual, which is detailed in 5.5.

Table 10 Accuracy within each language mode

Positive Response	**Language Mode**				
	Vute	Gbaya	Fulfulde	Mbum	French
TARGET RESPONSE	72%	79%	76%	68%	87%
NON-TARGET RESPONSE	28%	21%	24%	32%	13%

5.3.4 Secondary responses

5.3.4.1 Introduction

NON-TARGET RESPONSE are coded into further specific categories, referred to here as secondary responses and comprise NON-TARGET LANGUAGE, NON-TARGET WORD, GENERAL CATEGORY, and DESCRIPTION. This section discusses secondary responses in general and subsequent sections discuss each based on responses per language mode and across each category. NON-TARGET LANGUAGE involves when a participant does not adhere to language mode, using a different language mode. This was based on general consensus and not reflective of an individual's own assessment of language mode. For example, young children are often absolutely adamant about which lexemes belong to which language, despite general consensus that show otherwise. NON-TARGET WORD involves when a participant gives a word in the targeted language mode but is considered by consensus as incorrect, even if in the speaker's mind it is correct. GENERAL CATEGORY involves responding with a general categorical rather than specific response. DESCRIPTION involves responding with a descriptive phrase rather than a fixed expression. These categories were not pre-determined but came naturally out of the data.

The overall high percent of TARGET RESPONSE and low percent of NON-TARGET RESPONSE reflect that participants gave fewer NON-TARGET LANGUAGE, NON-TARGET WORD, GENERAL CATEGORY, and DESCRIPTION overall. For example, when in French mode, respondents tended to adhere to

language mode and did not deviate into other language modes, use NON-TARGET WORD, or DESCRIPTION. In this language mode, participants tended to give TARGET RESPONSE or no response at all, reflective of the overall tendency to not feel obligated to give a response.

Table 11 displays each secondary response as a percent of total secondary responses. NON-TARGET WORD occur the most with just over one-third of all responses, followed closely by NON-TARGET LANGUAGE and GENERAL CATEGORY, with DESCRIPTION the least used. These percentages reflect the flexibility of language mode adherence through the use of NON-TARGET WORD, GENERAL CATEGORY, and less so DESCRIPTION and the permeability of languages through the use of NON-TARGET LANGUAGE.

Table 11 Secondary response totals

Secondary Response	Percent of Total
NON-TARGET WORD	34%
NON-TARGET LANGUAGE	29%
GENERAL CATEGORY	26%
DESCRIPTION	10%

The two tables below expand on this to rank secondary responses as a percentage within language mode and within the category. Table 12 compares each secondary response, but within each language mode, giving a different perspective. This shows which secondary responses occur the most and least in each language mode, which varies across language modes.

Table 12 Comparing secondary responses within each language mode

Vute		**Gbaya**		**French**	
Secondary Response	**%**	**Secondary Response**	**%**	**Secondary Response**	**%**
NON-TARGET LANGUAGE	37%	NON-TARGET WORD	52%	GENERAL CATEGORY	56%
NON-TARGET WORD	34%	NON-TARGET LANGUAGE	24%	DESCRIPTION	19%
GENERAL CATEGORY	26%	GENERAL CATEGORY	17%	NON-TARGET LANGUAGE	13%
DESCRIPTION	3%	DESCRIPTION	6%	NON-TARGET WORD	12%
Fulfulde		**Mbum**			
Secondary Response	**%**	**Secondary Response**	**%**		
GENERAL CATEGORY	40%	DESCRIPTION	42%		
DESCRIPTION	30%	NON-TARGET LANGUAGE	24%		
NON-TARGET LANGUAGE	21%	GENERAL CATEGORY	21%		
NON-TARGET WORD	8%	NON-TARGET WORD	13%		

In Vute mode, participants tended to use NON-TARGET LANGUAGE, NON-TARGET WORD, and GENERAL CATEGORY, with very few DESCRIPTION at just three percent of secondary responses. In Gbaya, just over half of the secondary responses were NON-TARGET WORD, followed by NON-TARGET LANGUAGE and GENERAL CATEGORY, with few DESCRIPTION. In Fulfulde, participants tended to give GENERAL CATEGORY and DESCRIPTION, less NON-TARGET LANGUAGE, and few NON-TARGET WORD. Participants used GENERAL CATEGORY and DESCRIPTION as tools to remain in language mode. In Mbum, most of the responses were DESCRIPTION, followed by NON-TARGET LANGUAGE and GENERAL CATEGORY, and less NON-TARGET WORD. In French, well over half of the responses were GENERAL CATEGORY, followed by DESCRIPTION, NON-TARGET LANGUAGE, and NON-TARGET WORD. Speakers tended to give less specificity in French mode, giving GENERAL CATEGORY such as *singe* 'monkey' or *poisson* 'fish'. Participants adhered to French mode the most out of any language mode, using NON-TARGET LANGUAGE as just thirteen percent of all secondary responses. Gbaya and Vute language modes include higher percentages of NON-TARGET LANGUAGE and NON-TARGET WORD, and lower percentages of GENERAL CATEGORY and DESCRIPTION. In contrast, Fulfulde and French language modes include lower percentages of NON-TARGET LANGUAGE and NON-TARGET WORD, and higher percentages of GENERAL CATEGORY and DESCRIPTION. Languages that are generally more frequently used like Vute and Gbaya have fewer GENERAL CATEGORY and DESCRIPTION, while these categories occur more frequently in languages less used and these languages tend to have less NON-TARGET WORD.

Table 13 shows the percentage of each secondary response as a total of all responses for that category. This gives a comparison across language modes within each category. Each of these response categories are discussed in detail below.

Table 13 Comparing secondary response categories

Secondary Response	**Language Mode**				
	Vute	Gbaya	Fulfulde	Mbum	French
NON-TARGET LANGUAGE	57%	27%	10%	4%	3%
NON-TARGET WORD	44%	49%	3%	2%	2%
GENERAL CATEGORY	44%	20%	20%	3%	12%
DESCRIPTION	15%	20%	38%	17%	11%

Each of the secondary response categories are now discussed in turn, drawing on data from the above tables, giving comparisons of each category compared to all other secondary responses, of language modes across each category, and of each category within each language mode. These sections present data that will then be analysed in reference to factors and individuality.

5.3.4.2 Non-target word

When a participant remained in language mode, but gave a non-standard response, it is coded as NON-TARGET WORD. The coding is judged based on consensus, so if a response did not align with others' responses, it is coded as NON-TARGET WORD, which may either be true and real in the mind of an individual, or just a guess.

As mentioned above, overall NON-TARGET WORD comprises the most secondary responses, about one-third of all secondary responses. When comparing language modes across the NON-TARGET WORD category as in Table 13, the most responses occur in Gbaya (49%) and Vute (44%), each about half of all responses, with less than three percent of all occurrences in Fulfulde, Mbum, and French. When comparing secondary responses within each language mode as in Table 12, it shows that thirty-four percent of all secondary responses in Vute are NON-TARGET WORD and just over half in Gbaya (52%), while NON-TARGET WORD is a small percentage in the other languages, Mbum (13%), French (12%), and Fulfulde (8%).

5.3.4.3 General category

When participants gave a general term for a species instead of a specific lexeme, it is coded as GENERAL CATEGORY. Responses for this category varied depending on the participant. The most common type of GENERAL CATEGORY was simply giving a general term, such as Vute *njàm* 'animal' for *ndʒàràŋ* 'porcupine'. Children tended to make their own categories, often generalising animals based on size, such as giving the Vute lexeme *ndʒù* 'elephant' for any large animal.

Overall, twenty-six percent of all secondary responses are GENERAL CATEGORY. When comparing language modes across GENERAL CATEGORY as in Table 13, responses occurred the most in Vute (44%), followed by Fulfulde (20%), Gbaya (20%), French (12%), and Mbum (3%). When comparing all secondary responses within each language mode as in Table 12, it shows that fifty-six of all secondary responses are GENERAL CATEGORY in French and forty percent in Fulfulde, while a lower percentage in the other languages, Vute (26%), Mbum (21%), and Gbaya (17%). The generally low percentages in GENERAL CATEGORY reflect overall knowledge across participants of specific terms. Contrastingly, higher percentages in French and Fulfulde reflect the absence of knowledge of specific terminology in those language modes.

5.3.4.4 Description

Some participants who did not know the specific lexeme for a species gave descriptive responses, coded as DESCRIPTION. Responses ranged in length. For example, responses in Vute for *mɨdʒó* 'weaver bird' ranged from 'yellow bird' to 'bird with red eyes' to 'village bird' to 'bird that weaves nests', giving a wide variety of descriptive phrases based on the species' appearance, habitat, and behaviour. These types of responses tended to be in certain languages and by certain individuals, details of which are presented in 5.5.

Overall, ten percent of all secondary responses are DESCRIPTION. The overall low percentage of DESCRIPTION reflects multilingualism and linguistic repertoires, in that participants have a wide range of resources available and if they give a NON-TARGET RESPONSE will generally use a NON-TARGET WORD or NON-TARGET LANGUAGE before giving a DESCRIPTION. When comparing language modes across DESCRIPTION as in Table 13, responses occurred the most in Fulfulde (38%), with much less in the other languages, Gbaya (20%), Mbum (17%), Vute (15%), and French (11%). When comparing all secondary responses within each language mode as in Table 12, it shows that forty-two percent of all secondary responses in Mbum are DESCRIPTION and thirty percent in Fulfulde, with much less in the other languages, French (19%), Gbaya (6%), and Vute (3%).

5.3.4.5 Non-target language

When participants did not adhere to language mode, it is coded as NON-TARGET LANGUAGE. This applies a purist view of language but was necessary and informative to understand individual and group perceptions of language mode although responses were not always clear as to whether participants intended to cross language boundaries or in their minds were adhering to language mode. NON-TARGET LANGUAGE use is analysed in several ways, including which NON-TARGET LANGUAGE is used most overall, which language modes is most and least adhered to, and which NON-TARGET LANGUAGE were used in each language mode. It at first proved difficult in coding for this category and a set of heuristics was defined. Responses had to be decided as simply nonce borrowings to fill a gap for the participant, which were coded as NON-TARGET LANGUAGE, while a response like *ɗàŋkálè* for 'sweet potato', originally from Hausa, was given by nearly every respondent in every language mode and therefore considered assimilated across languages. These types of lexemes have been referred to as Wanderwörter (Haspelmath 2009) and areal roots (Awagana et al. 2009), meaning they exist cross-linguistically, even in genetically unrelated languages. Determining the use of NON-TARGET LANGUAGE in this analysis is often based on whether there exists a lexeme in the language, even if numerous participants gave a correct response in a NON-TARGET LANGUAGE. For example, a language-specific lexeme for 'sweet potato' exists in Vute, but not in Gbaya, which has borrowed the Hausa term. Even though a high

number of participants gave the Hausa term in Vute, it is coded as NON-TARGET LANGUAGE, while since no term exists in Gbaya, it is coded as TARGET RESPONSE. The use of NON-TARGET LANGUAGE reflects perceptions of language mode. If a child uses a French word in Vute language mode, it is likely real in their mind, as evidenced in their adamant defence. It is also the case that a participant felt the need to give a response and only a feature from another language mode was available to them.

Overall, twenty-nine percent of all secondary responses are NON-TARGET LANGUAGE. When comparing language modes across NON-TARGET LANGUAGE as in Table 13, responses occurred the most in Vute (57%), followed by Gbaya (27%), with far less in Fulfulde (10%), Mbum (4%), and French (3%). When comparing all secondary responses within each language mode as in Table 12, it shows that thirty-seven percent of all secondary responses in Vute are NON-TARGET LANGUAGE, while Gbaya (24%), Mbum (24%), and Fulfulde (21%) all show similar percentages, and just thirteen percent of all secondary responses in French are NON-TARGET LANGUAGE. Overall, participants used few NON-TARGET LANGUAGE in French mode, perhaps staying in French language mode is facilitated by school experiences, one of the few linguistic spaces where French language mode is obligatory and harshly punishable. In conversations, French holds a stigma that requires adherence to language mode. Participants also used comparably fewer NON-TARGET LANGUAGE in Fulfulde mode, perhaps due to asymmetrical multilingualism, where Fulfulde speakers may not use or know other languages, making it pertinent to remain in Fulfulde language mode and not access other languages like Vute and Gbaya. In contrast, if a person knows Vute (and Gbaya), they are more apt to have knowledge of other languages and not strictly adhere to language mode, facilitating language permeability and access to more languages and features. While in Vute and Gbaya modes, other languages are easily simultaneously activated. Whereas Mbum exists on another end of the spectrum, where other languages are not as easily activated, resulting in participants adhering to Mbum language mode and having a higher number of NO RESPONSE. Table 14 gives an overall view comparing the languages used as NON-TARGET LANGUAGE. French was the most used as seventy-five percent of the total NON-TARGET LANGUAGE, followed by Gbaya with fifty-six percent. Fulfulde, Vute, and Mbum were much less used, with twenty-three, twenty, and one percent, respectively.

Table 14 NON-TARGET LANGUAGE use

Language	Total	Percent
French	307	75%
Gbaya	230	56%
Fulfulde	94	23%
Vute	84	20%
Mbum	4	1%

Table 15 gives more detail by ranking the NON-TARGET LANGUAGE used in each language mode. Each language mode varies in the use of NON-TARGET LANGUAGE and in each language mode except Mbum one language occupies at least half of all NON-TARGET LANGUAGE occurrences in that mode. This shows that in each language mode (except Mbum) the use of a specific NON-TARGET LANGUAGE dominates, indicating that participants show a preference for NON-TARGET LANGUAGE when in certain language modes. For Vute language mode, half of the NON-TARGET LANGUAGE responses were Gbaya, thirty-five percent French, fifteen percent Fulfulde, and just one response in Mbum. For Gbaya language mode, sixty-five percent of NON-TARGET LANGUAGE responses were in French, twenty-seven percent in Vute, eight percent in Fulfulde, and none in Mbum. For Fulfulde language mode, fifty-six percent of NON-TARGET LANGUAGE responses were in French, twenty-six percent in Gbaya, fifteen percent in Vute, and three percent in Mbum. For French language mode, fifty percent of NON-TARGET LANGUAGE responses were in Vute, twenty-seven percent in Gbaya, eighteen percent in Fulfulde, and five percent in Mbum. Responses for Mbum language mode are much more evenly distributed, with thirty-two percent of NON-TARGET LANGUAGE responses in Fulfulde, twenty-five percent in Gbaya, twenty-two percent in French, and twenty-one percent in Vute.

Table 15 Ranking NON-TARGET LANGUAGE responses by language mode

	Language Mode									
	Vute		**Gbaya**		**Fulfulde**		**Mbum**		**French**	
	Language	**Total**	**Language**	**Total**	**Language**	**Total**	**Language**	**Total**	**Language**	**Total**
Raw Totals	Gbaya	189	French	120	French	41	Fulfulde	20	Vute	11
	French	132	Vute	49	Gbaya	19	Gbaya	16	Gbaya	6
	Fulfulde	55	Fulfulde	15	Vute	11	French	14	Fulfulde	4
	Mbum	1	Mbum	0	Mbum	2	Vute	13	Mbum	1
	Total	377	Total	184	Total	73	Total	63	Total	22
Percent of Language Total	Gbaya	50%	French	65%	French	56%	Fulfulde	32%	Vute	50%
	French	35%	Vute	27%	Gbaya	26%	Gbaya	25%	Gbaya	27%
	Fulfulde	15%	Fulfulde	8%	Vute	15%	French	22%	Fulfulde	18%
	Mbum	0%	Mbum	0%	Mbum	3%	Vute	21%	Mbum	5%

The distribution of NON-TARGET LANGUAGE across language modes reflects the interplay of languages and positioning in relation to other languages. Table 16 simplifies Table 15 to visually display the ranking of NON-TARGET LANGUAGE by language mode. Each NON-TARGET LANGUAGE is ranked from one to four within each language mode, with one being the highest used and four the least. All NON-TARGET LANGUAGE except Vute show consistency across language modes. Mbum places last across all languages, reflective of its low use as a NON-TARGET LANGUAGE. In contrast, Gbaya consistently places high across all languages as either the most or second most used NON-TARGET LANGUAGE. Fulfulde is the most used NON-TARGET LANGUAGE in one language mode (Mbum), while in all other languages it consistently ranks third. French is less consistent, ranking the highest in Gbaya and Fulfulde and second in Vute. The use of Vute varies, placing low in Mbum and Fulfulde and high in French and Gbaya.

Table 16 Simplified ranking of NON-TARGET LANGUAGE use by language mode

NON-TARGET LANGUAGE	Language Mode				
	Vute	Gbaya	Fulfulde	Mbum	French
Vute	-	2	3	4	1
Gbaya	1	-	2	2	2
Fulfulde	3	3	-	1	3
Mbum	4	4	4	-	4
French	2	1	1	3	-

Now that the ESS has been introduced, I turn now to lexical variation before discussing specific factors involved in both.

5.4 Lexical variation in the multilingual ethnobiological repertoire

5.4.1 Introduction

Variation is pervasive in multilingual practices, enabling speakers with access to a wider variety of features. Variation reflects our human propensity and capacity for creativity and innovation. It has a story to tell, both in Linguistics and Ethnobiology. In Nyanjida, it tells us about social organisation, revealing social networks, groups, and communities of practice. It tells us about individuality, how personal trajectories and linguistic backgrounds influence an individual's repertoire. It also tells us about language structure and language features. It tells us about language acquisition, how variation reflects the power of horizontal transmission. Variation serves a communicative purpose, acting as a tool, a signal, a reflection of an individual, a group, a society, a village, an area. It distinguishes these categories, creating an "us and them" identity. It is not just about being different from others but also about aligning with others. Variation provides a way to create boundaries, not just simple lines drawn, but an intricate mapping of overlapping boundaries, some rigid, some fluid, creating various affinities, an ebb and flow. François (2015: 168), when describing the work of Labov and the Milroys, stresses the intricacy of language variation, "These works emphasised not only the complex geographical distribution of properties, but the intricate patterns whereby tokens of innovative features are statistically distributed in the speech of individuals, depending on a variety of social factors." In ethnobiological lexicons, variation reveals an individual's knowledge and life experiences, knowledge of the Other, knowledge of the environment, and of plant and animal uses. Children learn variants from a young age. One three-year-old ESS participant (3MV) readily gave *gbá* and *gài bì sune*, two variants for 'eagle' in Vute, and was well aware that the lexemes share a

referent. Variation can be quite individual or entrenched within a group or community of practice. Variation that is unique and not attributable to a group or across larger populations singles out individuals and often reflects their origins, backgrounds, life trajectories, and personal characteristics. Variation imparts more than just lexical and social information. Historical and experiential information may also be tied to the lexicon through variation. For example, the nuisance biting insect 'jigger' is usually called *kákáì* in Mbum, yet it is synonymously referred to with the name of a town, *Tíbátí*, since the town is known for having jigger infestations due to the presence of livestock (Hino 1978: 307). Variation falls along a scale of deliberateness; use of variants can be quite deliberate to index affiliations of inclusion and exclusion, or the use can be without real intent, indexing characteristics and behaviour. In Gbaya folk stories, orators employ variation to emphasise characters. The Gbaya folk hero Wanto's language is often exaggerated with consonant substitution, where *l* replaces *n* and *ɲ*. For example, instead of *nɔkɔ* 'uncle' and *ɲa'm* 'my brother', Wanto says *lɔkɔ* and *la'm (Noss 1971: 6)*.

There exist many types of variation, a few of which will be mentioned here, but this thesis focuses primarily on lexical variation, which touches on just a small part of the scope and range of variation that is apparent in many aspects of multilingual practices in Nyanjida. As mentioned previously in section 2.2.3, people tend to have several names that reflect family relations and friend categories, often with inherent meaning, and change depending on a person's interlocutor. Village names also vary depending on perspective. Nyanjida itself is called *Adumdʒi* by outsiders. An adjacent Gbaya village, *Gardʒwa,* is called differently by Vute as *Luoh*, the Vute name of the nearby river. Many of the landscapes surrounding Nyanjida have Mbum names alongside Vute names, a reflection of their past presence. Naming practices in landscape ethnoecology reflect historical and present-day frontier processes, as different groups come and go, where the environment is named depending on Gbaya, Mbum, Vute, and Fulbe (and they differ in nomadic and sedentary Fulbe) perspectives.

Phonological variation exists in all languages in Nyanjida and reflects social and individual factors. This type of variation is often not noted in dictionaries and if it is, sociolinguistic factors are likely omitted. For example, Hino (1978: ix) mentions phonological variation in Mbum, such as *sâŋ, tʃaŋ, ʃaŋ* for 'hole', which he attributes to personal variation, details of which not given. Ideophones in Fulfulde exhibit phonological variation. Stennes (1967: 20) lists the following examples and reports that ideophones vary greatly from speaker to speaker but gives no accompanying sociolinguistic information.

(25) páw páaw fáaw váaw ‘abrupt; sudden’

(26) pavak paráp parák ‘tear’

(27) cáp káp ‘exactly’

Guarisma (1978:101) lists Vute phonological variants of ‘axe’ as *fár, hwár, fwár*, but does not give details of the people who gave these variants. The ESS revealed phonological variation, some of which is mentioned below. One of the most apparent involved alveolar/postalveolar fricative alternation in Vute. Participants vary in their responses between *tʃi* and *si* for ‘mushroom’ and *kwaʃé* and *kwasé* for ‘shrimp’. Also of note, (Thwing 1987) lists *kwahé* as another variant. In the ESS, postalveolar *ʃ* dominates responses, whereas the alveolar *s* occurs less frequently. The sample size was not large enough for determining the distribution of these variants. Phonological variation in Vute and Gbaya can be quite complex as exemplified by the phonological and lexical variation associated with *Uapaca togoensis*, a highly salient tree growing adjacent to the village, shown in (28) and (29).

(28) Vute
mɨ́jùm
mùjúm
mɨjóm
dʒámbáre (child term)

(29) Gbaya
zá wàjá
dòbò

Morphological variation is also pervasive and discussed below when relevant. One of the most apparent types involves the use of noun prefixes. Ethnobiological terms in Vute retain prefixes of a former noun class system attested for Mambiloid languages that informs their affiliation with Bantu and Benue-Congo (Thwing 1987). Participants in the ESS gave multiple instances of variation in noun prefixes. Perhaps variation in noun class systems within ethnobiology is common; Cobbinah (2013) notes that in Baïnounk Gubëeher, a language in Senegal, the botanical domain in particular allows manipulation of noun class paradigms, generating variation.

Dialect variation will be mentioned as it pertains to ethnobiological lexicons. The complexity and interconnectivity of it are beyond the scope of this thesis. Table 17 lists Vute dialect variation between the Nyanjida and Yoko (Central) dialects, as revealed in the ESS. Few participants gave the Yoko variants, mainly 62MV, who gave several very individualised variants reflecting his

knowledge of other Vute dialects. Variation between these two dialects is both lexical and phonological. These variants can also have further layered variation involving individual or small group phonological variants, such as palatising certain initial consonants.

Table 17 Vute dialect variation

Species	Vute Nyanjida	Vute Yoko
Ourebia ourebi 'oribi'	*sőő*	*fɨnámeé*
Tragelaphus scriptus 'bushbuck'	*kɨ́ɨ́*	*ndaàlí*
Syncerus caffer 'buffalo'	*ndʒàá*	*fùgamè*
Potamochoerus porcus 'wild pig'	*ŋgwìjá*	*ŋgwèé*
Phacochoerus aethiopicus 'warthog'	*ŋgwám*	*ndʒéndʒe*

All of these types of variation carry social meaning and reflect individuals' backgrounds. The use of variants is not always overtly intentional, but does involve a "process of bricolage", where the ways features are accessed and processes are constructed can be associated with meaning and variables (Eckert 2008). The following sections piece out some of these meanings and the associated variables to understand larger systems, of which variation is a part.

5.4.2 Lexical variation

Lexical variation is easily identifiable; however, its complexity is revealed through detailed analysis of the factors involved. Variants commonly index species characteristics. Responses in the ESS proved difficult to make clear cut distinctions of lexical variation versus borrowing. The permeation of areal roots behave differently in languages. Determining language origin and whether a borrowed term is assimilated in the language also proves complex. For example, the term for 'worm' in Vute, *soŋne*, was given by just eight participants, whereas twenty-two gave the borrowed Mbum term *laaka*, meaning 'eat poison'. The borrowed term is also pervasive in Gbaya, where twenty-six participants responded with *laaka* and only two with the Gbaya term *sɔ̃́sɔ̃́-pèŋ*. Some of these types of responses were difficult to determine whether they should be coded as TARGET RESPONSE and analysed as a variant or coded as NON-TARGET REPSONSE. Follow-up natural conversations discussing the species helped determine correct coding. For 'worm' there exist language-specific lexemes, but *laaka* permeates Vute and Gbaya, and speakers treat it as a feature of those languages, therefore it is coded as a TARGET RESPONSE and treated as variation. In contrast, there does not exist language-specific lexemes for 'papaya' and 'sweet potato' in Gbaya, instead the language borrows *dukuuje* and *dankalii* from Fulfulde. However, in Vute,

language-specific lexemes exist and these borrowed terms are considered NON-TARGET LANGUAGE by speakers. It also proved difficult discerning DESCRIPTION from actual variants. If a comparatively high number of participants gave a descriptive phrase instead of a specific lexeme or participants listed the descriptive phrase alongside other variants, the descriptive phrase is coded as a variant. If the descriptive phrase seemed like a variant, follow up questioning helped to determine how speakers conceptualise the phrase, whether they treat it as description or as variation.

One of the most apparent types of variation in ethnobiological lexicons involves sound symbolism, where a species is referred to with several lexemes, one or more of which are onomatopoeic. For example, one fish species (*Synodontis greshoffi*) is most commonly referred to by its borrowed Mbum name *bók bók*, onomatopoeic for the sound made when chopping the fish. Perhaps the onomatopoeic nature of the lexeme is more cognitively accessible than Vute *ŋàntí gak* or Gbaya *kóŋgó*, thus facilitating the borrowed term's entrenchment across languages. Variants of insect names in Vute are often sound symbolic reflecting the noises insects make. Children tend to use the sound symbolic variant, while adults tend to use an unanalysable simplex term. For example, in the ESS, twenty-one participants named 'cockroach' in Vute with the sound symbolic *sə̃sə̃*, while six older participants used *mbèéndʒɨ́*, the 'true' Vute name.

The ESS revealed several types of lexical variation, such as the contrast between an unanalysable simplex lexeme and a descriptive, complex lexeme. It proved difficult when coding variation in the ESS to determine whether responses were true parts of the lexicon or merely DESCRIPTION, especially in languages less familiar like Fulfulde and Mbum. Descriptive phrases could come from a consultant's lack of knowledge of specialised vocabulary. For example, Guarisma's short dictionary (1978: 125) lists 'hippopotamus' as two different entries, both of which denote the animal's habitat and analogous size, giving the literal equivalents of 'water elephant' and 'water animal'.

(30) *njù- nvúmné*
elephant water.LOC
'hippopotamus'

(31) *ɲàm- nvúmné*
animal water.LOC
'hippopotamus'

In contrast, Thwing (1987) lists the simplex lexeme *dò* 'hippopotamus' for the Central dialect and my own data revealed another simplex lexeme *mgbə̃*. In other instances, descriptive phrases are actual parts of the lexicon and can be linked to groups of people. These types of phrases in the ESS are coded as TARGET RESPONSE and analysed as variation if more than two participants gave

the term. Table 18 illustrates the variation between unanalysable simplex lexemes and transparent complex lexemes in Vute and Gbaya.

Table 18 Variation involving simplex and complex lexemes

Species	**Simplex**	**Complex**	**Language**
Erythrocebus patas 'patas monkey'	*ndúkú*	*ndʒàà* *mvòrə* monkey toothless	Vute
Typhlops punctatus 'spotted blind snake'	*jàá*	njőő *ŋgwé-jam* snake head-without	Vute
Gymnarchus niloticus 'knitefish'	*jóò*	*zòrò* *gə̃k* fish *snake*	Gbaya
Scopus ombretta 'hammerhead stork'	*dèsà*	*nɔ́ɛ́* *gínnaadʒi* bird fool	Gbaya
Aquila sp. *'eagle'*	*gbá*	*gàì* *bì* *sune* bird catch chicken	Vute
	zúwá or *bázá*	*nɔ́ɛ́* *bá* *kɔ̀rá* bird *catch* chicken	Gbaya
Mucuna puriens 'velvet bean'	*dɬ̃*	*kinîì* njőő medicine snake	Vute
'caterpillar cocoon'	*bwarɨp*	*júk* *meèmei* house caterpillar	Vute
'termite mound'	*tikə*	*júk* *suú* house termite	Vute

Variation distinguishes species and varieties. One such example involves the genus *Aframomum*, a member of the Zingiberaceae (Ginger) family that produces red fruit with peppery seeds, commonly called 'Melegueta pepper' or 'grains of paradise' in English and *poivre de Guinée* 'Guinee pepper' in French. Several species and varieties grow abundantly adjacent to Nyanjida and provide important medicinal forage for children. Even though species appear quite similar, they are commonly distinguished lexically, and species might also be further distinguished at the varietal level depending on its habitat or use. It proves questionable whether the distinctions should be considered variation. When compared to Western models, distinguishing species would not be considered lexical variation. Local perceptions also treat the species and varieties as distinct, with distinct uses, but the classification does not exactly correlate with Western hierarchical classification, proving much more complex, therefore it is treated here as lexical variation. Vute includes at least four lexemes to distinguish *Aframomum* species and varieties. *Bɨŋ* is considered the *Aframomum* of the savanna, while *ndʒóre* and *ŋgőő* inhabit the forest. A special-purpose *Aframomum* is distinguished as *ndʒóre mèín* 'God's *Aframomum'*, used by females during menstruation and considered to grow in a very specific habitat. Females and males use the plant differently; females have terms for the species and varieties that they use

medicinally. Table 19 shows variation in Gbaya and Vute and remains incomplete. ESS participants revealed just two variants in Vute and Gbaya, again pointing to the necessity of research triangulations involving in-depth follow-ups to fully understand variation and other concepts. Parietti (1997: 155) lists one lexeme for Fulfulde, *citta boɗeeje*, literally 'sweet pepper' for the *melegueta* species. In the ESS, participants who responded in Fulfulde gave descriptive phrases meaning 'pepper-like'. Only one participant, 62MV, responded in Mbum, using a phrase likely borrowed from Fulfulde meaning 'pepper-like', *sì ɓáŋ*, followed by a distinction of habitat in Mbum *hól* 'forest' and *làŋgàú* 'savanna'.

Table 19 Variation of Aframomum species in Vute and Gbaya[25]

Vute	**Gbaya**	**Scientific name**
	jâm	*Aframomum aulococarpus*
bɨ́ŋ	*gbérè*	*Aframomum latifolium*
	gàŋà-jòé	*Aframomum subsericeum*
ndʒóre	*jòé*	*Aframomum sulcatum*
ŋgŐõ	*jòé, ŋgàì zàŋ*	*Aframomum melegueta*
ndʒóre mèín		species undetermined

The hammerhead stork, *Scopus umbretta*, exhibits considerable lexical variation in Vute. The Vute names exemplify the types of names given to plants and animals. Animals are categorised into hierarchies with stories and names that reflect this ordering, thus one of the names, *mvèìn gàti* 'chief bird', denoting the bird's perceived hierarchical relationship with other birds and an extension of people's social structure. Names are commonly extended from objects to plants and animals, and in this regard, two variants are denoted with resemblance of the bird's head to an 'axe' or 'hoe', depicted in Figure 7. The bird's resemblance to *ndúŋɔɔ* 'axe' produces the name *gàì ndúŋɔɔ* 'axe bird' and its resemblance to *gɨ́m* 'hoe' gives the name *kádʒogɨ́m*, which incorporates the morpheme *ká-* 'forest', referring to the bird's forest habitat, literally meaning 'hoe handle of the forest'. Others, especially children, refer to the bird as *gài gìnnaadʒi* 'fool bird', referring to children's lore of fools or mythical creatures who seek them out.

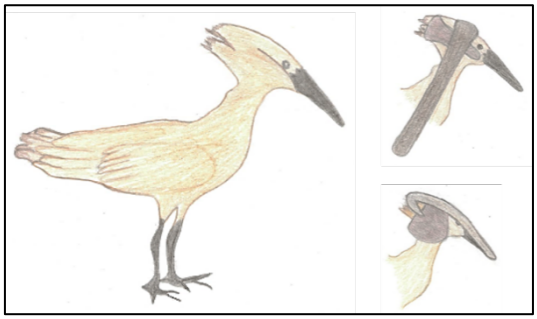
Table 20 displays the variants given in the ESS. Another variant, *tjéé kwí* incorporates *kwí* 'village', reflecting the proximity of the bird to the village.

[25] Further detailed research needs to be conducted to determine exact species, uses, etc. and requires specific timing when the plant is in flower and again when fruit producing. Species names determined from field specimens and Roulon-Doko (2008).

Table 20 Lexical variation of 'hammerhead stork'

Variant	Responses
gàì ndúŋɔɔ bird axe.handle	8
gàì gìnnaadʒi bird fool	6
mvèìn gà-ti chief bird-DIM	4
ká-dʒo-gɨm forest-handle-hoe	1
tjéé kwí ? village	1

Figure 7 Hammerhead stork



Another bird species, 'hornbill', shown in Figure 8, also exhibits considerable lexical variation and several names denote different species. In the ESS, six variants were given for the species, as displayed in Table 21. Three of the terms are sound symbolic; *klèklè* imitates the hornbill's call, while *təpɨ̃ŋ* and *kpùruŋ* reflect the distinct sound it makes while flying. *Tamhare* incorporates *tam*, meaning 'hard', reflective of the casque on their head. A duplication of the term used for 'hammerhead stork', *gàì ndúŋɔɔ* 'axe bird', extends the imagery of an axe to their long, down-curved beak and casque. Another term, *gàti tàŋ hai* 'plum-eating bird' imparts information about the hornbill's diet. Notably, the ESS did not capture all variation, perhaps due to the large number of stimuli and hurrying to get through all languages. Variation often surfaced in recordings of more natural elicitation sessions and conversation. For example, one two-minute recording in Vute describing honey collection revealed three variants for 'axe' and when eliciting ethnobiological insults with children, a seventh variant of 'hornbill' surfaced, *mɨ́gɨnè*.

Figure 8 Hornbill courtesy of Georje

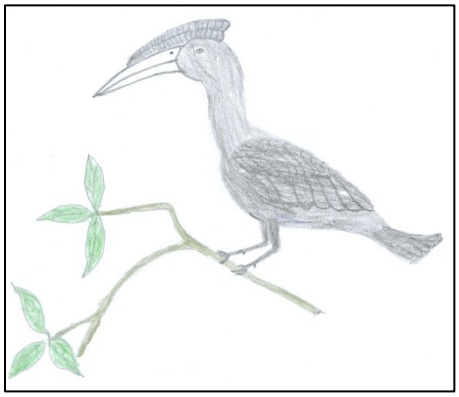


Table 21 Lexical variation of 'hornbill'

Variant	Responses
tam-hare hard-?	7
tə-pʱŋ CL-sound.of.flying	5
kpùruŋ sound.symbolic	4
gàti tàŋ hai bird eat plum	4
klèklè sound.of.call	2
gàì ndúŋɔɔ bird axe	1

Vute offers wide-ranging variation in 'hornbill' and 'hammerhead stork', yet in Gbaya, no variants were given for 'hornbill' and just two participants offered a variant for 'hammerhead stork', *nɔ́é gìnnaadʒi*, similar to one of the Vute variants, meaning 'fool bird', while sixty-one percent of participants gave one lexeme, *dèsà*. It remains a question why one language like Vute can offer such numerous variation in these species, yet in another language like Gbaya, variation is almost non-existent.

At this point much of the variation discussed involves Vute and Gbaya and this will continue to be the case. The ESS showed interesting and unexpected patterns in variation across languages. Variation was most prevalent in Vute and Gbaya language modes, but also occurred some in French, and notably no instances were recorded in Fulfulde and Mbum. Variation occurred in forty-six stimuli in Vute and twenty-one in Gbaya. Participants gave variants in French for just three stimuli, two types of 'cricket' and 'egusi seeds'. The responses were too few to determine any meaningful patterns. Thirteen participants gave *grillon* for one type of 'cricket', while just two participants gave *criquet*. For another type of 'cricket', eight participants gave *grillon*, while just three gave *criquet*. Responses for 'egusi seeds' also lacked correlations, with seven participants giving *pistache* and just two giving *kokombre*. Variation in French was expected to be low but no variation in Fulfulde and Mbum was surprising. Variation undoubtedly exists in Fulfulde and Mbum and it is not exactly clear why participants did not give variants for these languages in the ESS. One explanation may be due to participant fatigue and rushing through all of the languages at once. Participants often started with the languages they know best and as they got to other languages, perhaps were less apt to think of variants. It is not clear for all participants, but many do not have as much exposure in languages other than Vute and Gbaya when dealing with ethnobiological knowledge. Language purity ideologies also likely played a

role, in that it is acceptable and indexical to give variants in identity languages like Vute and Gbaya, but not in peripheral languages like Fulfulde, Mbum, and French.

5.5 Factors involved in multilingualism and lexical variation

5.5.1 Introduction

"In much of Sub-Saharan Africa, complex multilingualism with various mappings between languages and social factors is the rule rather than the exception (Childs et al. 2014: 173)."

The following sections characterise the factors involved in multilingualism and lexical variation. The two are analysed together since many of the same factors contribute to both. Treating languages and lexical variation as features available to speakers makes multilingualism and variation similar in that they both expand options available to speakers. Lexical variation and multilingualism carry social meaning and if we analyse them from the perspectives of scale and space, it makes factors more apparent. The processes of multilingualism and variation can be approached as products of local, small-scale frontier processes, where small groups create and access features that set them apart from the rest of the group, but they maintain ties to the larger groups through prototypical uses of language. This creates an "internal" or "interstitial frontier" (Kopytoff 1987), an independence from the mainstream, where small groups stand apart at the periphery or nested in between other groups. One of the most notable aspects of the analysis compared to past research is that these practices are not necessarily deliberate, but a product of the ways in which individuals interact and grow up together in a small village.

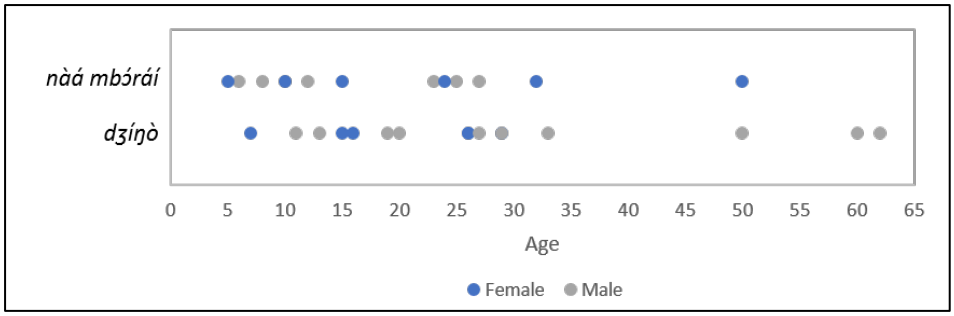
To understand the factors involved in these processes, we must look beyond traditional variables such as age, gender and self-reported primary affiliation, which are important, but only tell part of the story. When we look beyond these traditional variables, it becomes apparent who is more likely to use lexical variants and access multiple features from multiple languages. This section first describes traditional variables, then elaborates on the complexity of factors beyond traditional variables. Afterwards, primary and secondary responses and lexical variation are analysed in regard to these variables.

5.5.2 Traditional variables

Early variationist research focused on variables such as age and gender. Although significant, traditional variables offer just a part of the wider picture of the factors involved in lexical variation and multilingualism. They are introduced here, followed by analysis of more complex factors.

Not all naming of species exhibits patterns. Some ESS responses are well-distributed across participants without any identifiable patterns. For example, Figure 9 charts the distribution of lexical variants of 'cricket' in Gbaya. Sixteen participants responded with *dʒíŋò* and thirteen with *nàá mbɔ́rái*, roughly meaning 'the one of rusty water' (Roulon-Doko 2008b: 310). No significant patterns emerge, other than stratification across age and gender.

Figure 9 Distribution of 'cricket' variation



Age plays an important role in multilingualism and lexical variation. "Age is of an enormous significance for most African societies (Lüpke 2015b: 83)." Like ethnobiological knowledge, multilingualism is acquired throughout a person's lifetime as they continuously shape and reshape their linguistic repertoires. In Vute, multiple tiers of language learning exist and show remarkable differences between age groups. I did not elicit enough information to fully understand the significance of these tiers, nor the relationships of the tiers and how mutually comprehensible the tiers are. 62MV and others reported that Vute believe that men are not considered fully mature until around age twenty-eight and as men pass this milestone, they gain more language and knowledge (field notes, 2015).

Numerous times during the ESS participants would claim, "*C'est le père qui connait.*" 'Father is the one who knows.', pointing (with their chins) to one of the oldest males in village who holds the most knowledge of ethnobiological naming and practices. This Vute man (62MV), aged sixty-two at the time, was the oldest to participate in the ESS and acts as head of the village in the absence of the chief. His ethnobiological and linguistic knowledge are vast. His range of linguistic varieties and levels, along with pragmatic sensitivity (Irvine 2001) make his total linguistic repertoire quite expansive. Table 22 displays his ESS totals, giving totals for primary and secondary responses as well as accuracy. He participated in every language except French, which he said he did not know enough specific names in that language. Overall, he gave 452 TARGET

RESPONSE[26] and very few NO RESPONSE and NON-TARGET RESPONSE. When comparing participants' highest number of TARGET RESPONSE in each language mode, he ranked first in three languages and second in one. He maintains high accuracy[27] in every language mode, with a high overall accuracy (89%) and is most accurate in Vute (94%) and Gbaya (92%) and less accurate in Fulfulde (88%) and Mbum (80%). He showed strict adherence to language mode, using NON-TARGET LANGUAGE a total of eight times in the whole set, with the most NON-TARGET LANGUAGE use in Fulfulde language mode, where he used words from all the other languages. He only fell out of Gbaya language mode once to use a French word, once out of Vute to use a Fulfulde word, and twice in Mbum mode to use Fulfulde and Gbaya words. In Vute language mode, he responded to all but one species and gave only nine NON-TARGET RESPONSE. He later confirmed the name of the species by consulting with an older man who did not participate in the ESS. He responded to all but three species in Gbaya and gave only eleven NON-TARGET RESPONSE. The species he did not name in Vute and Gbaya were mostly ones he struggled to recognise and was confused about. He is strong in Mbum as well, with twelve NO RESPONSE and twenty-six NON-TARGET RESPONSE, most of which are descriptive phrases. During the set, he said that he was not strong in Fulfulde, as evidenced in the fifty-one NO RESPONSE. However, when compared to others in Fulfulde language mode, he ranks second in the most TARGET RESPONSE.

Table 22 ESS totals for 62MV

Language mode	Primary response			Secondary response				Accuracy
	NO RESPONSE	TARGET RESPONSE	NON-TARGET RESPONSE	NON-TARGET LANGUAGE	NON-TARGET WORD	GENERAL CATEGORY	DESCRIPTION	
Vute	1	134	9	1	4	3	1	94%
Gbaya	3	130	11	1	9	0	1	92%
Fulfulde	51	82	11	4	1	2	4	88%
Mbum	12	106	26	2	1	4	19	80%
Totals	67	452	57	8	15	9	25	89%

This man's high rate of TARGET RESPONSE reflect his knowledge and experience which come with age, but also reflects other qualities about him as an individual. His linguistic repertoire goes beyond just these five target languages and reflect his life trajectory and social networks. He

[26] Out of 576 possible responses.

[27] Calculated by dividing his TARGET RESPONSE by TARGET and NON-TARGET RESPONSE total.

holds vast social networks and acts a gatekeeper of what they refer to as *les Vutes anciens* 'the old Vute'. In eliciting obscure, specific terminology, he and one sixty-six-year-old man who did not participate in the ESS are the sole holders in the village of this lexical knowledge. They remember Vute names for days of the week and names of thirteen months which are no longer used as well as specific lexemes for species. For example, in eliciting 'cicada', 62MV was the only one to give the name for 'cicada moult', *ɓòòrɨ́p*, while all others gave variants of the lexeme for a mature cicada, *mɨ̋ɨ̋njɛ̃* or one of two sound symbolic terms. He and 50MV were the only two who gave the Vute lexeme, *tòrò* 'papaya', whereas everyone else gave *dukuudʒi*, borrowed from Fulfulde.

5.5.2.1 Children and age-based lexemes

Children constitute an important age group. In Nyanjida, children are relatively autonomous from their parents and hold stronger ties with their grandparents and peer groups. Children know the location of every edible fruit tree in the village and beyond. They spend free time foraging in groups. Young children know general names and species common around the village and fields. They learn names of animals in French through songs taught at school. Most children know plant names in Vute well and had quick responses in the ESS. Several species were mentioned by adults as plants that children know. Children have a register in Vute apart from adults that is comprised of a lexicon full of variation, such as the unique use of *njum* 'tired' instead of the lexeme used by adults, *joi*. Children and young adults hold a lexicon that is creative and innovative, having many terms involving semantic extension.

Responses to the ESS reflect tiers of knowledge reflective of age. Children were not as good at recall in this elicitation task but could easily recognise names when suggested. Older adults tend to use unanalysable simplex terms or very specific terminology, while younger adults and children tend to use transparent complex terms, symbolic terms, descriptive phrases, or borrowed terms. For example, older speakers know specific terms for partonyms, such as Vute *kukoi* 'corn husk', while younger speakers tended to give a descriptive, analysable complex lexeme. Instead of calling a monkey species simply by its Vute name, older adults, especially hunters might specify size, such as *ndʒúu ŋgób* 'small monkey'. With plants, older adults are more likely to specify whether the object is a fruit, leaf, seed, or other specifying information.

Eliciting variation revealed that certain variants of a species name are considered children's terms. Table 23 gives examples of these in Vute and Gbaya from the ESS and uses the distinction of 'child term' and 'adult term' based on emic categories. As I will later show, these labels do not always coincide with age. Lexemes children use are often descriptive, sound symbolic, or a

GENERAL CATEGORY only children use. In Vute, one snake species is called with the simplex term *jàá*, whereas the descriptive term *njŏŏ ŋgwéjam* 'headless snake' is considered child terminology. However, a discrepancy between ideology and actual practice exists, where in practice people across all age groups use "child terminology". Four participants above age twenty-seven gave the simplex lexeme *jàá*, while five gave the descriptive term and just two of those participants are under age fifteen, while three others are above age twenty. Lexemes considered child terminology are usually the unmarked term, meaning they are used more frequently across the population. Only male adults above age twenty gave the marked term *mɨ̃́njẽ* 'cicada', while all other participants gave sound symbolic terms.

Table 23 Examples of child terms in Vute and Gbaya

Species	Child terms	Adult terms	Language
Typhlops punctatus 'snake sp.'	njŏŏ *ŋgwé.jam* snake head.without	*jàá*	Vute
Francolinus bicalcaratus 'bush fowl'	*ku'kwijak* sound symbolism	*gúgú*	Vute
'cicada'	*ndʒɑ̃́ɑ̃́, ndɛ̃̀ɛ̃́ndɛ̃̀ɛ̃́* sound symbolism	*mɨ̃́-njẽ* CL-cicada	Vute
Piliostigma thonningii 'tree sp.'	*gateau ndèìn* cake cow	*bojá*	Vute
	gateau kɔ ndàè cake *GEN* *cow*	*dɔ́mɔ̀*	Gbaya
Erythrocebus patas 'patas monkey'	*ndúkú* patas.monkey	*ndʒan mvórə* tantalus.monkey toothless	Vute

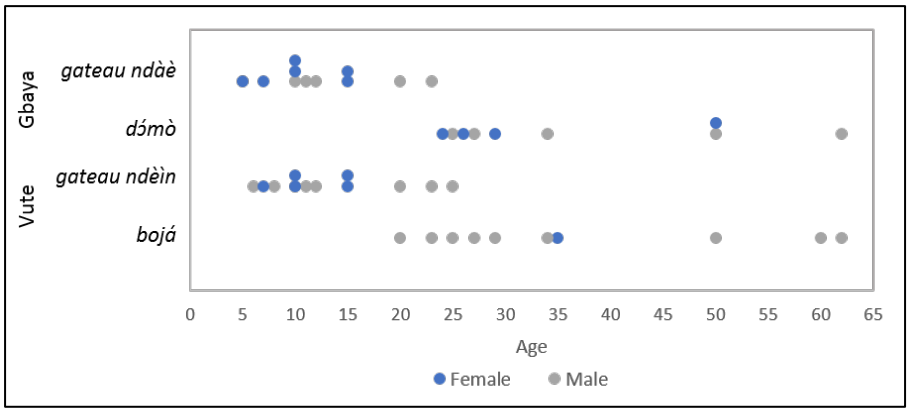
When the adult term is descriptive, it often denotes an historical background or ecological knowledge that is acquired with experience. One example in Table 23 is lexical variation for 'patas monkey'. Adults use the phrase *ndʒan mvórə* for 'patas monkey', comprised of *ndʒane* 'tantalus monkey'[28] and *mvórə* 'toothless'. Both monkey species are considered sacred totems due to their historical background during times of war when they helped protect the village. Children use the simple term *ndúkú* to denote 'patas monkey', whereas adults use the complex term *ndʒan mvórə*, which is part of acquired knowledge that the patas monkey eats foods that decay and break its teeth, hence *mvórə* 'toothless', which is actually a semantic extension of a species of grass with a tender sweet sheath favoured by monkeys. In the ESS, fourteen participants gave *ndúkú*, showing it as the unmarked term, whereas the marked term *ndʒan mvórə* was given by just four participants, two of the oldest male participants (62MV and 60MV) and 62MV's twenty-seven and thirty-three-year-old sons (27MV and 33MV). Knowledge of a

[28] *Chlorocebus tantalus*

term like *ndʒan mvórə* that involves so much packaging of knowledge is not only attributable to age, but also to links between people, such as the man and his sons, reflecting knowledge transmission and permissibility of access to such terminology and knowledge.

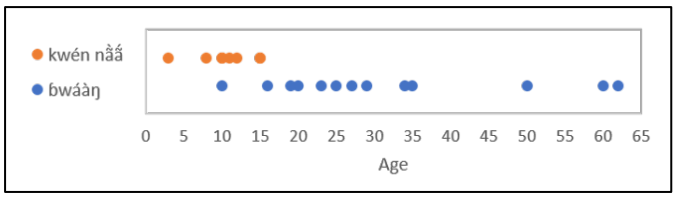
Both Gbaya and Vute show variation in naming a common tree species, *Piliostigma thonningii*, in which "child terms" are a calqued descriptive phrase literally meaning 'cow's cake', using a mix of French *gateau* 'cake' with the Vute *ndèìn* and Gbaya *ndàè* terms for 'cow'. The simplex lexemes *bojá* in Vute and *dɔ́mò* in Gbaya are considered the 'true' terms. Figure 10 depicts the clear age delineation of responses in Vute and Gbaya. In Vute, ten participants gave the simplex lexeme *bojá* and all are over twenty years old. Thirteen participants gave the descriptive variant and all are younger than twenty. In Gbaya, nine participants gave the simplex lexeme *dɔ́mò* and all are older than twenty-four. Notably, four Gbaya females gave the simplex lexeme in Gbaya and did not respond in Vute. Twelve participants gave the descriptive variant and all are younger than twenty-three. No participants gave more than one variant in Gbaya. Ten out of the fourteen participants who responded with the descriptive phrase applied the calque in both languages. Access and use of variants are regulated by social norms. When 62MV overheard his sixteen-year-old granddaughter (16FV) saying the term *gateau ndèìn* for the tree species, he scolded her for not using the Vute term *bojá*.

Figure 10 Distribution of Piliostigma thonningii variation



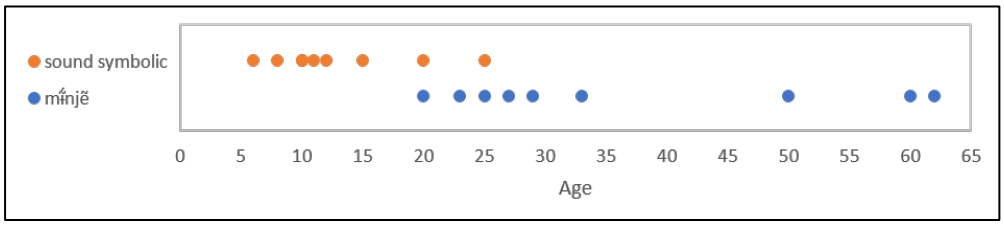
Responses for the tree *Lophira lanceolata* 'false Shea' in the ESS show a stark difference in children's responses, clearly delineated by age. Figure 11 shows the distribution of two variants, *ɓwáàŋ* and *kwén nɑ̃̀ɑ̃́*, the latter literally means 'rain tree', symbolising the tree's ritual use and attraction to rain. Twenty-one participants responded for this species. Children ages three to fifteen responded with *kwén nɑ̃̀ɑ̃́* and those who responded with *ɓwáàŋ* are all above age sixteen, excepting 10FV who gave both variants.

Figure 11 Distribution of Lophira lanceolata variation



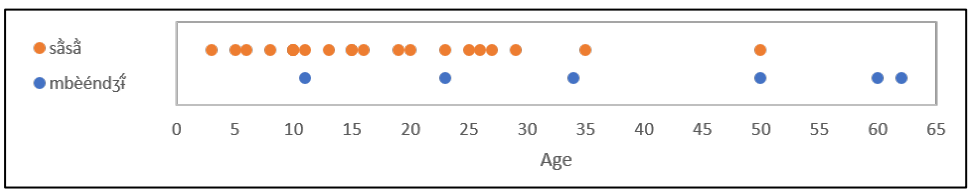
Sound symbolic lexemes tend to exhibit clear-cut age delineations. For example, Vute exhibits variants for 'cicada', *mn̄jə̃* and two sound symbolic variants, *ndɛ̏ɛ́ndɛ̏ɛ́* or *ndʒə̏ə́*. Figure 12 charts the distribution of these responses, where the nine participants who gave *mn̄jə̃* are all older than twenty and the eight participants who gave a sound symbolic term are younger than twenty-five. Two participants, ages twenty and twenty-five gave both types of variants.

Figure 12 Distribution of 'cicada' variation



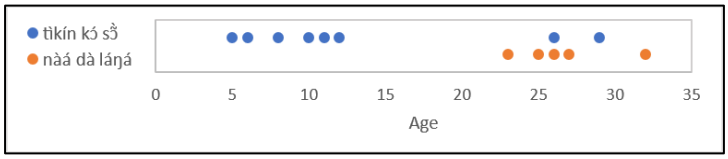
Variation in naming 'cockroach' in Vute exemplifies the salience of sound symbolic lexemes. As Figure 13 shows, a large number of younger participants gave the sound symbolic lexeme, *mbɛ̀ɛ́ndʒɨ́*, while six others gave *sə̀sə̀*, considered the 'true' Vute lexeme. Notably, the three oldest male participants gave this term (62MV, 60MV, and 50MV), along with two younger males (23MV and 34MV) and 11MV who has wide-ranging ethnobiological knowledge often correlating with responses of older participants.

Figure 13 Distribution of 'cockroach' variation



An example of clear-cut age delineations in Gbaya involves variation in 'walking stick', charted in Figure 14. Five participants, all older than twenty-three gave the variant *tìkín kɔ́ sɔ̃̀*, while participants younger than twelve gave *nàá dà láŋá*, except 29FGb and 26FGb.

Figure 14 Distribution of 'walking stick' variation



5.5.2.2 Complex variables

Having such clear-cut age-based responses are actually not common in the ESS. The two lexical variants of 'chicken coop' in Vute exemplify how variation cannot be solely attributed to one variable such as age, gender, or self-reported primary affiliation, demonstrated in Table 24. One variant *júk sune* is transparent, literally 'chicken house' and the other variant *fukúŋ sune* is more specific, meaning 'chicken coop'. Responses between the two variants were fairly evenly distributed, with nineteen participants responding with *fukúŋ sune* and fifteen responding with the simple *júk sune*. If gender is analysed first, it shows differences between males and females. Two-thirds of males gave the term *fukúŋ sune*, while one-third gave the term *júk sune*. Female's responses showed nearly the contrary, with sixty-two percent of females giving *júk sune* and thirty-eight percent giving *fukúŋ sune*. Analysing these differences based on self-reported primary affiliation provides further explanation. The five females who gave *fukúŋ sune* identify as Vute; no one identifying as Gbaya gave this variant. Females who identify as Gbaya responded with *júk sune*, as did 35FV who tends to respond with descriptive terms anyway. The male responses show differences in age. All males who responded with *júk sune* were under the age of twelve, while those who responded with *fukúŋ sune* ranged in ages ten to sixty-two. Two males, ages eleven and twenty-seven, offered both variants.

Table 24 Stratification of 'chicken coop' variation in Vute

	júk sune 'chicken house'				*fukúŋ sune* 'chicken coop'			
			Affiliation				Affiliation	
Gender	Total	Age range	Gbaya	Vute	Total	Age range	Gbaya	Vute
Female	8	7-35	7	1	5	5-50	0	5
Male	7	<12	0	7	14	10-62	0	14
Total	15				19			

Analysis of these variants exemplifies the multivariate nature of variation. Most variation cannot be simply attributable to one variable; more often multiple variables work together in complex ways to produce patterns that group and regroup individuals with overlapping boundaries. Divergences in patterns, as with 35FV above, can often be attributable to individual characteristics that reflect personal life trajectories and backgrounds.

5.5.3 Beyond traditional variables

As just shown, traditional variables can interact in complex ways, yet a full understanding only comes when other factors are layered in. Age, gender, and primary affiliation are easy to identify and are significant, but complete explanations go deeper than these variables[29]. So much of it is about individuality. This section explores individuality as well as groups that come together.

5.5.3.1 Individuality

Personal trajectories, exposure, interests, and experience play a large part in a person's ethnobiological knowledge and lexicon. Responses to the ESS reflect personal experiences and exposure to plants and animals. For example, 5MV named a citrus fruit with an overextension of French *balon* 'ball', rather than using a language-specific lexeme, reflecting his personal experience using the fruit as a football. 3MV referred to 'deer' in Vute as *fəə* 'meat', reflecting his experience of eating them since he had not yet learned specific terminologies for various deer species. Attributing children's responses solely to age omits individual (and group) experiences, which provide additive dimensions not solely attributable to one factor. Children's responses reflect their experience and exposure to species. Age is relevant in that it limits children's ethnobiological experiences and exposure. Young children tend not to distinguish

[29] Perhaps it seems contradictory, but I continue to graph data based on age and gender as a starting point for further analysis.

túgwi ‘ground squirrel’ and *m̀jaamti* ‘tree squirrel’ in Vute, giving one lexeme or the other for both species and as they become more familiar with the species, in turn become more lexically specific. 5MV does not have personal experience with ‘bush fowl’, yet he is cognitively aware of the concept and extends the Gbaya name *gbàfɔ̀* to any unknown bird that might resemble ‘bush fowl’. Later, as his exposure to environments increases and he likely learns to hunt with his father, he will refine his specificity of species in the languages of his repertoire.

25MV reported that the terms people use often come down to personal preference and interest. When speaking about *gbə́* ‘eagle’, he said, “Every person has a name they use. I use *gàì bì sone* ‘chicken catching bird’ (field notes, 2015) .” The use of specific lexemes and in-depth knowledge is often attributable to factors beyond traditional variables. 34MV gave the Vute term *ŋ̀r* ‘gorilla’, while all others in Nyanjida incorporate the suffix *-ma*. The Yoko dialect omits the suffix altogether and his use is attributed to the frequent time he spends in the Yoko area, an area in which he often hunts and where he cultivates seasonal fields, which contribute to his having intricate social networks for selling meat and agricultural products. Hunters give specifics relating to deer and other species they hunt, usually based on age, size, or sex. For example, several hunters specified an oribi in the ESS as female in Vute, *mám sõõne* ‘female oribi’.

The ESS helped to single out individual variation and an individual’s patterns throughout the data. For example, 60MV married into the village from the Banyo area and is the only man in the village who has a Vute wife (and recently a Gbaya wife). Compared to others in Nyanjida, he holds a distinct idiolect reflecting his life trajectory, provenance, and background, making some of his pronunciations and use of different lexical items completely different than those of any other participant. His knowledge of Fulfulde reflects his social networks spending time with Fulbe. He differed lexically with responses in Vute, such as his unique response for ‘wild pig’, *fèsə* rather than *ŋgwìjá* used in the village or the Yoko dialect *ŋgwèé*. He exhibits phonological variation in his Vute responses *ʤɔ̃̀* ‘monitor lizard’ and *ŋgɔ̀ɔ́* ‘crocodile’. In contrast, all other participants followed the Nyanjida dialect, labialising initial *ʤ* and *ŋg* and shifting the mid back vowel ɔ to an open back vowel, as in *ʤwãã̀* ‘monitor lizard’ and *ŋgwàá ‘*crocodile’.

All older people speak Mbum in Nyanjida and nearly all participated in the ethnobiology set. The village in the past had many people who speak Mbum, but with the mass exodus that occurred, only people remain who speak Mbum less frequently. Mbum as a part of a person’s repertoire can be explained only in part by age and self-reported primary affiliation. Just two Gbaya women speak Mbum because they have spent a much longer time in Nyanjida; their life trajectories facilitated and necessitated Mbum acquisition. The average age of those who participated in Mbum is thirty-seven, with a minimum age of twenty-three. No one under age twenty-three spoke Mbum except 15FV2, whose mother is Mbum and used to live in the village. The mother’s

presence in the village along with her children is the reason the age group in their twenties know Mbum. 27MV also attributed his knowledge of Mbum to his frequency in villages that have more Mbum speakers. Mbum responses in the ESS do not completely reflect a participant's knowledge of the language. Several participants mentioned that they were very competent at carrying conversations in Mbum, but had difficulties naming specific species, especially those less common. This is reflected in the high use of descriptive phrases (forty-two percent of all secondary responses in Mbum are DESCRIPTION).

The Gbaya women who have come to the village through exogynous marriage vary in their knowledge of Vute. The oldest, age fifty, has the most knowledge of Vute and has spent the most time in the village. As the amount of time in the village decreases, so does knowledge of Vute, apart from 26FGb whose father is Vute and comes from a village with Vute as one of its main languages. Most Gbaya women opted out of Vute in the ESS. One Gbaya woman (26FGb) who did participate tended to use broad terms like 'leaf' and 'tree' and when giving specific Vute terms, said them several times as if correcting the tone. Her experience of having a husband who frequently hunts is reflected in her knowing the names of hunted animals in Vute. Family acts as one type of space in which ethnobiological knowledge is shared and learned. 29MV attributed his divergence compared to others in naming deer in Mbum to his father, who is from an area where different dialects of Mbum are spoken. His father (60MV)is the one who married into the village from the Banyo area. 60MV's children's responses agree with others in the village and do not correlate with their father's responses, evidencing that horizontal transmission and communities of practice seem to influence a person's repertoire far more than one individual such as a parent.

5.5.3.2 Communities of practice

Learning and developing ethnobiological knowledge is a social phenomenon. The ESS data shows that certain people tend to cluster together in their responses. Two groups in particular stand out, forming communities of practice. Their behaviour cannot solely be explained by traditional factors and their mutual engagement in the lived experience of everyday activities contributes to their cohesiveness. Three brothers, 20MV, 25MV, and 27MV, and their cousins, brothers 19MV and 23MV, repeatedly cluster together in their correlated responses. "They ate from the same plate", meaning this group grew up together and share life experiences as they spent time in fields, forests, and beyond, sharing work and play. They hold sets of ethnobiological knowledge developed through mutual engagement in learning and growing up together. They share a way of scaling the ethnobiological world, in how they conceptualise and lexicalise this world. Their community of practice becomes a locus for reification, of how they conceptualise the

ethnobiological world through their mutual engagement in shared practices. Reification involves naming, encoding, perceiving, and describing, among other processes, all of which can be articulated linguistically and behaviourally (Wenger 1998). Their participation in the community of practice shapes them as individuals and as a group.

I refer to this significant group of individuals as a *core* community of practice for reasons that are detailed below. Their ESS responses at times tend to align with other specific people who are connected in different ways. The community of practice approach allows for multiple levels of involvement both within and outside the group. I follow Wenger's term 'constellation' (1998: 127) to signify relations beyond the community of practice. The core community of practice forms a cohesive group as they negotiate their place within a constellation of relations within the larger social structure of Nyanjida. Younger siblings and cousins form a smaller, less cohesive community of practice who themselves "ate from the same plate" and align frequently with the core group. These boys, 8MV, 10MV, and 11MV, are not always as clearly defined as the core group, therefore I refer to their group as an *emerging* community of practice, reasons for which are detailed below. Figure 15 displays the two communities of practice within a constellation of relations. The core community of practice is bolded and the emerging one is less bolded.

Figure 15 Communities of practice constellation

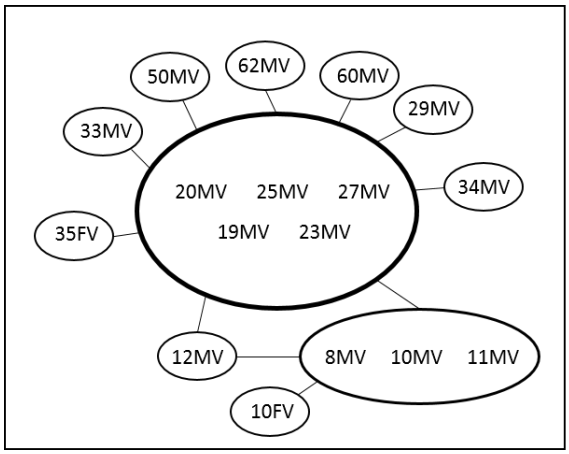
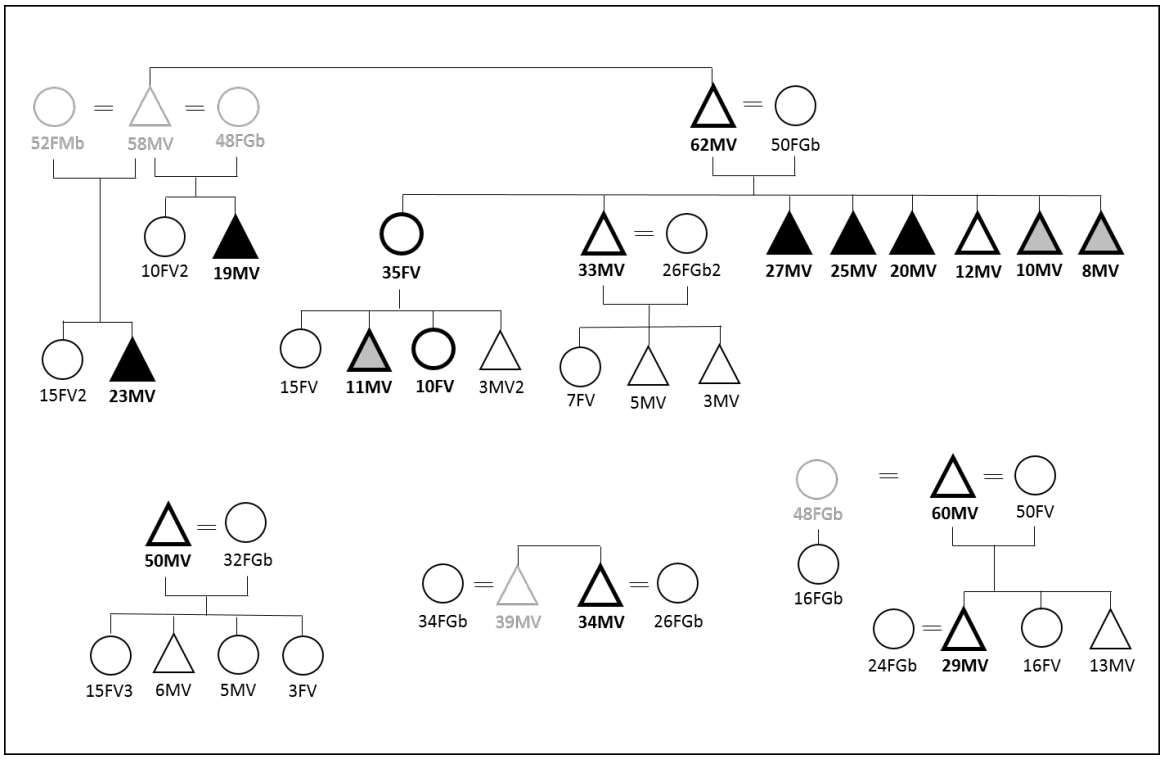


Figure 16 repeats the participant relationship diagram from section 5.3.2, with participants from Figure 15 bolded. The symbols for the core community of practice are shaded in black and those for the emerging community of practice are lightly shaded.

Figure 16 Community of practice relationships



The core community of practice tends to respond similarly to responses of the three oldest male participants, 62MV, 60MV, and 50MV, as well as 20MV, 25MV, and 27MV'S older brother, 33MV, and male relatives, 34MV and 29MV. The core community of practice also often align with their older sister, 35FV, who is an important mediary in the village, with wide social networks, often brokering relationships within and between villages. She is notably the only older female whose ESS responses align frequently with this group, as she grew up with them, but when they do not correspond, reflect her outlying status, due to her spending time with her grandparents growing up and then having left the village to marry, subsequently having returned to the village.

12MV often aligns with the emerging and core communities of practice. His association with the core community of practice reflects his relationships to them as a younger brother to 20MV, 25MV, and 27MV and cousin to 19MV and 23MV. His association with the emerging community of practice reflects his relationships to them as an older brother to 8MV and 10MV, and cousin to 11MV. He serves as an interloper between these two groups, a scalar practice reflective of his maturity level, involving a transition from child to young man, which is reflected in his varying alignments with the emerging and the core group of siblings and cousins. He stands at the periphery (Wenger 1998: 117) of these groups–neither completely engaged within either group, nor completely outside either group. He has access to both groups but does not maintain

enough engagement with either to be fully a member. His responses index these characteristics, marking his associations with the two communities of practice. 10FV holds a similar periphery status. Her responses at times align with these groups, as she frequently spends time with the emerging community of practice and is sister to 11MV (their mother is 35FV) and cousin to 8MV and 10MV. Neither 12MV nor 10FV fully participate with the emerging and core communities of practice–in a way, they lie within the "interstitial frontier" (Kopytoff 1987) between these groups and others, as they also often engage with others not in these communities of practice.

ESS data reflect the constellation of relationships. The three oldest males, 62MV, 60MV, and 50MV are the most likely to respond with specialised terminology. One or more members of the core community of practice usually correlate with the older males' responses on this type of lexical knowledge, as do the 34MV, 33MV, and 29MV. Additionally, 10FV often aligns with responses of older people, reflective that she spends most of her time with her grandparents. ESS data show that the core community of practice's responses correlate in Vute and Gbaya modes, with more correlations in Vute mode.

The term 'core' is used to signify this particular community of practice's position within the constellation of relationships, not only concerning ESS data but also their positioning within Nyanjida. The correlations they have within the constellation reflect the community of practice's situatedness within the larger social structure. Their cohesiveness positions them as distinct but they also experience influences from the larger social structure. They often spend their days going together from house to house, engaging with nearly all households. Their networks position them at the core of knowing the village goings-on. As they visit households, they engage in joking relationships with Gbaya women in the village. They frequently spend time with older males within the constellation of relationships (62MV, 60MV, 50MV, 34MV, 33MV, and 29MV), and this is reflected in their frequent correlations in the data. The core community of practice imports, adopts, and adapts information (Wenger 1998) from these older males for their own purpose. Their ESS responses often straddle the distribution of others' responses, positioning them at the core of the data. Their awareness and use of multiple lexical variants scales them to various orders of indexicality. Their use of variants recursively indexes their relationships, reinforced by their shared ways of growing up and shared social practices.

Data, informal conversations, and observation suggest[30] that there exist tiers of communities of practice formed from childhood and these different groups are often linked, as will be shown in section 5.5.6 with data concerning the emerging and core communities of practice and their correlations within the constellation of relationships. 29MV, 33MV, and 34MV likely once

[30] This remains underexplored.

formed their own community of practice with others as they “ate from the same plate” growing up but are now not as cohesive in their married lives that make them more individual. Their ESS responses do not correlate frequently enough to designate them as a current community of practice. A community of practice is not inherently stable but brings about a duality of continuity and discontinuity. Temporally the practice must adapt and readapt, producing a fluidity. The continuity of a community of practice requires ongoing engagement and participation, which 29MV, 33MV, and 34MV no longer maintain. Preliminary data suggests that male communities of practice are more prominent, although 10FV’s frequent correlations with the emerging community of practice suggests that she is more of an associated participant (Wenger 1998), meaning she hovers at the margins of the community of practice. Presumably, 35FV was part of a female community of practice whose members have since left the village as a result of exogynous marriage practices.

The core community of practice engages in framed practices (Blommaert et al. 2005), meaning they share points of view conveyed through shared lexical variants and ESS responses. Having “eaten from the same plate”, they frame the world in similar ways. Their framed practices and interactions create boundaries that set them apart from others, but also create inclusion through correlations with associated participants and the emerging community of practice. Their linguistic practices produce and reproduce socially meaningful associations (Eckert 2008). Their use of lexical variants and ESS responses stand as iconic representations (Irvine & Gal 2000) of their community of practice, referred to as second-order indices. The features they use index the community of practice’s characteristics and associations (Eckert 2008), having more of a symbolic function that transcends referential functions (Blommaert & Rampton 2011).

This core group indexes linguistic and social connectedness through the features they access. They share codes, practices, and ideas. Their choices create distance by using unique features, thus maintaining their core group adhesion. They minimise distance to others by accessing shared features with other members of the village. One example of their unique use of features involves the plant species, *Clerodendrum scandens*, used by them as children to whistle for pythons, referred to with the sound symbolic term *fifí* in Vute. Most ESS participants did not name this species, as it lacks utility and cultural salience. The six participants who responded with this term included four members of the core group, 35FV, and one of the members of the emerging community of practice, 11MV (35FV’s son), who possesses a wide breadth of knowledge. Their unique shared use of *fifí* legitimises this lexeme.

The core community of practice’s ESS responses and use of variation index their group iconically. This involves not necessarily intentional uses to index group affiliation, rather their shared lexicons and choices index relationships and shared experiences, creating groups of core and

associated participants, a shared space, and the organisation of this space arises from lexical choices (Irvine 2001). The core group displays phonological variation in contrast with older Vute males. Along with 34MV who frequently spends time with them, they responded with *ndwá* 'house cricket' in contrast to three males ages fifty, sixty, and sixty-two who pronounce it as *ndõő*. The core group, along with the older associated participants were the only ones in the ESS who gave the most dialect variants. They are all united by the variable of being male, but what really unites them is their connections with their fathers who maintain links with the Yoko and other dialects through long-standing social ties. In the ESS, core community of practice members gave the most lexical variation and tended to use more NON-TARGET LANGUAGE, a reflection of their boundary crossing tendencies.

I now turn to the factors involved in primary and secondary responses, followed by lexical variation.

5.5.4 Primary responses

Analysis of response categories in the ESS further illuminates the multivariate nature of multilingual practices and variation. This section discusses factors involved in primary responses and the following section discusses secondary responses. Table 25 displays participants who have the highest (over two hundred fifty) overall TARGET RESPONSE across all language modes. The same community of practice is again prominent, with every core and associated participant above age nineteen, including, notably 35FV.

Table 25 Highest numbers of TARGET RESPONSE

Participant	Total TARGET RESPONSE		Participant	Total TARGET RESPONSE
25MV	463		60MV	343
27MV	455		29MV	323
62MV	452		33MV	296
23MV	384		20MV	277
34MV	381		19MV	259
50MV	345		35FV	253

Accuracy was calculated for each participant by dividing TARGET RESPONSE by the sum of TARGET RESPONSE and NON-TARGET RESPONSE. Figure 17**Error! Reference source not found.** charts trends for participants' overall accuracy, a measure of positive responses. The chart follows an age

gradient, where accuracy increases as a factor of age, with the exception of 32FGb who has lower accuracy due to her high number of NON-TARGET WORD. Most participants have quite high accuracy, meaning they adhere to language mode and give accurate species names. All but three young participants have over sixty percent accuracy and most children under age twelve range in the sixty to seventy percent range, with those older have above seventy-percent accuracy and many above eighty percent.

Figure 17 Overall accuracy

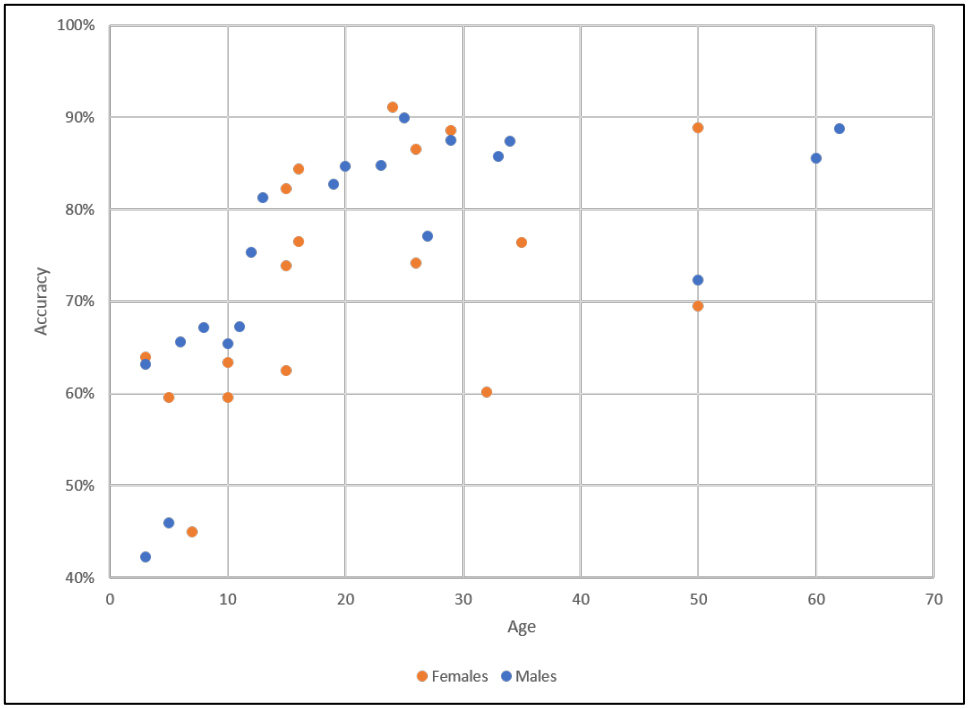


Table 26 offers the same information in table form, ranked by percent accuracy. The five members of the core community of practice are the darkly shaded and associated participants less shaded. The seven Gbaya females are the lightest shade. These rankings of accuracy set the scene for the general stratification of participants across all response types. Throughout all of the analysis we will repeatedly see these same patterns.

Table 26 Participant accuracy

Participant	Accuracy	Participant	Accuracy	Participant	Accuracy	Participant	Accuracy
24FGb	91%	23MV	85%	26FGb2	74%	3MV	63%
25MV	90%	20MV	85%	15FV3	74%	15FV2	63%
50FGb	89%	16FGb	84%	50MV	72%	32FGb	60%
62MV	89%	19MV	83%	50FGb	69%	5FV	60%
29FGb	89%	15FV	82%	11MV	67%	10FV2	60%
29MV	88%	13MV	81%	8MV	67%	5MV	46%
34MV	87%	27MV	77%	6MV	66%	7FV	45%
26FGb	87%	16FV	77%	10MV	65%	3MV2	42%
33MV	86%	35FV	76%	3FV	64%		
60MV	86%	12MV	75%	10FV	63%		

Core members are all above seventy-seven percent accuracy, with one of them being the second most accurate participant at ninety percent. Four older associated participants stand above eighty-six percent accuracy. The three emerging community of practice members have between sixty-five and sixty-seven percent accuracy and the interloper, 12MV, has seventy-five percent accuracy, characteristically falling between the accuracies of the two communities of practice. Five Gbaya females ranked above eighty-four percent accuracy, one of whom ranked the most accurate overall with ninety-one percent. Notably, the third most accurate are a husband and wife who are considered heads of the village. Accuracy reveals outliers, those participants who tend to fall in the fringes throughout the ESS analysis. All of these outliers have below eighty percent accuracy and their responses reflect their personal characteristics and life trajectories. Two Gbaya females and two Vute females tend to have responses that do not correlate with others. They stand apart due to their high use of NON-TARGET WORD and less so GENERAL CATEGORY. One of the Gbaya women, 32FGb, often stands apart due to the fact that her language use is perceived by others as idiosyncratic. She has an individual style that often does not correlate with others. One of the core community of practice members, 27MV stands apart at times due to his personal need to provide a response for every species, reflective of his high use of NON-TARGET WORD and DESCRIPTION. A fifty-year-old male associated participant (50MV) also often stands apart due to his personal life trajectory. He has spent a lot of solitary time in the bush and in the past lived with Fulbe.

Table 27 ranks TARGET RESPONSE as a percent of all three primary response types (NO RESPONSE, TARGET RESPONSE, and NON-TARGET RESPONSE) per person. This gives a different kind of accuracy based as a percentage of all possible responses within the languages in which a person participated, rather than just positive responses as above. In general, the rankings follow age gradation. The highest rankers are the head of the village, 62MV, and his wife, 50FGb. Their tied accuracy of seventy-eight percent reflects their knowledge of all languages and ability to give responses, whether they are TARGET or NON-TARGET RESPONSE. Their top rank is followed by many of the core and associated participants of the above-mentioned community of practice.

Table 27 Accuracy based on all primary responses

Participant	Percent		Participant	Percent
62MV	78%		12MV	37%
50FGb	78%		19MV	36%
25MV	64%		35FV	35%
20MV	64%		16FV	35%
27MV	63%		11MV	34%
50MV	60%		24FGb	33%
60MV	60%		32FGb	32%
23MV	53%		15FV3	31%
34MV	53%		8MV	29%
29FGb	47%		16FGb	29%
29MV	45%		6MV	29%
50FV	44%		5FV	25%
13MV	42%		10FV2	22%
33MV	41%		3FV	22%
26FGb	40%		7FV	22%
10MV	39%		15FV2	21%
15FV	39%		3MV2	16%
10FV	38%		5MV	15%
26FGb2	37%		3MV	8%

When analysing the ranking of TARGET RESPONSE in each language mode of the ESS, participants tended to rank similarly across all language modes, reflective of the individual multilingualism and ethnobiological knowledge across languages. If a participant is not consistent across languages, the discrepancy is usually easily explained by social network, community of practice, or family unit. In Gbaya language mode, men who have been married longer to Gbaya females or have previous social networks involving Gbaya rank higher in TARGET RESPONSE in that language mode, whereas men who have been married less time or whose parents are both Vute rank far lower in Gbaya TARGET RESPONSE. For example, one Vute male ranked high across all languages

except, Gbaya, which is explained in that both his parents are Vute and he is newly married to a Gbaya woman. Likewise, his father (60MV) ranks in the top five of all languages except Gbaya, reflective of his background of living where Gbaya is less spoken, his first wife is Vute, and only recently has he acquired a second wife who is Gbaya.

5.5.5 Secondary responses

Analysis of secondary responses shows not only how traditional variables of age and gender characterise secondary responses, but also individual linguistic profiles, self-reported primary affiliations, life experiences, communities of practice, and social networks. Tallying each secondary response type per person, calculating each as a percent of total NON-TARGET RESPONSE, and ranking the percentages per person reconfirms that overall NON-TARGET WORD dominates secondary responses, followed by NON-TARGET LANGUAGE, GENERAL CATEGORY, and DESCRIPTION. Figure 18 lists participants in their highest-ranking secondary response and circles participant groupings. Several participants had more than one category as their highest ranking. As expected, for NON-TARGET WORD comprises half of participants' highest ranking, including all seven Gbaya females (circled with dotted lines). Three males, ages nineteen, twenty, and thirty-four, have their highest rank tied in NON-TARGET WORD and NON-TARGET LANGUAGE. Two groups (circled with solid lines) are prominent in NON-TARGET LANGUAGE; one comprises four members of the core community of practice along with an associated participant and the other comprises the emerging community of practice. The high ranking of these participants in NON-TARGET LANGUAGE reflects their tendency to access features from all languages, crossing boundaries. Notably, 11MV and 34MV, whose highest rank is NON-TARGET LANGUAGE, have linguistic repertoires beyond the five target languages and wide social networks. Nine participants have GENERAL CATEGORY as their highest ranking, six of whom are girls age sixteen or below (circled with dashed line), the others a three-year-old boy (3MV) and a fifty-year-old woman (50FV) along with her twenty-nine-year-old son (29MV) who also has NON-TARGET WORD as his highest rank. Some of these high rankings are attributable to certain language modes, specifically Fulfulde and French. The six girls gave the most GENERAL CATEGORY in Vute, while 50FV ranked highest in this category based on her responses for Mbum. Three males, 27MV, 62MV, and 50MV ranked highest for DESCRIPTION. 27MV ranked high in this category due to his use of DESCRIPTION in Fulfulde and French, while 62MV used more DESCRIPTION in Mbum and 50MV a high number of DESCRIPTION in Fulfulde and Mbum. They all frequently converse in Fulfulde due to their social networks involving Fulbe. Using DESCRIPTION maintains their need to remain in language mode and exemplifies the flexible and creative use of language. Although children tended to give more GENERAL CATEGORY, adults do as well, and their responses can be attributed to individual factors.

Often, like DESCRIPTION, participants gave GENERAL CATEGORY to remain in language mode. For example, 32FGb gave few GENERAL CATEGORY overall, but many in Vute, perhaps to demonstrate her knowledge and remain in Vute language mode by monopolising features of Vute she knows well. The secondary responses NON-TARGET WORD, GENERAL CATEGORY, and DESCRIPTION become tools for participants to remain in language mode.

Figure 18 Participants' highest-ranking secondary responses[31]

NON-TARGET LANGUAGE	NON-TARGET WORD		GENERAL CATEGORY	DESCRIPTION
3FV	3MV	26FGb	3MV	27MV
6MV	5MV	29MV	5FV	50MV
8MV	10FV	29FGb	7FV	62MV
10MV	13MV	32FGb	10FV	
11MV	15FV	33MV	15FV	
12MV	16FGb	34MV	15FV	
19MV	19MV	35FV	16FV	
20MV	20MV	50FGb	29MV	
23MV	24FGb	60MV	50FV	
25MV	26FGb2			
34MV				

I now turn to analysis of each secondary response category. Each response category is discussed first in comparison to other secondary responses overall. Then responses are compared within the category to show percent of occurrence across language modes. Then each language mode is analysed to show how each category compares to all secondary categories within each language mode. Response ranges and means are also given for each category as well as a chart to display participants' total responses.

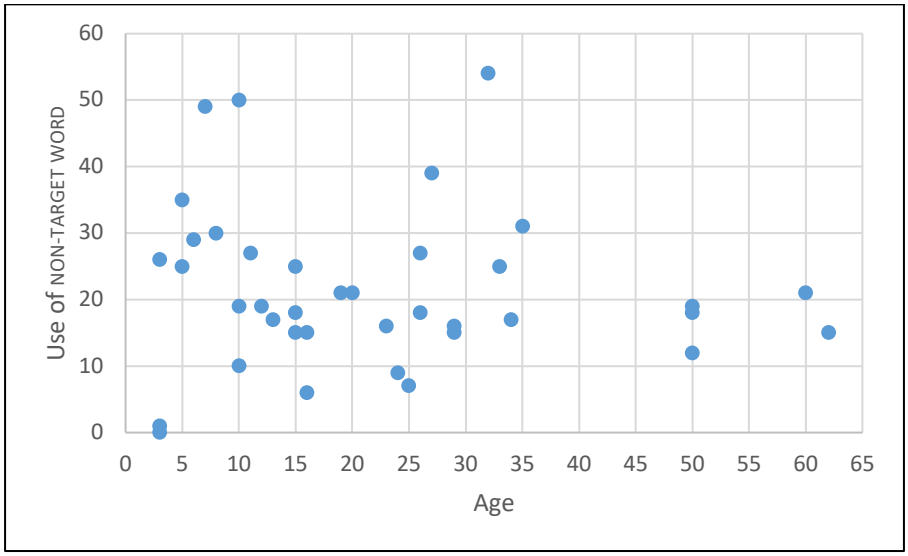
5.5.5.1 Non-target word

The most used secondary responses are NON-TARGET WORD, comprising thirty-four percent of all secondary responses. Figure 19 charts the total use of NON-TARGET WORD for all participants. Most participants range between ten and thirty NON-TARGET WORD. Age ten appears to be an age at which children start to use less NON-TARGET WORD. The highest number was given by 32FGb who gave most of this type of response in Vute and Gbaya, totalling twenty-six and twenty-four, respectively, just one in Fulfulde, and three in Mbum (and did not participate in French). Her

[31] Some participant's highest-ranking categories were tied, so they are included twice.

language use is perceived by others as idiosyncratic. Perhaps to her, she uses correct words and adheres to language mode, but from the perspective of others and compared to the consensus of all responses, her responses comprise a high number of NON-TARGET WORD. Children tend to have high numbers in this category, except two three-year-olds who gave few responses overall.

Figure 19 Use of NON-TARGET WORD



The responses for NON-TARGET WORD do not show symmetry across language modes. Table 28 shows the range and average of responses in each language mode for participants, including those who did not respond with any NON-TARGET WORD in a language mode. It also gives percentages of NON-TARGET WORD as compared to other secondary responses within each language mode and as a percent of the category itself. Comparison across the response category clearly shows that Vute and Gbaya have the most NON-TARGET WORD. Gbaya mode holds forty-nine percent of all NON-TARGET WORD use, followed closely by Vute with forty-four percent, while Fulfulde, Mbum, and French all hold less than three percent of the category. Then, looking at the category within each language mode, in Gbaya mode NON-TARGET WORD comprises fifty-two percent of all secondary responses, and in Vute thirty-four percent, Mbum thirteen percent, French twelve percent, and Fulfulde eight percent. Looking at the ranges and averages, Vute and Gbaya have the highest numbers of NON-TARGET WORD, each with ranges and averages much higher than the other language modes. The highest number of NON-TARGET WORD given by a participant in Gbaya is twenty-nine and in Vute twenty-six, while Fulfulde has eleven, Mbum five, and French just three. In Vute, Gbaya, and Mbum everyone that participated gave at least one NON-TARGET WORD, while a number of participants did not give NON-TARGET WORD in Fulfulde and French. When analysing participants across language modes, they tended to give similar

numbers of NON-TARGET WORD in both Vute and Gbaya. These two languages are generally used more frequently and interchangeably by participants; therefore they may feel freer to use NON-TARGET WORD and other secondary responses in adhering to their perception and regulation of language mode. It should be noted, though, that some of the pictures confused participants and a small number of this type of response may be due to that. It also comes down to personal characteristics. Two participants, 27MV and his sister 35FV are prone to exaggeration and crossing social boundaries; perhaps this plays into their high use of NON-TARGET WORD, where they attend less adherence to language norms.

Table 28 Comparison of NON-TARGET WORD category

	Language mode				
	Vute	Gbaya	Fulfulde	Mbum	French
Response range	0-26	4-29	0-11	1-5	0-3
Mean	9.77	11.59	.94	2.54	.68
Percent of secondary response	34%	52%	8%	13%	12%
Percent of category	44%	49%	3%	2%	2%

5.5.5.2 General category

Overall, GENERAL CATEGORY comprises twenty-six percent of all secondary responses. Figure 20 charts participants' total use of GENERAL CATEGORY. 7FV has the highest number of total responses in this category, totalling sixty-three, followed by 50FV who has forty-six. The chart shows that children below age twelve tend to have more than twenty GENERAL CATEGORY responses and adults generally have less than that, with the exception of the usual outliers 26FGb and 32FGb. Just two people gave no GENERAL CATEGORY, two males, ages twenty and fifty.

Figure 20 Use of GENERAL CATEGORY

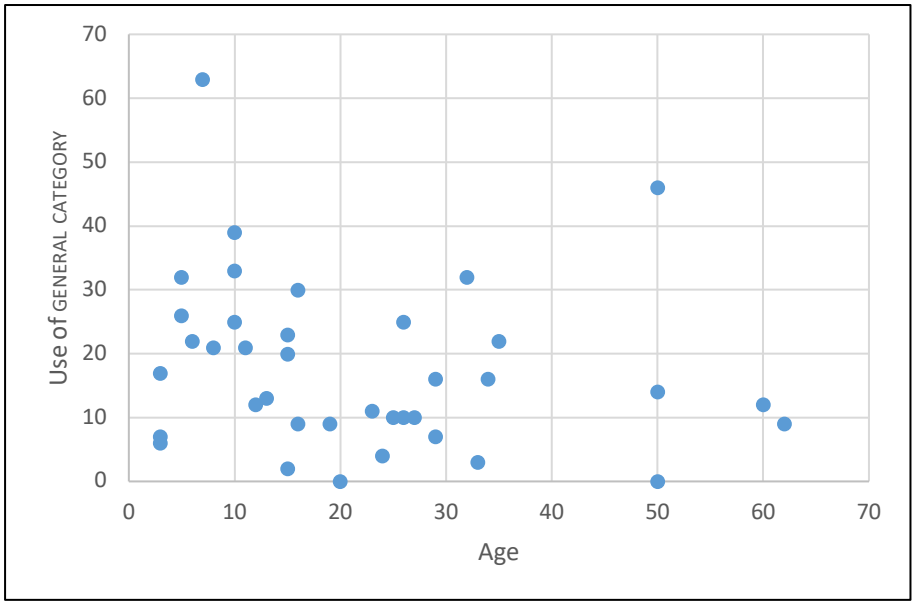


Table 29 displays the ranges and means of GENERAL CATEGORY use for each language mode, as well as GENERAL CATEGORY as a percent of all secondary responses within each language mode and each language mode as a percent of the category itself. Comparing across the response category shows that Vute has forty-four percent of all GENERAL CATEGORY, then Gbaya and Fulfulde each with twenty percent, and less so in French with twelve percent and Mbum with three percent. Comparing within each language mode shows that participants gave different percent levels of GENERAL CATEGORY in each language mode. Notably, over half of secondary responses (56%) in French mode comprise GENERAL CATEGORY. This would be expected, as specific species names might not be known, so, for example, participants tended to apply the French GENERAL CATEGORY *singe* to every monkey species and *poisson* to every fish. When looking at response means, more participants tended to give GENERAL CATEGORY in Vute, where the average number of responses per participant is much higher than for other languages. Response ranges are fairly similar across language modes, except French, which is much lower than for other modes. Means reflect the distribution of responses across participants. Vute has a high response range that corresponds with a high response mean. Other language modes have high response ranges but lower means; the highest ranges are due to a few individuals who gave high numbers of GENERAL CATEGORY. A wider distribution of participants gave GENERAL CATEGORY in Vute, thus the high mean, whereas in other languages just a few individuals gave high numbers, therefore the means are lower.

Table 29 Comparison of GENERAL CATEGORY category

	Language mode				
	Vute	Gbaya	Fulfulde	Mbum	French
Response range	0-28	0-21	0-25	0-29	0-11
Mean	7.57	3.71	4.63	4.31	3
Percent of secondary response	26%	17%	40%	21%	56%
Percent of category	44%	20%	20%	3%	12%

5.5.5.3 Description

Overall, DESCRIPTION comprises just ten percent of all secondary responses. Figure 21 charts participants' use of this category. Just eight people gave more than ten DESCRIPTION responses, and two of these people gave very high numbers, 50MV who gave eighty-seven, mostly in Fulfulde and Mbum, and 27MV who gave sixty-four, mostly in Fulfulde and less so in French. The majority of participants gave less than ten DESCRIPTION responses and nine participants gave none.

Figure 21 Use of DESCRIPTION

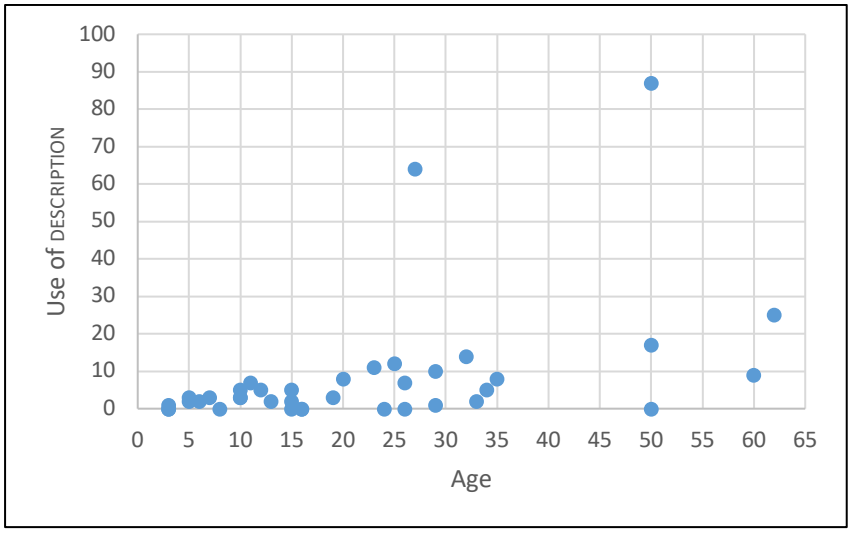


Table 30 displays ranges and means for DESCRIPTION use for each language mode, as well as DESCRIPTION as a percent of all secondary responses within each language mode and each language mode as a percent of the category itself. Several anomalous high numbers are omitted

in the ranges and given in a separate row as they do not reflect participant consensus. Comparing DESCRIPTION across the category clearly shows that Fulfulde has the most with thirty-eight percent, followed by Gbaya with twenty percent, Mbum with seventeen percent, and French with eleven percent. Comparison within each language mode is more representative and informative, clearly showing high numbers of DESCRIPTION in Mbum and Fulfulde. Response means also show the high number of DESCRITPION in Mbum, which has an average of 8.38, reflecting that most participants in this language mode tended to use DESCRITPION. Every participant except one gave at least one DESCRIPTION, reflective of the less frequent use of this language pertaining to ethnobiology and the overall knowledge of this language, where participants adhered to language mode by using DESCRIPTION. Other language modes have much lower means and even though thirty-eight percent of all DESCRIPTION occurred in Fulfulde, the mean is still low due to two participants who each gave over thirty DESCRIPTION. With these two participants omitted, the highest range in Fulfulde mode is four. Omitting these two and three other participants from the ranges of all language modes makes nine the highest response number in the range, reflective of the low overall use of DESCRIPTION and showing that high response numbers are attributable to just a few individuals.

Table 30 Comparison of DESCRIPTION category

	Language mode				
	Vute	Gbaya	Fulfulde	Mbum	French
Response range	0-6	0-9	0-4	0-8	0-3
Omitted ranges	-	-	33, 36	19, 42	18
Mean	1	1.41	3.43	8.38	1.11
Percent of secondary response	3%	6%	30%	42%	19%
Percent of category	15%	20%	38%	17%	11%

5.5.5.4 Non-target language

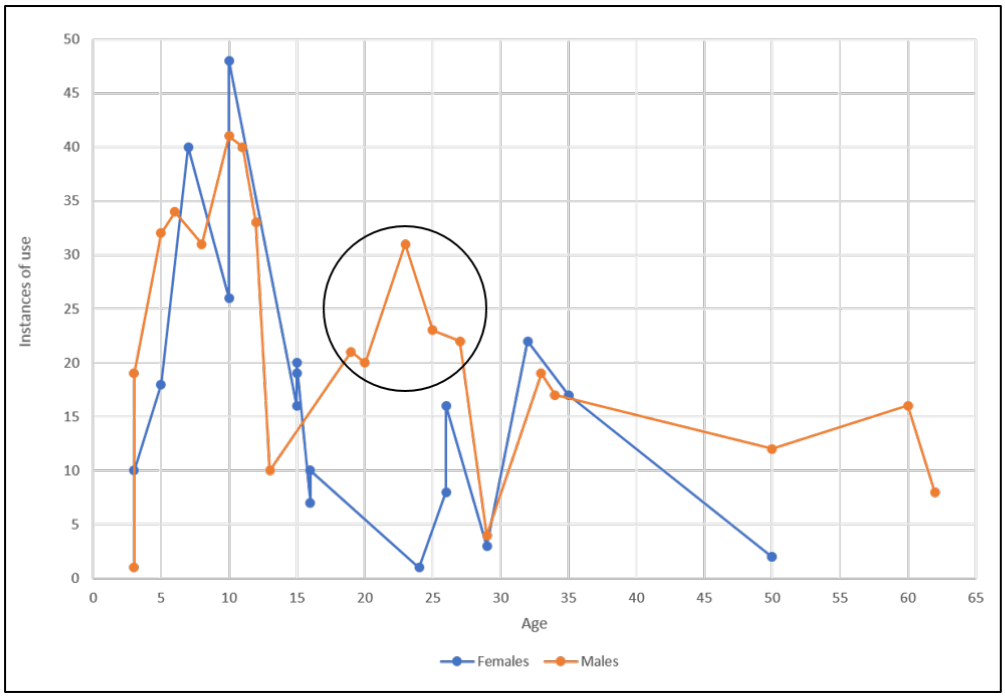
Multilingual practices in Nyanjida fall along a language mode continuum, where one end represents monolingual mode and the other multilingual mode (Grosjean 2013a; 2008). Speakers never truly use monolingual mode but rather occupy the multilingual end of the continuum, ranging from the use of several languages to many more. Individuals move along the

continuum, occupying various points throughout their daily lives, specific to each interactional space. ESS responses reflect this non-static movement. Participants do not adhere to strict monolingual mode and instead access multiple instances of NON-TARGET LANGUAGE.

Participants who gave NON-TARGET LANGUAGE responses are those who tend to cross language boundaries, the reasons of which vary, both individually and by groups. The use of NON-TARGET LANGUAGE proves more complex than the other secondary response categories, involving several more levels of analysis. Firstly, analysis concerns the language modes in which participants give NON-TARGET LANGUAGE and secondly, which languages are being used within each language mode.

I begin by looking at overall NON-TARGET LANGUAGE use, as charted in Figure 22. It shows a clustering of children below age twelve who have high numbers of NON-TARGET LANGUAGE. Children below age five show less instances due to having participated in fewer language modes. Interestingly, some of these children were the most adamant about adhering to language mode and the majority of their NON-TARGET LANGUAGE use occurs in Vute mode. The five core community of practice members (circled) clearly stand out in the chart, with higher numbers of NON-TARGET LANGUAGE compared to others twelve and older. Their responses range from twenty-one to thirty-one instances of NON-TARGET LANGUAGE use. They give NON-TARGET LANGUAGE in at least three language modes, with one of them giving NON-TARGET LANGUAGE in all language modes. This reflects their propensity to cross language boundaries and their position on the chart reflects their positioning between younger and older participants. Every participant used a NON-TARGET LANGUAGE in at least one language mode and several participants did so in as many as four language modes. The chart shows a general age gradient, with the number of instances decreasing with age. Except for 3MV, the nine participants who gave less than ten NON-TARGET LANGUAGE are older than twelve. Notably, five of the seven Gbaya females gave eight or less NON-TARGET LANGUAGE, with the caveat that they participated in less languages. The two Gbaya females who have more responses are the two whose responses are often anomalous compared to others. 50MV gave just two, reflecting her adherence to language mode. This adherence resulted in her high ranking in other secondary response categories.

Figure 22 NON-TARGET LANGUAGE use



I now turn to analysis of NON-TARGET LANGUAGE within and across each language mode.

5.5.5.4.1 Non-target language use

This section analyses the category of NON-TARGET LANGUAGE to examine the total use of this category in regard to each language mode. Analysing the category shows how participants asymmetrically access this category across language modes. Table 31 displays the ranges and averages for NON-TARGET LANGUAGE use for each language mode, as well as NON-TARGET LANGUAGE as a percent of all secondary responses within each language mode and each language mode as a percent of the category itself. Section 5.3.4.5 gave a detailed overall introduction to this category with percentages.

Comparing language modes across the NON-TARGET LANGUAGE category shows that participants used NON-TARGET LANGUAGE significantly more in Vute and Gbaya modes, with fifty-seven percent occurring in Vute and twenty-seven percent in Gbaya. This is attributed to the high use of French in each of these language modes. The other three language modes have far fewer instances of NON-TARGET LANGUAGE overall. Fulfulde mode comprises just ten percent of all NON-TARGET LANGUAGE use, Mbum four percent, and French three percent. NON-TARGET LANGUAGE comprise thirty-seven percent of secondary responses in Vute, twenty-four in Gbaya and Mbum, twenty-one percent in Fulfulde, and thirteen percent in Mbum.

When examining response means and ranges, Vute mode has a much higher average of NON-TARGET LANGUAGE at 10.77 and the highest number given by a participant, twenty-seven. Sixteen participants used NON-TARGET LANGUAGE more than ten times in Vute mode and are all less than fifteen years old, along with two core members, 23MV and 20MV. Gbaya (5.41) and Mbum (4.85) have about half the mean of Vute, with Fulfulde's much lower at 2.43, and Mbum quite low at less than one. The highest number of NON-TARGET LANGUAGE responses in Gbaya mode is eighteen and in Mbum ten. Like Vute, more participants gave higher numbers in these modes, thus correlating with the higher means. In Fulfulde mode, 10FV gave the highest number, fourteen, while the rest fall below five, thus the lower mean in this mode. In French mode, 10FV also gave the most NON-TARGET LANGUAGE, seven, while all others gave two or less, thus the low mean.

Table 31 Comparison of NON-TARGET LANGUAGE category

	Language mode				
	Vute	Gbaya	Fulfulde	Mbum	French
Response range	0-27	0-18	0-14	0-10	0-7
Mean	10.77	5.41	2.43	4.85	.79
Percent of secondary response	37%	24%	21%	24%	13%
Percent of category	57%	27%	10%	4%	3%

I now turn to another level of analysis, to understand which NON-TARGET LANGUAGE were used.

5.5.5.4.2 Languages utilised

This section analyses which languages were used in each language mode, shown in Table 32. Overall, Vute and Gbaya modes exhibit the most NON-TARGET LANGUAGE use and French and Gbaya are by far the most used NON-TARGET LANGUAGE.

Table 32 Languages utilised

		Language mode					
		Vute	Gbaya	Fulfulde	Mbum	French	Total
Language utilised	Vute	-	49	11	13	11	84
	Gbaya	189	-	19	16	6	230
	Fulfulde	55	15	-	20	4	94
	Mbum	1	0	2	-	1	4
	French	132	120	41	14	-	307
	Total	377	184	73	63	22	719

The following tables unpack the data given in Table 32. First, Table 33 calculates the percent of NON-TARGET LANGUAGE within each language mode. This compares all NON-TARGET LANGUAGE against each other within each language mode. Then, Table 34 calculates the percent of each NON-TARGET LANGUAGE across language modes. This focuses on each NON-TARGET LANGUAGE to show its distribution across language modes.

Table 33 depicts the asymmetry of NON-TARGET LANGUAGE use within and across each language mode. I will first discuss each language mode. In Vute mode, half of the NON-TARGET LANGUAGE responses occur in Gbaya and about one-third in French, while fifteen percent occur in Fulfulde, and less than one percent in Mbum. In Gbaya mode, about two-thirds of the responses occur in French and about a quarter in Vute, while eight percent occur in Fulfulde and less than one percent in Mbum. Participants gave far fewer NON-TARGET LANGUAGE in Fulfulde mode, where over half occur in French and about a quarter in Gbaya, while fifteen percent occur in Vute and just three percent in Mbum. The core community of practice and two associated participants cluster together in their low use of NON-TARGET LANGUAGE in Fulfulde mode, reflective of their social networks involving Fulbe. In Mbum mode, about one-third of NON-TARGET LANGUAGE are in Fulfulde, about a quarter each in Gbaya, French, and Vute. In French mode, half the responses occur in Vute and just over a quarter in Gbaya, while eighteen percent occur in Fulfulde and just five percent in Mbum.

Table 33 Percent of NON-TARGET LANGUAGE within each language mode

		Language mode				
		Vute	Gbaya	Fulfulde	Mbum	French
Language used	Vute	-	27%	15%	21%	50%
	Gbaya	50%	-	26%	25%	27%
	Fulfulde	15%	8%	-	32%	18%
	Mbum	0%	0%	3%	-	5%
	French	35%	65%	56%	22%	-

I now turn to describing the distribution of languages across language modes by examining in two different ways. First, using the data in Table 33, I compare the percentages of each language across language modes. French comprises sixty-five percent of NON-TARGET LANGUAGE use in Gbaya mode, fifty-six percent in Fulfulde, thirty-five percent in Vute, and twenty-seven percent in Mbum. Gbaya comprises fifty percent of NON-TARGET LANGUAGE use in Vute mode, twenty-seven percent in French, twenty-six percent in Fulfulde, and twenty-five percent in Mbum. Fulfulde comprises thirty-two percent of NON-TARGET LANGUAGE in Mbum mode, eighteen percent in French, fifteen percent in Vute, and eight percent in Gbaya. Vute comprises fifty percent of NON-TARGET LANGUAGE use in French, twenty-seven percent in Gbaya, twenty-one percent in Mbum, and fifteen percent in Fulfulde. Mbum comprises four percent of NON-TARGET LANGUAGE in French, three percent in Fulfulde, less than one percent in Vute, and no occurrences in Gbaya.

Table 34 also focuses on the distribution of each NON-TARGET LANGUAGE and further shows the asymmetrical use of each across language modes. It also gives response ranges and means.

Table 34 Percent of NON-TARGET LANGUAGE across language modes

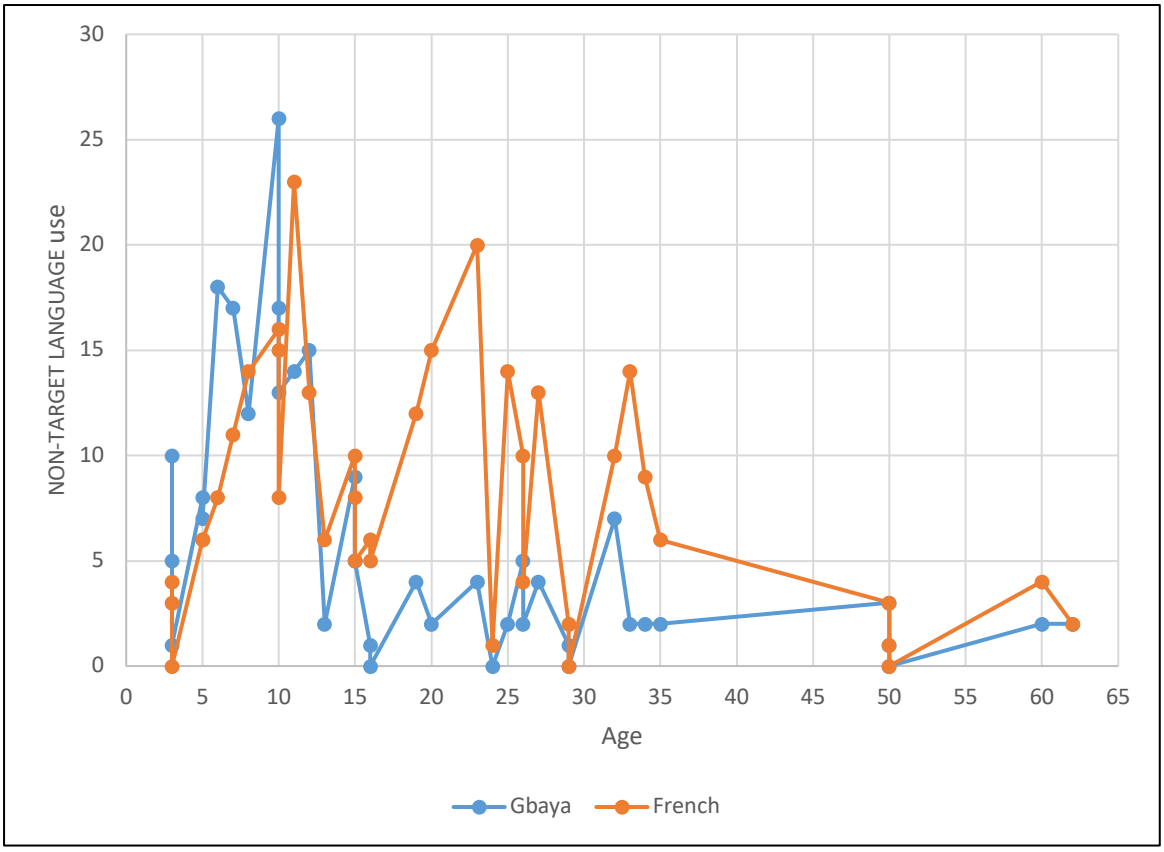
		Language mode							
		vut	gba	ful	mbu	fra	Total	Range	Mean
Language used	Vute	-	58%	13%	15%	13%	12%	0-15	2.21
	Gbaya	82%	-	8%	7%	3%	32%	0-26	6.1
	Fulfulde	59%	16%	-	21%	4%	13%	0-7	2.5
	Mbum	25%	0%	50%	-	25%	1%	0-1	.11
	French	43%	39%	13%	5%	-	43%	0-23	8.08

Overall, French comprises forty-three percent of all NON-TARGET LANGUAGE use. Of all the use of French as NON-TARGET LANGUAGE, forty-three percent occurred in Vute mode, thirty-nine percent in Gbaya, thirteen percent in Fulfulde, and five percent in Mbum. Gbaya is the second most used NON-TARGET LANGUAGE, comprising thirty-two percent of all NON-TARGET LANGUAGE use. Of all the use of Gbaya as NON-TARGET LANGUAGE, eighty-two percent occurred in Vute, with just eight percent in Fulfulde, seven percent in Mbum, and three percent in French. Compared to other instances of NON-TARGET LANGUAGE, French has the highest response mean at 8.08.

French and Gbaya together comprise three-quarters of all NON-TARGET LANGUAGE use. Figure 23 charts participants' use of French and Gbaya. The highest number of responses by a participant is twenty-three. Gbaya also has a comparatively higher response mean of 6.1 and has the highest number of responses given, at twenty-six. The fifteen participants who gave more than ten responses in French are clearly identified in the graph, comprising the five core community of practice members, the three younger members of the emerging community of practice, 12MV, and 33MV. Others who gave more than ten include the two Gbaya females who often have outlying responses. Notably, the other five Gbaya females gave five or fewer French responses.

Interestingly, participants who chose not to participate in French language mode gave several NON-TARGET LANGUAGE responses as French. The high use of French is due to several species in particular, some of which are named in French across all language modes. Some of these species include *mamba vert* 'green mamba', *hirondelle* 'swallow', *martin pêcheur* 'kingfisher', *héron* 'heron', *papillon* 'butterfly', *caméléon* 'chameleon', *ananas* 'pineapple', and *haricots* 'beans'. The graph clearly shows an age gradient and it is much more apparent in Gbaya. Participants who gave more than ten Gbaya responses are all below age twelve. All participants above age thirteen gave fewer than ten responses. Notably, four Gbaya females did not give any responses in Gbaya as NON-TARGET LANGUAGE and another just twice, while the two who often give anomalous responses each used Gbaya five times. 50FV and her daughter (16FV), who opted out of participating in Gbaya mode, accessed Gbaya as a NON-TARGET LANGUAGE.

Figure 23 Use of French and Gbaya as NON-TARGET LANGUAGE

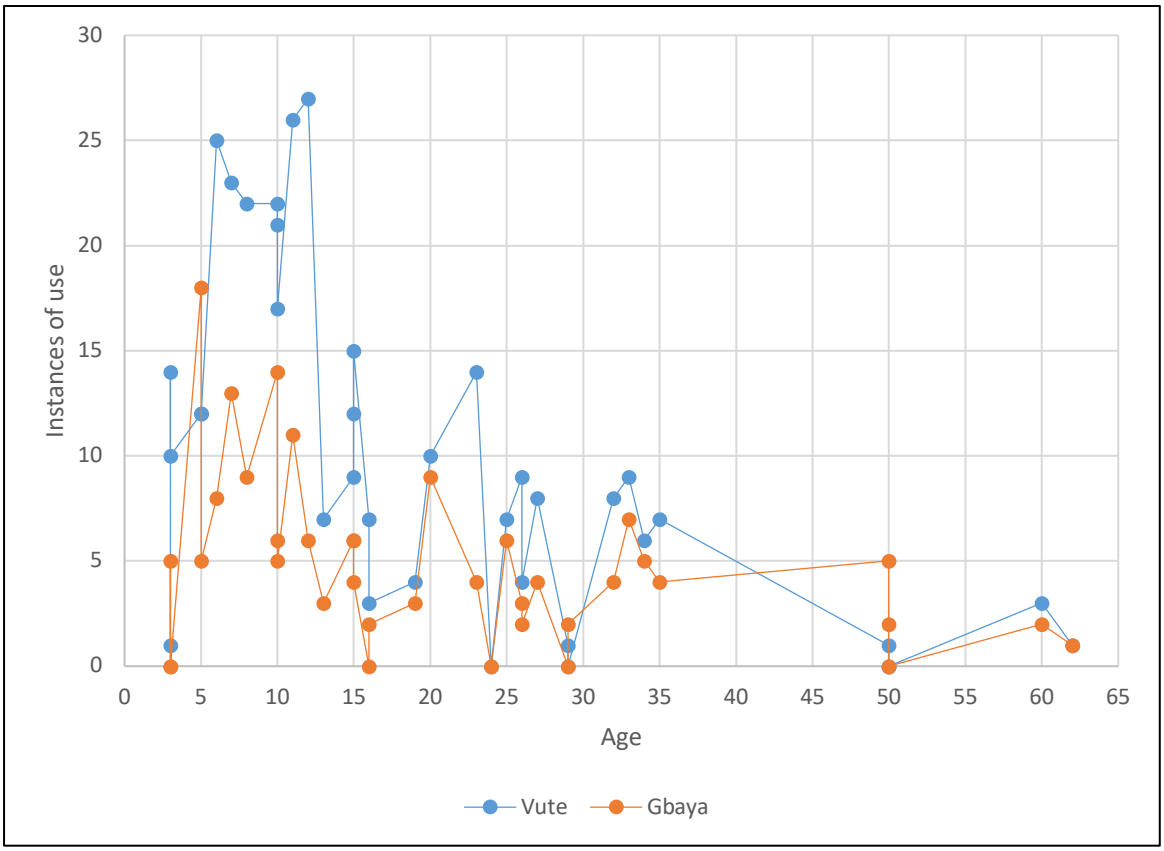


The use of Fulfulde as a NON-TARGET LANGUAGE is comparatively quite low, comprising thirteen percent of NON-TARGET LANGUAGE use. Of all the use of Fulfulde as NON-TARGET LANGUAGE, fifty-nine percent occurs in Vute, twenty-one percent in Mbum, sixteen percent in Gbaya, and four percent in French. Fulfulde has a comparatively lower average of 2.5 and the highest instance of use is seven. This NON-TARGET LANGUAGE does not show an age gradient. Fulfulde as a NON-TARGET LANGUAGE would be much higher if Gbaya had language-specific lexemes for borrowed terms that are not coded as TARGET RESPONSE. The use of Vute as a NON-TARGET LANGUAGE is also quite low, comprising twelve percent of NON-TARGET LANGUAGE use. Of all the use of Vute as NON-TARGET LANGUAGE, fifty-eight percent occurs in Gbaya, fifteen percent in Mbum, and thirteen percent in both Fulfulde and French. Vute has a comparatively low response mean of 2.21 with 5MV giving the highest number, fifteen, and all others giving less than six. This NON-TARGET LANGUAGE also does not show a significant age gradient. The use of Mbum as a NON-TARGET LANGUAGE is very low at less than one percent of all NON-TARGET LANGUAGE use, with just four participants each giving one instance of Mbum due to the salience of Mbum in their repertoires. Two of the participants, the siblings 15FV and 23MV, have a Mbum mother and another participant, 62MV had a Mbum grandmother.

5.5.5.4.3 Significance of Vute and Gbaya

Vute and Gbaya exhibit a significant relationship regarding NON-TARGET LANGUAGE. The two language modes have much higher numbers of NON-TARGET LANGUAGE compared to the other three modes. Figure 24 charts NON-TARGET LANGUAGE use in Vute and Gbaya modes. Both language modes show an age gradient where younger participants generally give higher numbers and older participants give fewer. Gbaya mode shows a less stark age gradient than Vute. The chart displays that younger participants used NON-TARGET LANGUAGE far more in Vute mode, particularly those younger than fifteen. Every participant used NON-TARGET LANGUAGE in Vute mode, whereas in Gbaya mode, five participants did not use NON-TARGET LANGUAGE.

Figure 24 NON-TARGET LANGUAGE use in Vute and Gbaya modes

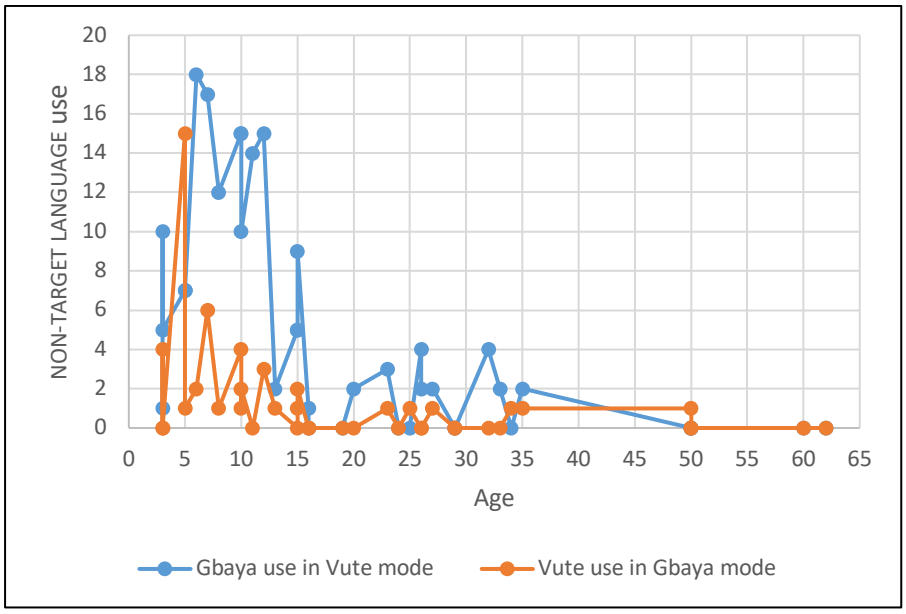


Additionally, when comparing within language modes, Gbaya is used the most in Vute mode and Vute is the second most used NON-TARGET LANGUAGE in Gbaya mode. Of all the use of Vute as a NON-TARGET LANGUAGE, fifty-eight percent occurs in Gbaya mode and of all the use of Gbaya as a NON-TARGET LANGUAGE, eighty-two percent occurs in Vute mode. This can be seen as an age gradient, in which younger children cross language boundaries the most in the languages they know the best, Vute and Gbaya. The social practice of exogynous marriage contributes to the

reciprocity of Vute and Gbaya. As identity languages and the most frequently used languages of the village, their boundaries are porous, allowing access of features from both languages. Families comprised of a Gbaya mother and Vute father create a multilingual setting that promotes heteroglossic practices beyond mere code-mixing.

Figure 25 charts the use of Gbaya in Vute mode and the use of Vute in Gbaya mode. The chart clearly shows a clustering of eight young children below age twelve who have high use of Gbaya while in Vute mode. Children adamantly believe they adhere to language mode but have not yet clearly mastered language boundaries. They possess a language-neutral mental lexicon that with time will develop more control and language-specificity. Their high use of Gbaya is perhaps reflective of time spent with their Gbaya mothers and grandmother. As they grow older, they will acquire language delineation. When they are so young, it involves more bricolage, where they access pieces of languages without knowing to which language they actually belong or being able to control how they access them. As they age, they begin to associate specific features with specific languages, a process that is embedded in social spaces.

Figure 25 Relationship of Vute and Gbaya



5.5.5.4.4 Gender

There does not appear to be significant gender difference in the use of NON-TARGET LANGUAGE. Looking at the overall use of this category in Figure 22, females and males generally fall along the same trend line, with the only stark difference being all five core community of practice members who cluster together as a spike in the trend line due to their high use of NON-TARGET

LANGUAGE. Five Gbaya females show very low overall NON-TARGET LANGUAGE use, all lower than eight instances, while the two typically outlying Gbaya females have higher instances of sixteen and twenty-two. Table 35 compares the Gbaya females with all others who are older than sixteen, showing average use and the percent of total NON-TARGET LANGUAGE. Gbaya females have comparatively lower averages for the use of Vute, Fulfulde, and French, while the averages for Gbaya and Mbum are similar. The percentages of NON-TARGET LANGUAGE show that Gbaya females and all others have over half of their NON-TARGET LANGUAGE use in French. Although all others have a slightly higher average use of Gbaya, twenty-four percent of Gbaya female's NON-TARGET LANGUAGE use is in Gbaya, compared to fourteen percent for all others. It may appear that Gbaya females use more Gbaya as NON-TARGET LANGUAGE compared to others, but when the two Gbaya females who give outlying responses are omitted, the percent drops to ten, making their use of Gbaya less than all others. When children under sixteen are included, this percent more than doubles for all others. Regarding gender, it can only be concluded that Gbaya females use Vute and perhaps Fulfulde less as a NON-TARGET LANGUAGE, while other languages do not show a significant difference.

Table 35 NON-TARGET LANGUAGE use by affiliation

		NON-TARGET LANGUAGE				
		Vute	Gbaya	Fulfulde	Mbum	French
Gbaya females	Percent	5%	24%	14%	2%	56%
	Mean	0.43	2.00	1.14	0.14	4.71
All others over age 16	Percent	13%	14%	18%	1%	53%
	Mean	2.07	2.29	2.93	0.14	8.43

The asymmetry of NON-TARGET LANGUAGE use in each language mode demonstrates the scalar nature of language relationships, such as Vute mode comprising eighty-two percent of Gbaya use, while French mode comprises just three. Participants oriented the most to Vute and Gbaya modes, giving the most responses, but also those language modes were the most malleable, where participants moved between the two spaces, heavily accessing features from both spaces, as well as from other languages, especially French. Language mode as space enables the construction of boundaries, which are scalarly porous, with Vute the most porous, allowing other languages, and French the least, which had much fewer uses of NON-TARGET LANGUAGE. The languages used as NON-TARGET LANGUAGE are also scalar, in that Gbaya and French are used much more frequently across language modes. Analogies of scale provide multiple perspectives on how participants orient to and navigate language modes as linguistic spaces.

I now turn to factors involved in lexical variation.

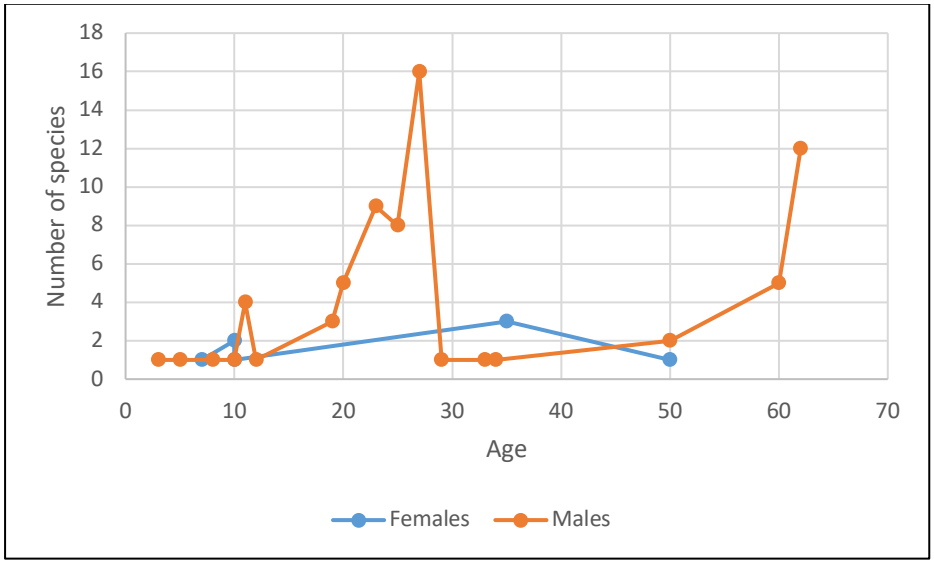
5.5.6 Lexical variation in the ESS

Lexical variation in the ESS follows similar trends and reveals the same communities of practice and social networks. “Variation does not simply reflect, but also constructs, social meaning (Eckert 2012: 87).” Participants’ use of variants reflects individuality and commonalities, some of which are significant enough to index communities of practice. Speakers do not always employ lexical variants deliberately. The use instead comes from life experiences and social networks, which construct meaningful connections on individual and group levels. Variation becomes a variable that unites the core community of practice as well as associated participants and binds these socially meaningful ties. ESS responses and lexical variation exemplify indexicality on multiple levels, occupying different perspectives of an indexical field. For one, variants index characteristics of ethnobiological species and these characteristics are often inherent in species’ names. Lexical variants and ESS responses also exemplify first and second order indices. They acts as first order indices as they index memberships and act as second order indices as they index characteristics. The meaning inherent in lexical choices constitutes an array of potential meanings, or indexical field that is scalarly flexible and changeable as different people access the lexicon. The ways participants contrast and complement each other in the ESS is a recursive process, in which multiple levels of opposition or complementarity are applied again and again. The linguistic differences involved in lexical variation become iconic representations of the social contrasts in Nyanjida. This section first discusses which participants tended to give variants in Vute and Gbaya, then gives more detailed analysis of particular species and the positioning of participants.

ESS participants gave variants for forty-six species in Vute and twenty-one in Gbaya. The distribution of responses does not show consistency across these species. For some species, many participants gave variants and for other species, just a few participants gave variants. The highest number of instances more than one variant was given is sixteen in Vute, equating to the highest number of species for which a participant gave more than one variant. Figure 26 charts the instances in which more than one variant was named in Vute. The largest spike in the chart depicts the five core community of practice members, whose instances all rank above three, with 27MV ranking highest out of all participants with sixteen. This group often gave numerous variants for species. Notably, 62MV, the father of three of the core members and uncle to the other two ranked second highest with twelve instances. All others named variants for less than five species. High rankers also include other associated participants. Every core and associated participant gave at least one variant in the ESS. 35FV, associated with the core community of

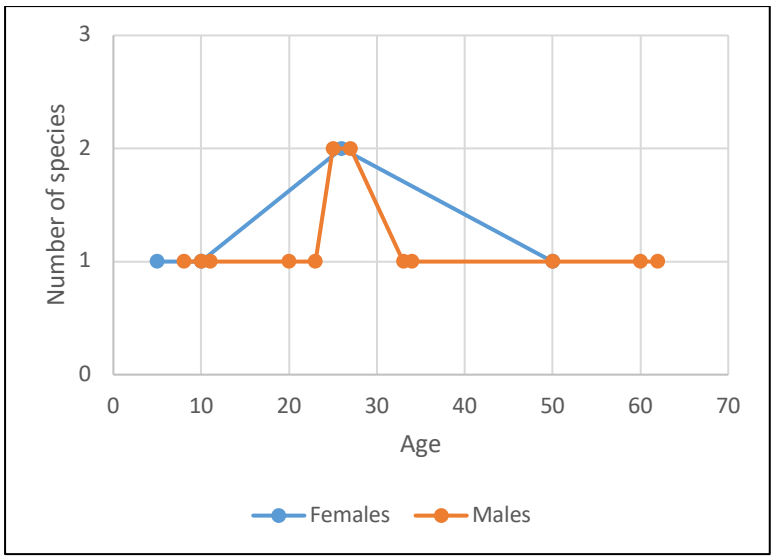
practice, stands apart from other females, giving more variants. The core members are those in the community who tend to manipulate language the most, accessing features from all languages and aware of lexical variation. In understanding the distribution of variants through follow-up questions, the core members gave the most wide-ranging explanations of variation and its distribution, acting as a link between older and younger speakers through their metalinguistic and metapragmatic knowledge and awareness.

Figure 26 Variation in Vute



In Gbaya, a smaller number of participants gave more than one variant; the highest number of instances more than one variant was given is two, as charted in Figure 27. Just three participants gave more than one variant twice, two core members and 26FGb. Overall, four core and nearly three-quarters of associated participants gave more than one variant in Gbaya. However, participants who gave variants in Gbaya mode do not cluster together as much as in Vute mode. The core community of practice does not exhibit as much cohesion in Gbaya and when they do correlate with others, it is with the emerging community of practice and associated participants, whereas they do not correlate with the older associated participants as they frequently do in Vute mode. This reflects the cohesiveness in Vute of the constellation of relationships in which the communities of practice are situated. The older males and 35FV have a significant relationship with the communities of practice in Vute, whereas this is not apparent in Gbaya. The Mbum mother of 23MV and Gbaya mother of 19MV did not participate in the ESS. It is assumed that a wider participant sample would reveal a wider constellation of relationships that would better show the distribution of lexical variation in languages other than Vute.

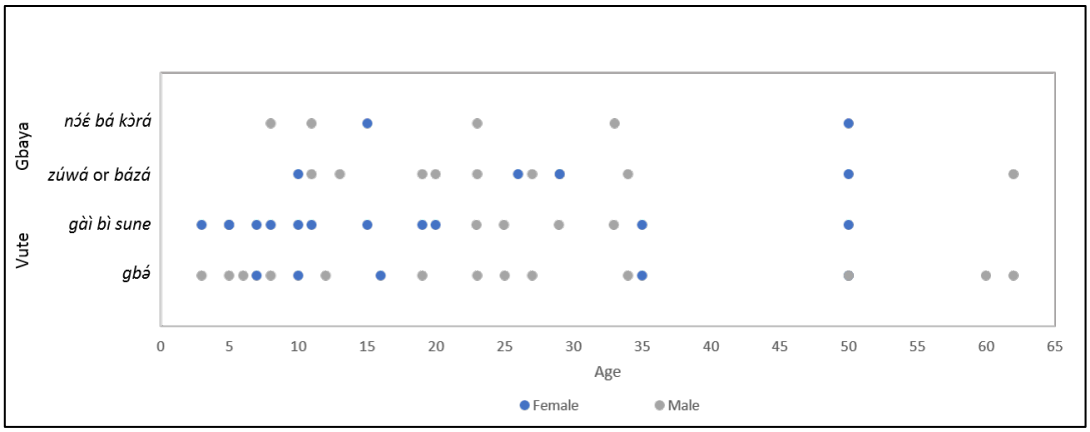
Figure 27 Variation in Gbaya



5.5.6.1 Variation across languages

Variation shows different patterns across languages. At times participants correlate across specific languages and at other times can pattern quite differently. As mentioned above, 'eagle' exhibits two kinds of variation in Vute and Gbaya, contrasting a simplex variant (*gbə́* in Vute and *zúwá* or *bázá* in Gbaya) and a descriptive variant (*gàì bì sune* in Vute and *nɔ́ɛ́ bá kɔ̀rá* in Gbaya) that literally means 'chicken catching bird'. Figure 28 charts the distribution of these responses. In Vute, the responses for both variants are stratified across participants. In Gbaya, responses are fewer, especially in the descriptive variant. This shows that even though the descriptive variants are semantically synonymous, sixteen participants gave this type of variant in Vute and just six in Gbaya. The core community of practice's responses for this species demonstrate that their cohesiveness exists in both Vute and Gbaya. In Vute, 19MV, 23MV, 25MV, and 27MV all give *gbə́* and 19MV, 20MV, 23MV, and 25MV all give *gàì bì sune*. In Gbaya, all five members gave *bázá*.

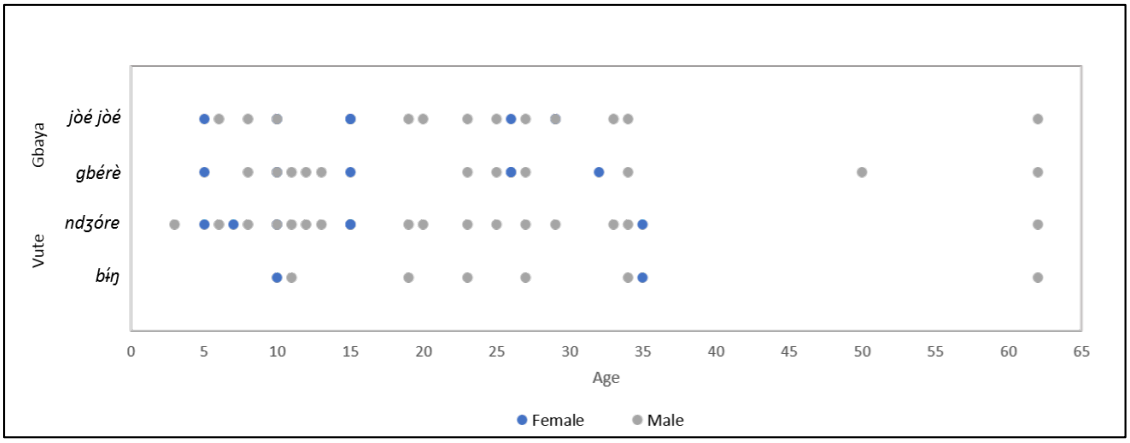
Figure 28 Distribution of 'eagle' variation



The *Aframomum* genus comprises several species and varieties, the distinctions of which foster variation at different levels, as introduced in 5.4.2. Although several variants exist, ESS participants distinguished just two species through lexical variation in Vute and Gbaya, *bɨ́ŋ* and *ndʒóre* in Vute and *gbérè* and *jòé jòé* in Gbaya. Figure 29**Error! Reference source not found.** charts the distribution of variants in Vute and Gbaya, excluding 60MV who gave an idiosyncratic variant in Vute that reflects his original dialect. Overall, one quarter to one third more males gave variants compared to females. Looking at responses for each variant in each language, the distribution of responses for variants in Gbaya is even, while responses in Vute are asymmetrical. In Vute, twenty-two participants gave *ndʒóre*, while just eight gave *bɨ́ŋ*, reflecting the species' high salience and utility. The unmarked lexeme *ndʒóre* is widely distributed across participants ranging in ages five to sixty-two, while the marked term *bɨ́ŋ* was given by three core community of practice members and five associated participants. Eight participants responded with both Vute variants, comprising twenty-three percent of participants in Vute, and are all core and associated participants. In Gbaya, responses were much more evenly distributed, with seventeen participants giving *gbérè* and eighteen gave *jòé jòé*. Ten participants responded with both Gbaya variants, comprising twenty-nine percent of participants in Gbaya, all but two of whom are core and associated participants. Five participants gave both variants in both languages, 10FV and four males, 23MV, 27MV, 34MV, and 62MV, all associated with the core community of practice. The distribution of responses within and across languages exemplifies the variability of patterning, where responses in one language are more evenly distributed across variants and in the other language one variant is more prominent. One Aframomum variant not mentioned in the ESS, Vute *ndʒóre mèín*, indexes on a second order the characteristics of people who use it medicinally–on one level the females and on another their

use of it for a specific purpose as an emmenagogue. The name 'God's Aframomum' indexes the plant's powerful inducement of bodily functions normally beyond human control.

Figure 29 Distribution of Aframomum variation



5.5.6.2 Complex patterns

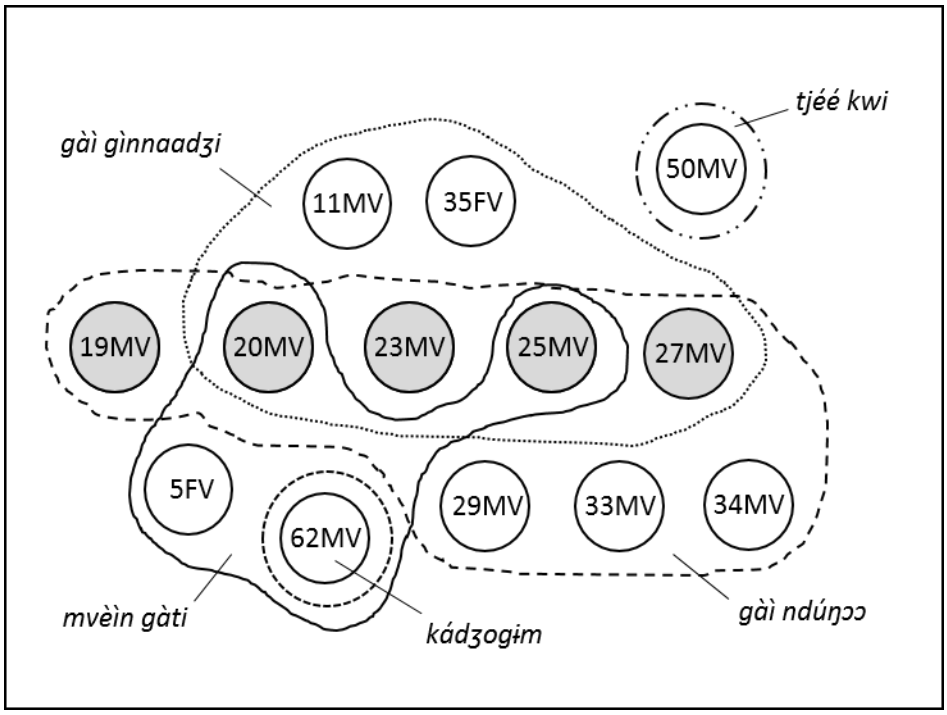
Variation of 'hammerhead stork', introduced in 5.4.2, provides insights into the complexity of lexical variation. Table 36 displays the distribution of responses amongst participants. Each row in the table represents a participant to show multiple responses for the same participant. Overall, thirteen participants responded, with just two females and eleven males. It was surprising that just thirty-seven percent of all participants gave responses since the bird species is well known and had been mentioned as one with considerable variation. Some of the participants who had mentioned several variants in conversations and more natural elicitations did not repeat their knowledge in the ESS, perhaps due to taboos. Additionally, the prescribed use and distribution given by people when discussing the variants do not always hold up in actual practice. The variant *gài gìnnaadʒi* 'fool bird' was reported as a child's term, yet only one child gave the term in the ESS; the other five respondents are above age twenty. This paradox of language ideologies and purity versus actual practices relies on erasure. When an adult uses a lexeme like *gài gìnnaadʒi* that is prescriptively considered a child's term, the adult erases or downplays these ideologies. Those who gave this variant comprise four of the core members, 35FV and her son, 11MV, who is part of the emerging community of practice. The use of *gài gìnnaadʒi* not only indexes this group of people, but also iconically represents characteristics of the group and of individuals. The four community of practice members have shared experiences with this bird as they grew up together. 35FV holds strong beliefs of the supernatural, as does her son who holds wide-ranging ethnobiological knowledge beyond his age.

Participants gave the most responses for *gàì ndúŋɔɔ* ‘axe bird’ followed closely by *gàì gìnnaadʒi* ‘fool bird’ and *mvèìn gàti* ‘chief bird’. The other two variants *kádʒoogɨm* and *tjéé kwi* were given by one participant each, two males, ages sixty-two and fifty. Figure 30 depicts the clustering of responses and the centrality of the core community of practice, darkly highlighted. The clusters exemplify a first-order index where the use of a variant indexes membership or associations with the core community of practice. The lexical choices also serve as second-order indices, as they index characteristics of these groups. Four of the core members gave multiple variants. All five core members gave *gàì ndúŋɔɔ* ‘axe bird’ along with three of the associated participants. These responses exemplify a first-order index, as they reflect the core community of practice’s cohesion and affiliation with three older associated participants, ages twenty-nine, thirty-three, and thirty-four. Their shared responses also exemplify a second-order index; their characteristics as a group whose shared experiences foster their perspective of the bird’s appearance as *gàì ndúŋɔɔ* ‘axe bird'. Those who gave *mvèìn gàti* ‘chief bird’ comprise two core members and 62MV along with 5FV. The use of this variant indexes family characteristics with regards to one type of ethnobiological classification in which this bird is classified as the chief of birds. 62MV holds the most knowledge of ethnobiological classification schemes, a characteristic transmitted in this case to his sons, 20MV and 25MV, and granddaughter (5FV). The single use of *kádʒogɨm* and *tjéé kwi* indexes the specialised knowledge of two of the oldest male participants.

Table 36 Distribution of responses for ‘hammerhead stork’

	Variant				
	gàì ndúŋɔɔ	*gàì gìnnaadʒi*	*mvèìn gàti*	*kádʒogɨm*	*tjéé kwi*
Participant			5FV		
		11MV			
	19MV				
	20MV	20MV	20MV		
	23MV	23MV			
	25MV	25MV	25MV		
	27MV	27MV			
	29MV				
	33MV				
	34MV				
		35FV			
					50MV
			62MV	62MV	

Figure 30 'Hammerhead stork' response clusters



The linguistic choices involved in lexical variation not only index category memberships, but multiple levels of oppositions and complementarity that fall within a constellation of relationships that can be linked to multiple larger categories. The choice of a lexical variant creates access to indexical resources; this does not always indicate intentionality but rather a reflection of the recursive processes of producing and reproducing meaning through processes of growing up in a small village where everyone knows everyone. This creation of multiplex social and linguistic networks produces lexical choices that become iconic representations of the relationships and communities of practices.

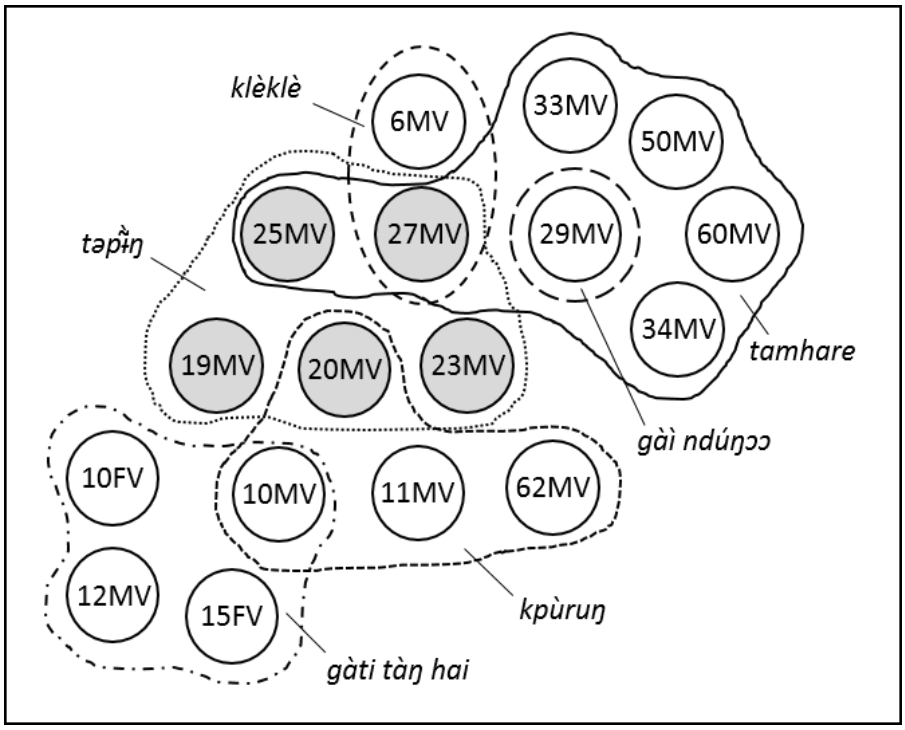
Variation involving another bird species introduced in 5.4.2, hornbill, also clearly delineates the core community of practice. Seventeen participants (45% of participants) gave responses in Vute for 'hornbill', some giving more than one response. Twelve participants gave just one variant. Table 37 displays the distribution of responses by age and gender, again a row represents each participant to show multiple responses for the same participant. Two girls, ages fifteen and ten, gave responses, the remaining fifteen respondents are male. Of all the seventeen participants, only three are not consistently correlated with the core community of practice. Three of the core members gave more than one variant, as did an associated participant and 10MV belonging to the emerging community of practice. Children younger than fifteen gave the sound symbolic variants *kpùruŋ* and *klèklè* or the descriptive term *gài tàŋ hai* 'plum-eating bird'. The use of sound symbolic or transparent terms often indexes age and lack of knowledge of specialised,

non-transparent lexemes. Figure 31 depicts the clustering of responses and again shows the centrality of the core community of practice, darkly highlighted. The only participants to give one of the sound symbolic variants, *təpn̈ŋ*, are the five core community of practice members. This indexes on a first-order their community of practice and on a second-order indexes their shared experience and knowledge of the sound a hornbill makes when flying. Their sole use of this variant acts an iconic representation of their group; it represents the nature of their community of practice, mainly their shared experience of interpreting and organising the natural world. Two of the core members gave *tamhare* along with five associated participants. The use of this variant indexes the affiliations of these males, their transmission of this shared knowledge through family ties.

Table 37 Distribution of responses for 'hornbill'

	Variant					
	tamhare	*təpn̈ŋ*	*kpùruŋ*	*gàti tàŋ hai*	*klèklè*	*gài ndúŋɔɔ*
Participant					6MV	
			10MV	10MV		
				10FV		
			11MV			
				12MV		
				15FV		
		19MV				
		20MV	20MV			
		23MV				
	25MV	25MV				
	27MV	27MV			27MV	
	29MV					29MV
	33MV					
	34MV					
	50MV					
	60MV					
			62MV			

Figure 31 'Hornbill' response clusters



Most of the discussion so far involves examples from Vute and most involve males. Lexical variation of *Piliostigma thonningii*, the distribution of which is presented in Figure 10, offers analysis in both Vute and Gbaya and is distributed more widely amongst participants. Table 38 displays the distribution of responses with participant codes. Again, each row in the table represents a participant to show multiple responses for the same participant. The table depicts the clear age delineation of responses in both languages, where younger participants tend to give the descriptive lexemes *gateau ndèìn* in Vute and *gateau ndàè* in Gbaya, both literally meaning 'cow's cake'. Older participants tend to give the simplex terms *bojá* in Vute and *dɔ́mò* in Gbaya. Four members of the core community of practice, shown in bold, straddle this age delineation and three of them are the only participants to give more than two responses. The four members group together in their Vute response of *bojá* and three of them for *gateau ndèìn.* In contrast, they split in their Gbaya responses, where two of them give *dɔ́mò* and the other two give *gateau ndàè*. The table also depicts that the core community of practice aligns with others in patterned ways. In their use of *bojá*, four of the members align with all but one of the older associated participants. In their use of *gateau ndèìn*, three of them align with all three of the emerging community of practice as well as 12MV and 10FV, amongst other young participants. They are not as cohesive with Gbaya responses, although the two younger members, 20MV and 23MV group together with younger participants who gave the complex lexeme, while 25MV and

27MV group together with older participants who gave the simplex lexeme. Notably, the four Gbaya women who responded all gave the simplex lexeme in Gbaya.

Interestingly, the fifteen participants who responded in both languages all gave the same type of lexeme in both languages. For example, 7FV gave complex lexemes in both languages, whereas 34MV gave simplex lexemes in both languages. This propensity of individuals to respond similarly across language modes is further discussed in section 5.6.

Table 38 Distribution of responses for 'Piliostigma thonningii'

	Vute		Gbaya	
	bojá	*gateau ndèìn*	*dɔ́mò*	*gateau ndàè*
Participant				5FV
				5MV
		6MV		
		7FV		7FV
		8MV		
		10FV		10FV
		10FV2		10FV2
		10MV		10MV
		11MV		11MV
		12MV		12MV
		15FV		15FV
		15FV2		15FV2
	20MV	**20MV**		**20MV**
	23MV	**23MV**		**23MV**
			24FGb	
	25MV	**25MV**	**25MV**	
			26FGb2	
	27MV		**27MV**	
			29FGb	
	29MV			
	34MV		34MV	
	35FV			
	50MV		50MV	
			50FGb	
	60MV			
	62MV		62MV	

The core community of practice is again clearly identified with lexical choices of the tree *Strychnos spinosa*. Table 39 displays the distribution of responses in Vute for two variants *ɓwàá* and *ndű̀ ŋgaŋn̄*, given by eight participants each. All core community of practice members (bolded) gave *ndű̀ ŋgaŋn̄*, along with two older associated participants and 50FV. Children under age fifteen gave *ɓwàá* along with four associated participants. The shared use of *ndű̀ ŋgaŋn̄*

indexes the core community of practice. Likewise the use of *ɓwàá* indexes the cohesion of 33MV, 34MV, and 35FV as a group and the four participants under age fifteen as another group with shared experiences.

Table 39 Lexical variation of 'Strychnos spinosa'

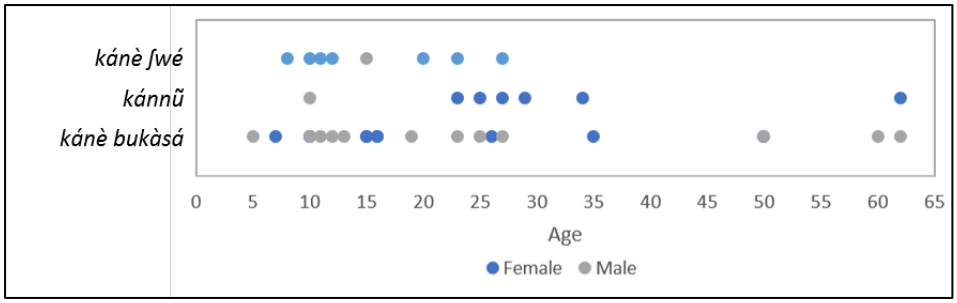
	Variants	
	ɓwàá	*ndű ŋgaŋnɨ*
Participants	7FV	
	10FV	
	13MV	
	15FV	
		19MV
		20MV
		23MV
		25MV
		27MV
	33MV	
	34MV	
	35FV	
		50MV
		50FV
	60MV	
		62MV

Lexical variation in Vute of *Zonocerus variegatus* 'variegated grasshopper' shows how one variant is often well-distributed across participants, while other variants exhibit patterns. Figure 32 displays the distribution of three variants, *kánè bukàsá*, *kánnũ*, and *kánè ʃwé*. Each variant comprises *kánè*, the general name for 'grasshopper'. The variant *kánè bukàsá* is modified with the name of the grasshopper's host plant, *bukàsá (Chromolaena odorata)*. The other two variants portray information about the species' poisonous nature[32], *kánnũ*, a compound of *kánè* 'grasshopper' and *nũ* 'poison' and *kánè ʃwé*, literally 'death grasshopper'. Twenty-two participants gave *kánè bukàsá* and the variant is consistently distributed across ages five to sixty-two and nearly even across gender, with ten females and twelve males. The variant *kánnũ* indexes age in that those who gave this variant are older than twenty-three, with the exception of 10FV. It also acts as a first-order index of membership, as it was given by three of the core community of practice members, along with four associated participants. The variant *kánè ʃwé* indexes age; all participants who gave it are less than twenty-seven. The variant also acts as a

[32] Interestingly, the host plant, *Chromolaena odorata*, contains toxic pyrrolizidine alkaloids that are stored in insects' bodies as a defence mechanism.

first-order index as it references membership. Three of the core members gave the variant *kánè ʃwé*, as did 15FV and all three members of the emerging community of practice and 12MV, the interloper between the two communities of practice. The only participants to give all three variants are two core members. Six participants gave at least two variants, most of whom are core or associated participants, including 10FV.

Figure 32 Grasshopper variation



Variation is a part of daily linguistic practices. The ESS showed that particular participants tend to use more variants and these variants are most elicited in Vute mode, where the communities of practice and associated participants become clearly apparent. The asymmetry across languages of elicited variants points to the flexibility and adaptability of participants' use of Vute and to a lesser extent Gbaya. Terminologies in bi- and multilingualism research do not aptly capture these language relationships for the type of multilingual setting in Nyanjida. I now turn to cognition for its explanatory power and as a way to bring all of this together.

5.6 The gestalt multilingual ethnobiological lexicon

"Researching the bilingual mind is central to our understanding of the human mind in general (de Groot 2011: 374)."

What we have seen so far comprises a complexity of multivariate factors involved in the multilingual ethnobiological lexicon. This section examines multilingual cognition as another level of analysis to understand the interconnectedness of languages in multilingual practices. The ESS brings into question language control and production, how multilingual speakers can remain in language mode with relatively little interference from other languages, and why certain language interference is permitted. ESS data differs from cognition research conducted in labs, as much of the stimuli has everyday relevance to the participants. The set was not designed specifically for cognitive research; rather, the following analysis extrapolates

correlations between the data and existing cognitive research concerning bilinguals and multilinguals.

The ESS focused on participants' lexical choices within and across languages, processes that involve cognitive flexibility, control, and coordination. Grosjean's (2013a: 15) definition of language mode, repeated here, brings in cognitive aspects of language mode, "as the state of activation of the bilingual's languages and language processing mechanisms at a given point in time." People perceive and portray language boundaries as secure and hold rather strict norms of what it means to be in a particular language mode. The ESS was implemented in a way that did not prime participants to engage in a certain way in each language mode or to overthink their actions. This enabled the data to demonstrate what speakers actually do when engaging in each language mode.

5.6.1 Cognitive flexibility

The multilingual ethnobiological lexicon provides a window into the mind. The ethnobiological lexicon is a connected system of knowledge involving all languages of a person's repertoire. One cannot examine just one language of a person's repertoire and completely understand their ethnobiological knowledge. This system forms a gestalt, comprised of a complex network, a system that goes beyond features. When a Vute man was listening to a recording of Wawa, a language related to Vute, he said he understood it. People speak of multilingual conversations that they did not quite understand but in which they were still able to converse. These examples point to a gestalt, something beyond discrete languages and even beyond the concept of languaging. Speakers are not just accessing features, but something more on a schematic level. ESS responses show that languages are not neatly mentally compartmentalised, but that they all interact and are accessed in complex ways. While eliciting a fish species, a Gbaya woman gave the Mbum term *bók bók* despite the fact that she does not consider Mbum a language she speaks. In a multilingual environment, speakers access features of languages even when those languages are not a part of their repertoire, evidencing that cognitive mapping transcends discrete languages. Accessing a lexeme like *bók bók* from a language one does not know is socially conditioned in that the lexeme is used frequently no matter the language. It remains a question how these types of lexemes such as areal roots are activated in the mind.

5.6.2 Language control and activation

Models of mental control in bilinguals support the view of languages as part of a whole system (Green 1998). The core community of practice members report that they creatively manipulate

language, accessing language- and dialect-specific features to form new lexemes not associated with any particular language. Multilingual speakers are experts at cognitive control. They exert control through balancing degrees of activation levels (de Groot 2011) in a system where languages can be activated in parallel (Kroll et al. 2015). Reciprocal multilingualism relies on dual language activation. When a Gbaya wife speaks Gbaya to her Vute husband or children who reply in Vute, both languages must be simultaneously activated.

The complexity of control required of a multilingual speaker involves scalar effects as they engage in activation of cognitive mapping. Theories of multilingual cognition indicate four interrelated dimensions of control that simultaneously interact: scope, direction, locus, and source (de Groot 2011), all of which relate to the ways in which speakers engage scales of control. Speakers in Nyanjida exert several scopes of control, one that is global, affecting multiple languages in their repertoires, and one that is local, activating specific features of the multilingual system. The ESS targeted local control through language mode, yet effects of global control are apparent through the high use of NON-TARGET LANGUAGE in certain language modes. Direction of control involves proactive control, in which speakers activate language(s) to set the scene, and reactive control, in which speakers operate on demand. The ESS required proactive control, in which speakers activated specific language modes. In natural language practices, they exert both proactive and reactive control as they negotiate spaces of communication. The locus of control involves the position, whether within the language system or on specific features. ESS participants navigated various loci of control, from using language-specific features to applying cross-linguistic semantic patterns such as calquing. The source of control indicates whether it is internally or externally motivated. All of these different dimensions of control are at play. Speakers in Nyanjida exert global control by proactively approaching situations, while at the same time exert local control through reactive processes involving specific loci of control, depending on internal and external motivations.

These types of control depend on the languages accessed. Languages that are less known require a more extensive brain network and accessing of areas of the brain associated with language control (Costa 2017). ESS data suggest that participants exhibited more control in Fulfulde, Mbum, and French, whereas they exhibited less control in languages they use most often, Vute and Gbaya. Participants used more NON-TARGET LANGUAGE in Vute and Gbaya, and these were the only languages in which participants gave lexical variants, excepting a few in French.

Psycholinguistic and neurolinguistic research suggest that languages are regulated by activation (Green 1998). Moving between different language modes is facilitated through activation and deactivation (2008, 2013a). The ESS evidences simultaneous activation of Vute and Gbaya as

participants accessed lexemes from both languages in each mode, making it difficult to strictly remain in language mode, whereas Fulfulde, Mbum, and French are not as frequently simultaneously activated, thus facilitating stricter adherence to those language modes. While eliciting in one language, other languages remain active, enabling ease of access (García & Wei 2014), also referred to as resting activation (Taylor 2005). Research that examines cerebral representation of bilingual's languages based on degree of knowledge of the languages shows that when the bilingual has high proficiency in both languages, overlapping areas of the brain are activated, whereas those with low proficiency have more distributed areas of the brain activated with less overlap (Costa 2017). This could possibly be inferred for Gbaya and Vute, that overlapping areas of the brain are activated, whereas Fulfulde, Mbum, and French have fewer overlapping areas.

The ESS showed how a person's repertoire influences their use and pronunciation of another language and gives evidence to how languages are asymmetrically activated. While doing the set in Fulfulde, 7FV, whose mother identifies as Gbaya and her father as Vute, used a distinctive pattern of short vowel in the first syllable, long vowel in the second syllable, even in words that do not have that pattern, reflecting her perceptions of Fulfulde phonology. She applied her ideological perspective on how the Fulfulde lexemes should sound. Others accentuated the implosives and added plosives, even when neither exist in the word. 16FGb, who identifies as Gbaya and spent most of her life in an adjacent Gbaya village, pronounced the Vute central unrounded vowel *ɨ* as the back vowel *u*, saying *ju*^{h} as *jɨ* 'bee'. This reflects that her prominent language, Gbaya does not use the central unrounded vowel *ɨ*. Her more frequently used language influences the less frequently used language.

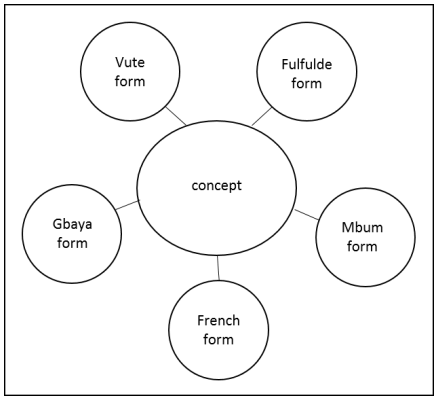
Another example of simultaneous language activation involves the use of NON-TARGET LANGUAGE features such as suffixes. 23MV added the Vute noun class suffix *-ti* to several bird names in French, such as *siffleur-ti* 'sunbird', *héron*-ti 'heron', and *hirondelle-ti* 'swallow'. He borrows French terms and adds Vute suffixes to adhere to Vute mode. Taking the stance of parallel language activation allows that one language can influence another, even if not intended as such by a speaker (Kroll et al. 2015). Simultaneous activation of languages allows subtle shifts in space to orient a speaker to a certain ideology.

5.6.3 Mental lexicon

Individual ESS participants gave similar responses across all language modes, reflective of the way concepts are stored. The mental lexicon, defined in section 3.2.3, unites concepts and forms. A picture-naming task like the ESS activates the conceptual level that then stimulates the

lexical level. When speakers say a NON-TARGET LANGUAGE lexeme, it demonstrates not only the activation of a language other than the target language but also that the conceptual level connects to multiple lexical levels. The ethnobiological lexicon is interwoven with conceptual representations, meaning linguistic forms are interlinked through conceptual representations, so in a naming task like the ESS, speakers activate lexemes through conceptual representation and if needed, through lexical connections. Figure 33 depicts a simplified version of the multilingual mental lexicon as part of an interrelated network. It implies that lexemes from different languages share one conceptual representation, in line with Weinreich's (1953) compound type. Taylor (2005: 1779) suggests that "one integrated, common conceptual store for most concepts and words is more likely for bilinguals whose languages and cultures are related and similar." It is inferred here that in a small-scale multilingual setting of intense language contact where children grow up multilingual, even non-cognates share conceptual representation. In the diagram below, each language form represents also multiple variants attached to the concept. These linkages can be at different levels of activation and activated simultaneously in coordination.

Figure 33 Mental lexicon



No two people share exact cognitive mapping, thus language activation is controlled by individual characteristics, among other factors (Yu & Schwieter 2018). Just like unique individual linguistic repertoires, individual gestalts vary widely but do come together in patterns such as those of the core community of practice. I postulate that mutual engagement in a community of practice produces similar general cognitive mapping across individuals and the characteristics and experiences of the individual further refine their mapping. Their growing up together and shared experiences create similar cognitive mappings, as reflected in their shared ESS responses.

Multilingual ethnobiological lexicons unite individuals through shared knowledge and conceptualisations. We have seen that ethnobiological knowledge is patterned and that concepts are shared while also maintaining distinct language-specific lexemes. One shared concept is the preference for couscous and meat, where these are considered 'true food' and everything else subsidiary. In Gbaya, *kàm* refers to both food in general and 'couscous' (Burnham 1980: 242). Every language maintains distinct lexemes denoting a hunger for meat or the weakness that comes from not eating meat: *ndú*: in Vute, *bàlá* in Gbaya (and *wàn bàlá* 'someone who hungers for meat'), *jáksìn* in Mbum, and *zindeego* in Fulfulde. To not have eaten meat or couscous is to have not eaten at all. This scalar practice marks the concept through language, where language-specific lexemes index a particular kind of hunger, one that is shared by all.

5.6.4 Connected cognitive networks

Bilingualism research tends to involve cultures and languages that can be controlled in an experimental setting, where a specific culture can be isolated to show its influences on how a person views the world (Ji et al. 2004). It remains a question in a setting like Nyanjida, where cultures somewhat converge and languages remain distinct, how this type of cultural background affects the way people view and conceptualise their world and the relationship of language(s) to this. Ji et al. (2004) found that Chinese tend towards holistic reasoning, focusing on relationships between objects. Contrastively, Americans, which they generalised to Westerners, tend towards analytic reasoning, focusing on objects' characteristics and categorisation. We can assume based on the ESS responses that people in Nyanjida tend toward holistic reasoning, and this corresponds to the ways multilingual practices reflect attention to social context and interpersonal relationships. This requires an effective cognitive control system, one that goes beyond control of language to behaviour in general (de Groot 2011), thus correlating with the fact that linguistic practices are embedded in everyday social practices. This ties into bilingual research suggesting that bilingualism reduces egocentric bias (Costa 2017), meaning they evaluate situations not only based on their point of view, but also the perspective of others. Language is a part of a larger system of executive control, integrated into domain-general cognitive systems, giving multilinguals greater functional connectivity (Hayakawa & Marian 2019).

Sound symbolic lexemes in the ESS proved highly salient, often given more than simplex lexemes, especially by children. The connection of sound symbolic lexemes to other cognitive systems makes them more cognitively accessible not only for children, as local prescriptive ideologies suggest, but also adults. As multilingual speakers engage in linguistic practices, they

also negotiate comportment and social contexts. This entails schematic knowledge, or *habitus* (Bourdieu 1991), of situational behaviour and evaluation of self and others (Blommaert et al. 2005), relying on extensive metapragmatic and metalinguistic awareness that links to executive cognitive control. The same neural networks that manage attention regulation and determination of irrelevant information allow multilinguals to navigate conversations and execute control (Hayakawa & Marian 2019).

5.6.5 Mental mapping

The following sections discuss instances of lexical variation that reflect how lexemes are stored in the mental lexicon. The subsection on lexical variation attempts to understand how different types of lexemes for the same concept interact at the lexical and conceptual levels. It also discusses cognitive individuality. The final subsection discusses how the mental lexicon reflects species relationships.

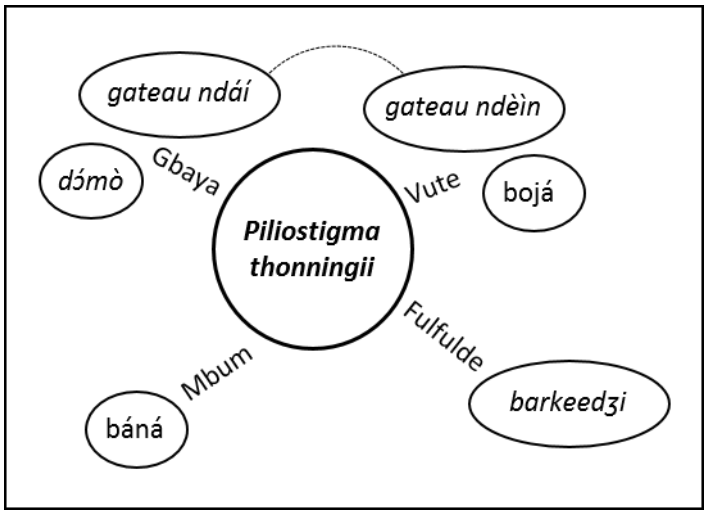
5.6.5.1 Lexical variation

When an ESS participant did not name the specific lexeme of a species, their use of a complex lexeme or descriptive phrase informs the complex mapping involved in a multilingual ethnobiological lexicon. They are linked by a shared concept, but it remains a question how the variants cognitively interact on the lexical level when one variant is an analysable complex lexeme and the other an unanalysable simplex lexeme. There exists this language-internal variation and layered onto that are cross-linguistic differences of the same dichotomy, where the lexemes for a species are lexically complex in one language and simplex in another, all linked by a shared concept with both different and similar lexical specifications. Simplex lexemes often comprise non-referential indexicality (Silverstein 1976), in which meanings stem from past associations (Bailey 2007) and the analysability no longer available, thus losing indexicality. "From these perspectives, language is never a neutral instrument of pure reference, as actual speech always occurs in a social context, which is never neutral or ahistorical. (Bailey 2007: 263)." Several older ESS participants gave unanalysable simplex lexemes which have lost their indexicality, no longer referencing what they once did. The following discusses some examples of simplex and complex lexemes and what they contribute to understanding multilingual mental mapping.

Both Vute and Gbaya exhibit variation in naming the tree species *Piliostigma thonningii*. Each language has not only a simplex variant, *bojá* in Vute and *dɔ́mɔ̀* in Gbaya, but also a calqued descriptive variant that mixes French *gateau* 'cake' with 'cow' in each of the languages to

produce *gateau ndèìn* in Vute and *gateau ndáí* in Gbaya, literally 'cow's cake'. These lexemes are all linked to the concept of *Piliostigma*, but in different ways, depicted in Figure 34. The simplex lexemes *bojá* and *dɔ́mò* are linked to the concept but separate from each other. The calqued descriptive lexemes *gateau ndèìn* and *gateau ndáí* are also linked to the concept and semantically related, as indicated by the dotted line. Semantically related lexemes are closely linked in mental mapping (Taylor 2005), which then strengthens links between languages within the concept. *Bojá* and *gateau ndèìn* are linked through Vute language activation and *dɔ́mò* and *gateau ndáí* linked through Gbaya. Participants did not give variants in Mbum and Fulfulde, where only simplex lexemes were given.

Figure 34 Piliostigma thonningii mental mapping



The distinction between simplex and complex lexemes also reflect cognitive individuality. In the ESS, individuals tended to give the same types of responses across language modes, such as responding with either a simplex or complex lexeme in each language mode. Bilingualism research shows that linguistic experience and proficiency in more than one language reconfigures general cognitive functioning (Bobb & Kroll 2018). This can be translated to small-scale multilingualism, where life experiences and exposure to linguistic resources shape and reshape an individual's cognitive mapping and language system as a whole, making it so they tend to use the same schema across languages. The naming of some species fosters an activation pattern so that lexical and semantic patterns apply across languages. For example, many participants gave the Vute variant *gài gìnnaadʒi* 'fool bird' for 'hammerhead stork'. Two of the participants calqued this in Gbaya as *nɔ́é gìnnaadʒi* 'fool bird', the only variant given in

Gbaya. They applied their semantic knowledge in Vute to produce a lexeme in Gbaya mode, in essence activating one language to assist another.

Fifteen ESS participants gave responses (shown in Table 38) for the tree *Piliostigma thonningii* in Vute and Gbaya language modes. One hundred percent answered the same in both languages, meaning if a participant gave the simplex lexeme *dɔ́mɔ̀* in Gbaya, they also gave *bojá* in Vute and if they responded with the calqued descriptive phrase meaning 'cow's cake' in one language, they responded the same in the other language. The same pattern emerges with lexical variants for a fish species, named with the simplex lexemes *mijɔ:ni* in Vute and *jóò* in Gbaya or with the descriptive phrase literally meaning 'snake fish', *(mɨ̀-)ɲo here* or *here ɲo* in Vute and *zoro gok* in Gbaya. The eight participants who responded in both languages followed the same pattern; if they gave the simplex lexeme in one language, they gave the same in the other language and if they gave a complex lexeme in one language they responded the same in the other language.

A less stark pattern emerges for a species of eagle; however, participants still tended to answer similarly across languages. Like the above examples, there exists a contrast between a simplex lexeme, *gbá* in Vute and *zúwá* or *bázá* in Gbaya, and a descriptive phrase, literally 'chicken catching bird', *gàì bì sune* in Vute and *nɔ́ɛ́ bá kɔ̀rá* in Gbaya. Eleven out of thirteen participants (85%) responded the same across both languages. Table 40 displays the distribution of responses. Those who gave the simplex variant in both languages comprise three core community of practice members (in bold) and three associated participants (34MV, 62MV, and 10FV). Those who gave the descriptive variant comprise one of the core community of practice members (23MV), an associated participant (33MV), two of the emerging community of practice members (8MV and 11MV), and 15FV. The average age who gave the simplex variant (29.5) is much higher than for the descriptive variant (18). With age comes linguistic experiences that reconfigure cognition through adaptation made possible by brain plasticity. The linguistic flexibility exhibited by the core community of practice and associated participants facilitates an expansion of cognitive mapping that invokes a predisposition to respond similarly no matter the language. This correlates with multilingual research that identifies young adults to have higher cognitive control capacities (Bialystok et al. 2005).

Table 40 Distribution of 'eagle' responses

Simplex variant	10FV **19MV 25MV 27MV** 34MV 62MV
Descriptive variant	8MV 11MV 15FV **23MV** 33MV

One more example involves naming 'chicken coop' in Gbaya and Vute. Each language has distinct lexemes for 'chicken coop', *fukuŋ sune* in Vute and *vale kora* in Gbaya, which contrast with descriptive phrases literally meaning 'chicken house', *juk sune* in Vute and *twaku kora* in Gbaya. Twenty-two out of twenty-eight (79%) of participants responded the same across both languages. Those who responded with the distinct lexemes and not the descriptive ones include the five core community of practice members and all five older male associated participants. Their experience and knowledge of both Vute and Gbaya reconfigures their cognitive mapping so that they access the distinct lexemes for 'coop' even though they also possess configurations that facilitate descriptive phrases. This also plays out in Wanderwörter such as *laaka* 'worm', which permeates Vute and Gbaya modes and is so entrenched cross-linguistically that it is treated as a variant. Wanderwörter maintain high activation across languages, overriding activation of language-specific lexemes. Eighteen out of twenty-five (72%) participants who gave *laaka* in one language also gave it in the other.

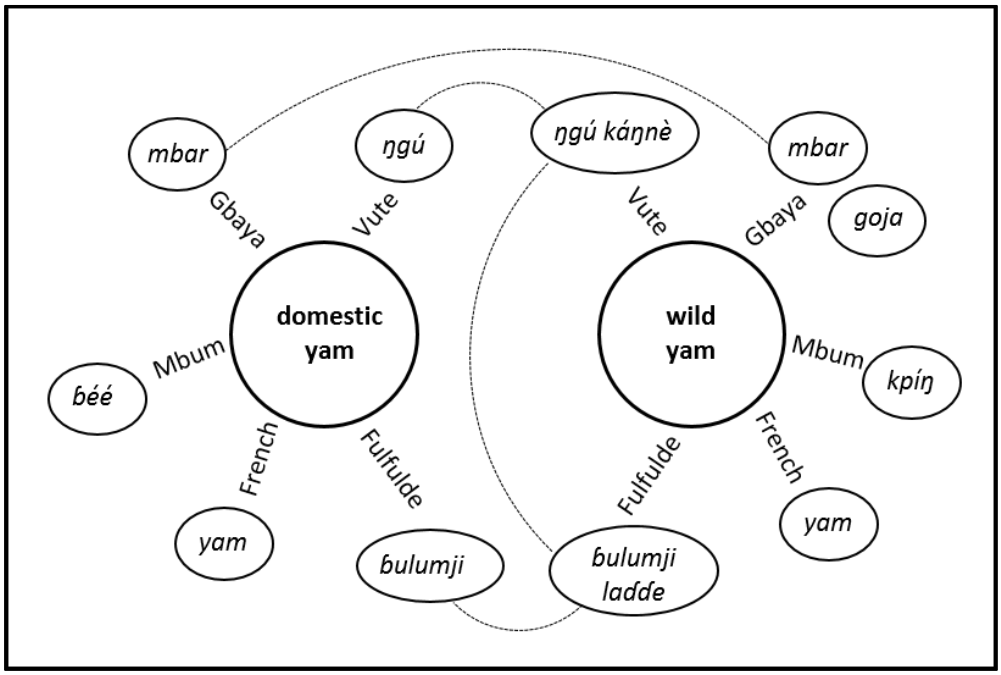
These lexical distinctions reflect the individuality of cognitive mapping, that networks are activated in similar ways cross-linguistically. If a speaker has a higher activation for descriptive terms in one language, it is likely that the same type of term will be activated in other languages. In the same vein, if the speaker tends towards simplex lexemes in one language, they tend to activate that type of lexeme in other languages. This points to a gestalt system in which specific activation patterns apply cross-linguistically. However, there exists asymmetrical application across languages. As mentioned above, a significant number of participants responded with a specific lexeme meaning 'chicken coop' or a descriptive phrase meaning 'chicken house' in both Vute and Gbaya. When the analysis includes French *poulailler* 'coop' and *maison de poule* 'chicken house', just five participants out of eleven (45%) applied the same type of phrase across all three languages. This again points to the significance of Vute and Gbaya in people's repertoires and reflects the close cognitive relationship of the two languages.

5.6.5.2 Species relationships

Another added layer to multilingual mental mapping involves the relationship between species, often between wild and domesticated species, an example of which involves the relationship between domesticated and wild yam species. Both of the species differentiate into multiple varieties, with the domesticated ones often distinguished lexically, but in the ESS, participants simplified responses, giving general terms for the domesticated species. Figure 35 depicts the relationships in naming these species and dotted lines indicate semantic relationships. Gbaya distinguishes *mbar* 'domestic yam' and *goja* 'wild yam' with distinct lexemes, as does Mbum with *ɓéé* 'domestic yam' and *kpíŋ* 'wild yam'. Vute distinguishes the wild species through

extension by assigning a modifier indicating habitat to the lexeme for the domestic species *ŋgú*, creating *ŋgú káŋnè*, literally 'forest yam'. ESS participants similarly distinguished the two species in Fulfulde, extending *bulumji* 'domestic yam' to *bulumji laɗɗe* 'wild yam', literally 'bush yam'. It is assumed but not verified that Fulbe in the area have distinct lexemes for these species and that ESS participants calqued the Vute term. In French, speakers use one lexeme for both species, *yam*. The semantic relationship for these species proves directional, where the domesticated yam extends to wild yam, as the Vute and Fulfulde lexemes exemplify. Participants' Gbaya responses also reflect this, in that they gave *mbar* 'domestic yam' and *goja* 'wild yam' interchangeably for 'wild yam' but strictly only used *mbar* for 'domestic yam'.

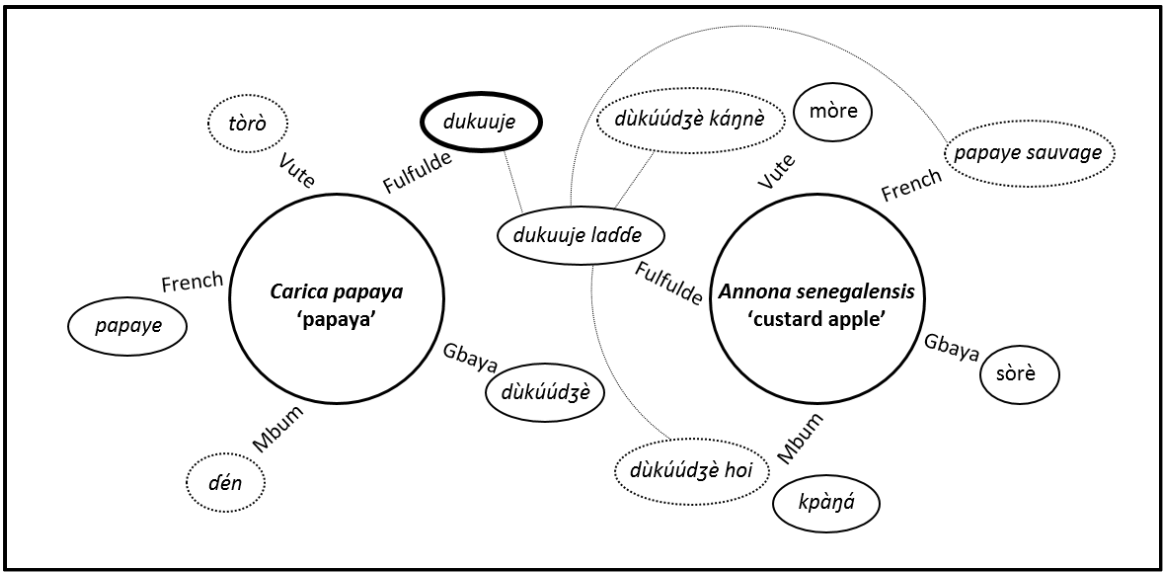
Figure 35 Yam mental mapping



The interplay of naming practices of the domestic papaya (*Carica papaya*) and a wild tree species, 'custard apple' (*Annona senegalensis)*, reflects the perceived physical relationship involving similar fruits and informs multilingual mental mapping, where semantically related concepts are closely interlinked. Figure 36 depicts the mental mapping of the two species. In Vute, two unrelated simplex lexemes signify each of the species, *tòrò* 'papaya' and *mòre* 'custard apple'. Mbum also has separate lexemes, *ɗén* 'papaya' and *kpàŋá* 'custard apple'. In Fulfulde, the lexeme for 'papaya', *dukuuje*, extends to create *dukuuje ladde*, literally 'bush papaya' for 'custard apple', creating a stronger cognitive relationship between the two. Gbaya fully borrows *dukuuje* from Fulfulde for 'papaya' and has a distinct term for *'custard apple'*, *sòrè*. The Fulfulde

lexeme for ‘papaya’ permeates all languages; this is indicated in the diagram with a thicker circle. Only two participants in Vute mode gave *tòrò*, while twenty-nine others gave *dukuuje*. In Mbum mode, four gave *ɗén*, while six gave *dukuuje*. The weak activations of *tòrò* and *ɗén* are represented in the diagram with dotted lines. Two participants gave *dukuuje* in French mode. The cross-linguistic permeation of *dukuuje* makes this lexeme has a higher activation, lending to its frequency of use. The lexeme’s activation level makes it more accessible, even when in strict language mode. The cognitive relationship in Fulfulde of *dukuuje* ‘papaya’ and *dukuuje laɗɗe* ‘custard apple’ does not exist in the other languages that have distinct, simplex lexemes, yet this semantic template is applied in those language modes. 15FV, when she did not recall ‘custard apple’ in Vute, gave the term *dùkúúdʒè káŋnè*, inserting Vute *káŋnè* ‘bush’ to modify the Fulfulde lexeme. Several people applied this template in Mbum as *dùkúúdʒè* hóí, literally ‘bush papaya’. One participant calqued this in French as *papaye sauvage* ‘wild papaya’. These lexeme configurations are not regular components of the lexicon like *dukuuje laɗɗe*; they access established lexical and conceptual mappings, bringing different features of languages together. They apply heteroglossic practices that access features from different languages based on cognitive associations. Cognitive research suggests that extraction of semantic information differs based on language proficiency in bilinguals. Areas of the brain used for semantic processing are less activated in less proficient languages; instead speakers access a more distributed network in the less proficient language (Costa 2017). In the above examples, speakers access semantic information from languages in which they have more ethnobiological knowledge such as Vute, Gbaya, and Fulfulde, and apply it to those with less ethnobiological knowledge such as Mbum and French. It remains a question how this applies to calquing in multiple languages and how semantic and conceptual processing function in this type of multilingualism.

Figure 36 Papaya mental mapping



All of this points to a gestalt mental lexicon, a complex, intertwined network of concepts and lexemes. Participants generally did not frequently use calques, even as a way to provide a reply. Eliciting in language mode helped to avoid on the spot calquing. Specific individuals, who are not as strong in Fulfulde and French, tended to apply calques in those language modes. This points to individual mapping, in which a person tends to access the same types of features to form lexemes throughout the ESS. The ways in which the relationship of 'papaya' and 'custard apple' are coded through extension, calquing, code-mixing, and accessing multivariate features evidences the malleability and permeability of language mode and that languages are not compartmentalised and separate in the mind. The semantic relatedness and mixing of language-specific features straddles linguistic boundaries and evidences a type of multilingualism in which a shared concept links to multiple lexical forms.

5.6.6 Language mode

The ESS showed that participants do treat languages as distinct, based on socio-constructed ideologies of prototypical use. Language boundedness is real to people, but porous in patterned ways. Most ESS participants adhered to language mode and deviances from language mode reveal much about the ways in which speakers access their lexicons. Lexemes do not exist in isolation, only referring to an object; rather, are packaged with multiple social and linguistic references as well. The gestalt system allows languages to coexist but are not strictly mutually exclusive. Maintaining language mode entails control, something that is required in an elicitation task like the ESS, but in natural speech boundaries are much more fluid. Speakers access

features from their diverse repertoires as part of a system, yet at the same time prescriptively maintain language distinctions, which prevents things like basic vocabulary from diffusing across language boundaries. Basic vocabulary are altered language-internally but not likely diffused cross-linguistically (Haspelmath & Tadmor 2009a), hence body terms remain distinctly language-specific.

Languages are perceived as separate by speakers, yet share a cognitive interdependence (García & Wei 2014), where the languages are not separate systems stored separately in the brain. Instead, they interact collaboratively rather than competitively (de Groot 2011). I used language mode in the ESS as a heuristic device to understand individual and communal perceptions of language boundaries. Eliciting the ESS in language mode makes it clear how speakers control the activation of their languages. Self-corrections and pauses in the ESS reflect participants' adherence to language mode (Auer 1998). If a participant gave a NON-TARGET LANGUAGE response, they might quickly track back to the target language. Likewise, pauses often indicated a searching for the correct word to maintain language mode. When some participants could not recall a lexeme in a non-Vute language mode, they slipped back into Vute and said the Vute name while thinking. They said the name in Vute several times to prime the memory, as if to prime the lexical level of their mental lexicon, an example of Weinreich's subordinative type. It is not the case that Vute (or Gbaya) are dominant in the traditional sense, but as identity languages are used more frequently. Participants default to Vute or Gbaya as a way to prime less frequently used lexemes in languages that are less active. The juxtaposition of languages provides a contextualisation cue (Auer 1998).

Lexemes are more closely stored and with greater overlap for regularly used languages like Vute and Gbaya. In contrast, lexemes are more separately organised with fewer overlaps in languages that are less frequently used or relegated to certain linguistic spaces, such as Mbum and French. Fulfulde comes into the middle of this, regularly used, but less frequently. This becomes apparent in the ethnobiological lexicon, where species are much more frequently named in Vute and Gbaya. While eliciting plant names, 25MV gave names for *Imperata cylindrica* in Vute *mbàdàm* and Gbaya *hỗfí* but did not recall Fulfulde. When prompted with the Fulfulde lexeme *soo'o*, he recognised it. The Fulfulde lexeme is part of his mental network, but not as active as the Vute and Gbaya lexemes. Recall in elicitation tasks differs from actual speech that is rapid and likely has an overall higher activation rate, providing access to a wider range of features. Likewise, ESS participants did not readily name variants, whereas many more appeared in recordings of natural speech. The spontaneity of speech creates a cognitive environment of instantaneous activations.

5.6.6.1 Children

Young children acquire concept-form linkages, but not always the language distinctiveness of the forms at the same time. “In most multilingual acquisition scenarios, speakers rapidly develop a language-neutral mental lexicon where one concept is tied to several forms (Green 1998) (Lüpke 2016b: 43).” The ESS evidences this, where children twelve and younger had the highest NON-TARGET LANGUAGE use. They are very language aware and attempt to keep languages distinct in the ESS, some of them being absolutely adamant about which language they were using. However, they often cross language boundaries, but in patterned ways. They use other languages the most in Vute and Gbaya modes, where they mix the two languages, especially in Vute mode. Their insistence of language mode adherence points to the language-neutrality of the forms, reflecting the frequent use of the two languages and strong connection in their mental lexicons, which are linked to specific languages later in life. Children, over some period of time, acquire this mapping of concept-form-language linkages, enabling them to identify and use language-specific features in line with socially mediated ideologies. Regulation of language modes “requires sensitivity to external input and the capacity for internal direction (Green 1998:68).” As speakers mature, they begin to use more automatic areas of the brain, specifically perceptual and motor areas, and recruit different areas of the brain to manage language interference (Hayakawa & Marian 2019), making lexical choices more refined, specific, and norm-adhering.

Children begin to acquire language-specificity at a very young age. 3MV, when eliciting the ESS in Gbaya, gave French *papillon* for ‘butterfly’ and when asked if that was Gbaya, changed it to *na-papillon*, adding a Gbaya prefix commonly used with insects. These types of lexemes straddle linguistic boundaries (Bailey 2007), accessing features from different languages that are activated in parallel. Some children kept their languages quite distinct in the ESS. For example, one six-year-old boy gave no responses at all rather than using words in other languages if he did not know the word in the target language, as reflected in his high number of NO RESPONSE, which comprise fifty-six percent of primary responses in the four languages in which he participated. He had a higher accuracy than most children and comparatively less instances of NON-TARGET LANGUAGE use. This also highlights the individuality of mental lexicons, where individuals tended to respond similarly across all language modes, reflective of their mental mapping of ethnobiological knowledge.

5.6.6.2 Language mode (non)adherence

The ways ESS participants adhered to language mode bring into question why they allow some NON-TARGET LANGUAGE like Fulfulde *dukuuje* ‘papaya’ and French *haricots* ‘beans’ and not others,

and why language modes differ in their permissibility. Vute and Gbaya modes more readily permit the use of these, as reflected in their overall high use of NON-TARGET LANGUAGE. Table 41 lists the number of species that received responses in NON-TARGET LANGUAGE, given per language used. The use of NON-TARGET LANGUAGE reflects the scalar nature of lexical choices as the number of species named in a NON-TARGET LANGUAGE is scaled differently in each language. Gbaya has the highest number, followed by Vute, French, Fulfulde, and Mbum. The use of Gbaya and Vute as NON-TARGET LANGUAGE is distributed across more species, whereas the use of French and Fulfulde is distributed across less species, yet these two languages have higher NON-TARGET LANGUAGE use overall compared to Vute due to a higher number of participants forming a consensus in their use of French and Fulfulde for specific species. In contrast, fewer participants gave NON-TARGET LANGUAGE for a wider range of species in Gbaya and Vute.

Table 41 Number of species given in NON-TARGET LANGUAGE

NON-TARGET LANGUAGE	Number of species
Gbaya	64
Vute	48
French	26
Fulfulde	10
Mbum	3

In the ESS, several species were named with NON-TARGET LANGUAGE, some of which are additive, existing alongside language-specific lexemes, and others replacive, where language-specific lexemes are not widely known or used. As we have seen, some lexemes like *dukuuje* permeate all languages and it becomes a question whether these terms are a part of the language, an areal root that permeates all languages, even unrelated ones. In the ESS they are coded as NON-TARGET LANGUAGE but the high number of responses and diffusion across the population point to a consensus that they are part of the language. Alternatively, these types of lexemes have powerful activation levels that override language mode adherence. Lexemes with powerful descriptive force cross language boundaries, permeating all languages. One example from a non-ESS elicitation, an aquatic species that covers itself in debris and has a propeller-like way of swimming is said to only be known by the French lexeme *sous-marin* ‘submarine’. Likewise, an ant with a particularly painful bite is simply called by the French lexeme *croquant* ‘biter’.

Table 42 lists species that have ten or more responses in a NON-TARGET LANGUAGE and shows the distribution of those responses across language modes. Vute and Mbum are not listed as they do not act as NON-TARGET LANGUAGE more than ten times for any species. French has the most with nine species. Just three species were named more than ten times in Gbaya and Fulfulde as NON-TARGET LANGUAGE. The table lists the use of Fulfulde *dankalii* and *dukuuje* as a NON-TARGET LANGUAGE in Gbaya as 0. This is due to coding of these as a TARGET RESPONSE in Gbaya since they have been assimilated in the language and no participants gave alternate responses. Ninety-one percent of participants gave *dukuuje* in Gbaya mode and eighty-eight percent gave *dankalii*, while the remainder gave NO RESPONSE. The table highlights lexemes that permeate all languages. In French as a NON-TARGET LANGUAGE, *haricots* 'beans', *ananas* 'pineapple', *papillon* 'butterfly', and *fleur* 'Mexican sunflower' permeate all languages, with *caméléon* 'chameleon' permeating all except Mbum. Four species, *soui-fleur* 'bee eater', *mamba vert* 'green mamba' *martin pêcheur* 'kingfisher', and *hirondelle* 'swallow' permeate only Vute and Gbaya modes and have lower instances of use. In Fulfulde as a NON-TARGET LANGUAGE, *dukuuje* 'papaya' and *dankalii*[33] 'sweet potato' permeate all languages and *ɲaale* 'egret' permeates just Vute and Gbaya. In Gbaya as a NON-TARGET LANGUAGE, no lexical items permeate all languages and responses per species are much lower than those for the top NON-TARGET LANGUAGE responses in French and Fulfulde.

The table reflects language permeability scales, in which Gbaya and Vute modes tend to have higher instances of NON-TARGET LANGUAGE responses per species compared to other language modes. Less consensus exists in Fulfulde, Mbum, and French modes. Gbaya as a NON-TARGET LANGUAGE exemplifies the asymmetric permeability of language modes, in that much higher numbers of participants used Gbaya in Vute mode. As identity languages with frequent use, Gbaya and Vute allow access to a wider pool of features associated with different languages. Their permeability reflects natural linguistic practices where both languages are accessed simultaneously, making it difficult to strictly remain in Vute and Gbaya modes, whereas Fulfulde, French, and Mbum are not as frequently simultaneously activated, making it easier to adhere to language mode. French *haricots* 'beans' was given in Vute mode by three-fourths of participants and in Gbaya mode by two-thirds, even though there exist lexemes in Vute and Gbaya. The ESS elicited ethnobiological knowledge on the spot. When a participant gave French *haricots* for 'beans' in Vute mode, they were not pushed to respond with *dɨ̀*, even though most participants know the language-specific lexeme. Age partly affects language permeability; all of the older participants used French as NON-TARGET LANGUAGE infrequently, as did the three youngest

[33] *Dankalii* originates from Hausa

participants, reflecting the influence of French from school. Children learn the French names of plants and animals in part through songs at school.

Table 42 NON-TARGET LANGUAGE distribution across languages per species

French					
	Language mode				
Species	vut	gba	ful	mbu	Total
haricots 'beans'	28	25	12	4	69
ananas 'pineapple'	18	6	16	4	44
papillon 'butterfly'	19	12	6	1	38
fleur 'sunflower'	4	28	1	2	35
caméléon 'chameleon'	15	10	1	0	26
soui-fleur 'bee eater'	7	10	0	0	17
mamba vert 'green mamba'	5	6	0	0	11
martin pêcheur 'kingfisher'	7	4	0	0	11
hirondelle 'swallow'	5	5	0	0	10
Fulfulde					
	Language mode				
Species	vut	gba	mbu	fra	Total
dukuuje 'papaya'	29	(0)	6	2	37
dankalii 'sweet potato'	9	(0)	10	2	21
ɲaale 'egret'	3	7	0	0	10
Gbaya					
	Language mode				
Species	vut	ful	mbu	fra	Total
dójà 'grasshopper'	14	1	1	0	16
jóò 'hive'	8	2	0	1	11
kóró 'Gabon viper'	8	1	0	1	10

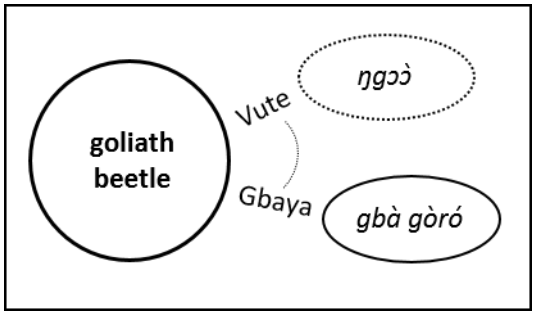
The ESS reflects mental mapping and what is prompted first, representative of activation thresholds. The high salience of Fulfulde *dukuuje* overrides activation of lexemes in other languages. Notably, participants used Fulfulde *dukuuje* 'papaya' across languages, but not French *papaye*. This provides evidence of *dukuuje* as a true areal root, one whose activation overrides language specific lexemes. It has high consensus in Vute and Gbaya and was given by two participants in French mode when *papaye* is also widely known. Similarly, participants chose Fulfulde *dankalii* 'sweet potato' across all languages and did not use French *patate* at all, except in French mode. Notably, more participants used *dankalii* in Gbaya mode (30) than Fulfulde mode (27).

Some of these lexemes are true areal roots and have become assimilated into languages, replacing lexemes or filling a conceptual gap for non-native species, whereas other exist additively alongside other lexemes. The French term *mamba vert* 'green mamba' exists alongside Vute and Gbaya lexemes, *siséné* and *mbí zɔ́*. Just two participants gave the Vute lexeme and ten gave the Gbaya lexeme. The Gbaya lexeme literally means 'green snake'. Gbaya *zɔ́* 'grass' correlates with French *vert* 'green' as 'grass' commonly denotes 'green'. 27MV, trying to adhere to Vute mode, calqued this semantic relationship, giving Vute *ɲṓṓ úndi* 'grass snake'. The use of calquing and the interchangeability of languages reflects heteroglossic practices; speakers not only access language-specific features, but also features that stem from semantic relationships. Participants' mental mapping maintains high activation for these Wanderwörter across all languages. This correlates with the degree of entrenchment (Blommaert & Backus 2011) of these lexemes. Those that are repeatedly used become deeply entrenched, invoking ease of access and activation, making them accessible across languages.

Language systems within the greater cognitive network can engage at different activation levels (Green 1998). A scaling of activation enables lexemes such as Fulfulde *dukuuje* and French *haricots* to have high activation no matter the language mode. Participants engaging in Vute and Gbaya modes exhibit less control, permitting the activation of a wider range of cognitive networks, resulting in higher permeability in these language modes. In contrast, in the other language modes, where participants used less NON-TARGET LANGUAGE, larger parts of mental mapping are deactivated, easing the control required for language mode adherence. Similarly, Taylor (2005) suggests a distinction between excitatory and inhibitory pathways, where shared information rapidly and automatically activates multiple networks and more frequently used and salient lexemes like *dukuuje* have higher "resting activation". Participants may know the Vute lexeme for 'papaya', yet *dukuuje* has a higher activation potential and cognitive networks tend to activate *dukuuje*, especially in Vute and Gbaya modes, thus trumping language-specific lexemes that have lower activation potentials. "Representation of information in memory is distributed, retrieval of a lexical item does not mean the activation of any particular node. Rather, it involves activating an entire pattern of information related to the item, and the patterns representing related words overlap (Taylor 2005: 1779)." Vute and Gbaya modes permit activation of these larger patterns and lessen language-specific control, resulting in the access of features from other language modes, whereas French mode in particular does not invoke the activation of these wider patterns, facilitating language mode adherence. The activation patterns of information is exemplified in the calquing depicted in Figure 34, Figure 35, and Figure 36.

The patterns of activated cognitive networks make some lexemes more readily available than others, and not always in the targeted language mode. Some species were more salient in specific languages, with some only known in one language. ESS participants in Vute mode named 'goliath beetle' only with the Gbaya lexeme *gbà gòró*. No participants gave the Vute lexeme *ŋgɔɔ̀*, instead responded with descriptive phrases. This lexeme was later identified when 62MV consulted with an older Vute man who was not able to participate. Figure 37 depicts the conceptual and lexical cognitive relationship, where the dotted line connecting Vute and Gbaya signifies their permeable relationship and the dotted line circling *ŋgɔɔ̀* signifies its inactivity. Older people could not readily recall the Vute lexeme, although they know it. Vute and Gbaya modes permit higher permeability compared to other modes, meaning speakers access features from both language modes, making it more permissible to use the Gbaya lexeme for 'goliath beetle' in Vute mode. The Gbaya lexeme actually has a higher resting activation and entrenchment, making it more likely that speakers will access that lexeme over the Vute lexeme. In natural speech, speakers access features from Vute and Gbaya language modes interchangeably, accessing features that have high activation.

Figure 37 Goliath beetle mental mapping



For some non-ESS elicitations it would take a few days for a person to recall a lexeme in certain languages or they would have to consult with others to prime their memory. Conferring with others in the ESS and other elicitation tasks evidences the reliance of people on others to activate resting parts of their cognitive networks. In non-ESS elicitation sessions, older people worked together to activate their cognitive networks, accessing terms infrequently or no longer used such as names for thirteen months. When eliciting names of plant specimens in Vute, 62MV at first could only name 'ironwood' (*Vernonia* sp.) in Gbaya, g*bàtí gɔ̀rɔ̀*, and took quite a while to recall Vute *gwja túgwi*. The Gbaya lexeme is the more active form and can easily be used in Vute mode since these two language modes allow reciprocal access. The use of certain

features from both languages is permissible through shared patterning in the mental lexicon. So, some language modes have overlapping patterns, some closer, others distanced.

Not all language modes themselves have the same patterns of activation. Vute and Gbaya modes differed in their permeability to NON-TARGET LANGUAGE for 'Gabon viper', *wùúm* in Vute and *kóró* in Gbaya. Participants did not mix the languages in Gbaya mode, only giving Gbaya *kóró* and no instances of Vute *wùúm*. In Vute mode, participants mixed languages, with nine giving the Vute lexeme and eight giving the Gbaya lexeme. Additionally, participants used the Gbaya lexeme in Fulfulde and Mbum modes. The Gbaya lexeme holds a higher activation potential in the cognitive network. The reason Vute mode in this instance is more permeable to the Gbaya lexeme is attributed to the participants who used Gbaya lexemes in Vute mode. The eight participants comprise associated participants of the core community of practice and 26FGb who tends to give outlying responses. Core community of practice members and associates tend to be those who engage more widely in heteroglossic practices. Their patterns of activation differ from others, in that more of their cognitive networks are activated and accessed, whereas others apply more control.

5.6.7 Competence

The multilingual practices and cognitive complexities discussed in this thesis demonstrate the inapplicability of traditional concepts of competence that focus on fluency in discrete languages. It is not only individuals that shape their multilingual ethnobiological lexicon, but also their shared experiences and perceptions of the natural world. "Eating from the same plate" creates a space in which individuals grow up together, facilitating shared linguistic development and ethnobiological knowledge. The complexity of cognitive control in which speakers in small-scale multilingual settings engage facilitates access to multiplex features as they adeptly move through social and linguistic spaces. A speaker can be quite competent in a language even though they might not have a broad knowledge of the language but through their cognitive mapping flexibly monopolise a small set of features they know well and in a multilingual environment can coordinate these features with the languages they know in depth. The language system continuously adapts to contexts (Lüpke 2016b; Cobbinah et al. 2016) and this is achieved through activation of a language system of multiplex linguistic resources, enabling a process-oriented linguistic competence beyond mainstream concepts of fluency.

We now turn to the influences of multilingualism on ethnobiological classification, as these categorical conceptualisations also help to inform multilingual cognition.

5.6.8 Ethnobiological classification

"Language serves as an organiser of knowledge and there is reason to believe that aspects of language influence categorisation (Ji et al. 2004: 58)."

In line with the conceptualisation of multilingualism in this thesis, ethnobiological classification also must be approached with all languages of a person's repertoire in mind. One cannot understand classification in just one language, as how people organise knowledge about the natural world involves influences from all languages. Ethnobiological lexicons reach beyond simple referential meaning, forming multivariate associations that help to inform multilingual cognition. Classification involves not only socially influenced processes and universal principles, but also a function of cognition (Atran & Medin 2008). Research in Ethnobiology has long focused on classification to understand the ways in which people organise and lexicalise their environment through language and conceptual knowledge. It is a way of scaling the environment, of examining the similarities and differences of species on several levels. "Classifications provide only snapshots of distributed cognition and cultural transmissions embedded in ever-changing natural and social environments. Prototypicality grounds discourse and behaviour amidst this social change (Casagrande 2017: 56)." Prototypical species are seen as the most representative member of a category and all others scaled in comparison; they are often the most salient species and viewed as the 'true' species, while others are scaled in relation to the prototype. Classifications are recursively defined through contrastive sets.

People compare and connect species through the scalar practice of ethnobiological classification by applying perspective that contrasts species based on degrees of encompassment, of sameness and difference. Classification applies different measures of scale based on size and other factors. Different classification schemes apply local, specialised criteria. Classification is a relational procedure, where people perceive representative species, scaled along different dimensions, identifying prototypes and category members. It is a way of framing the environment and the relationships within, while at the same time applying human social relationships to species as a way of organising the natural world. Classification is built from ideologies and multiple perspectives, making it not always standardised and susceptible to change, a rescaling process. Classification involves drawing distinctions and creating scalar hierarchies. The interscalability of classification makes it so each category reinforces the other, forming a system of contrasts.

Classification involving multilingualism reflects the interplay of languages and the cognitive mapping at the conceptual and lexical levels. Multilingual ethnobiological classification forms a gestalt, encompassing a broader range of conceptualisations represented in language as well as those not represented in language. "Languages dissect the world differently (de Groot 2011:

372)," yet the multilingual setting in Nyanjida contributes to a conceptual system reflective of all languages, drawing on many different ways of conceptualising the natural world. In Nyanjida, it comprises a layering of broad classifications such as 'animal', thematic classifications (Ji et al. 2004) that transcend typical taxonomic classifications, cultural classifications passed down through narratives, edibility classifications, and individual and family perspectives. Children learn Vute and Gbaya classification schemes through oral games that connect species to habitats and other distinguishing features. Classifications can be quite localised as well as far-reaching. The perception of hammerhead stork as chief of all birds extends to the Gbaya in the Central African Republic (Roulon-Doko 2008a). Plants are classified on multiple levels, many of which are distinguished along a scale distinguishing qualities of size, utility, habitat, and growth habit. These types of classifications are not always shared across languages, with some qualities lexicalised in specific languages and others not. Cultural and social practices follow classification schemes, such as classifications inherent in cuisine preparation. When grinding roasted groundnuts, the skin is removed for mushrooms and meat, while it is left intact for vegetables such as manioc leaves. These practices reflect ethnobiological knowledge not encoded in language. We know that classifications are not static but change depending on context and perspective, as well as the species being contrasted.

> In broad terms, the Gbaya see the natural world as being divided into two parts–the village (*sààjé*) and the bush (*záŋ bèè*). The bush, in turn, is divided into two main parts, the forested stream valleys, (*kɔ̀ zér*) and the upland wooded savanna (*zán*) between these valleys. For the Gbaya the whole unit as just described is a *kɔ̀ zér*, but the term "*kɔ̀ zér*" can also refer to individual features within the unit such as the stream itself, the forest, or the valley. A Gbaya may say that he is going to wash in the *kɔ̀ zér* (stream) or that the *kɔ̀ zér* (valley) is steep, or that he is cutting down the *kɔ̀ zér* (forest) to make a field. Context indicates the precise meaning in each case. (Burnham 1980: 125)

The ways ethnobiological species and environments are lexicalised differs cross-linguistically. Groups of species are categorised with language-specific lexemes that do not always encompass the same species cross-linguistically and some categories are not named in every language. Data from elicitation of classification partially correlates with Berlin's (1992) universal principles of mutually exclusive hierarchical taxonomies, yet some of the principles do not apply in every language, nor do they account for the complexity of a classification system of multiple languages. For example, the category of 'grass' is referred to as *úndi* in Vute, *zố* in Gbaya, *huɗo* in Fulfulde, *hòì* in Mbum, and *herbes* in French, yet each language-specific classification may differ by which species are included in that category and which species are considered prototypical. The French spoken in the village lacks terms for specific types of grasses. All-

encompassing categories, referred to as 'life-forms' differ cross-linguistically. Vute denotes all animals as *ɲàm*, whereas Gbaya lacks this type of term[34], instead has distinct terms for types of animals, namely *sàɗí*, encompassing vertebrates, especially including those consumed as meat, and *kókóɗó-mɔ̀*, encompassing mostly invertebrates such as insects. In contrast, Vute lacks a term for insects despite being conceptualised as a category. The lack of lexicalisations in combination with the existence of language-specific lexemes and conceptualisations indicates a holistic system that enables speakers to draw on different conceptualisations, whether lexicalised or not. Multilingualism broadens the conceptualisations available to a speaker. Conceptualisations, just like languages, are not compartmentalised in the mind, instead forming language-independent, integrated conceptualisations. Speakers are aware of and use language-specific lexicalisation patterns and these are accessed from an integrated system.

Classification data suggests that classification schemes are complex, involving social, cultural, and linguistic influences. The way one language maps lexemes onto concepts may have a semantic influence on other languages, a semantic accent (de Groot 2011). This evidences the gestalt system in which languages are activated simultaneously, enabling cross-linguistic influences. An additive dimension to named classification categories involves classification schemes that transcend languages and typical classifications like 'grass'. This involves calquing of one concept or relationship across languages. For example, one ESS participant extended the term for an *Aframomum* species in Fulfulde, *citta boɗeeje*, literally 'sweet pepper' to two responses in Mbum, using a mix of Fulfulde *sì ɓáŋ* 'pepper-like' and terms for the plant's habitat in Mbum, *hól* 'forest' and *làŋgàú* 'savanna'. Peppers and *Aframomum* species are not formally classified together, yet similarities in taste are signified lexically in Fulfulde and this relationship is calqued into other languages such as Mbum. The relationship is also lexicalised in Vute or Gbaya, leaving a semantic accent. The relationship of 'papaya' and 'custard apple' based on fruit-resemblance also transcends typical classification boundaries, where the classification scheme of Fulfulde is applied across other languages through calquing. The Fulfulde term for 'papaya' *dukuuje* extends to 'custard apple' as *dukuuje laɗɗe*, literally 'bush papaya'. The conceptualisation is then calqued to Vute as *dùkúúdʒè káŋnè* 'bush papaya', to Mbum as *dùkúúdʒè* hói 'forest papaya', and even to French as *papaye sauvage* 'wild papaya'. Relationships that transcend regular classification patterns only become apparent through cross-linguistic analysis.

[34] It is quite common cross-linguistically to not have life-form terms such as 'animal' or 'plant'.

5.6.8.1 Shared conceptualisations

There exists a classification scheme involving 'male' and 'female' plants that applies cross-linguistically and perhaps regionally, as I also documented it for Wawa speakers near Banyo (field notes, 2011). This conceptualisation of plants forms a shared belief system not bounded by discrete languages. Plant species are distinguished lexically as 'male' or 'female' based on physical characteristics and habitat. 'Female' plants tend to grow in wetter areas, have larger physical features, and tend to have red flowers, while 'male' plants tend to grow in drier areas and have smaller features. The distinguishing features are often subtle. Some of the distinctions correlate with western genus or species distinctions, while others straddle typical classification boundaries, forming semantic relationships based on physical resemblance. These often comprise covert categories that are not named. The sets usually have a prototypical species and all others scaled in comparison based on recursive category perceptions.

Multilingualism functions as a resource for filling in cognitive gaps, an additive dimension to language-specific conceptualisations. Ethnobiologists label classifications that do not fall into regular paradigms as intermediate classifications. One such example, the French term *fleur* 'flower' denotes any new or unknown flowering plant[35]. It has become a unique categorisation strategy across languages and does not refer to a specific species. Speakers have borrowed the French term and integrated it into their classification scheme. ESS participants applied this term to a ubiquitous invasive sunflower species that grows along roadsides throughout Cameroon, *Tithonia diversifolia*. The term permeates all language modes as no language has a specific term for this species. Participants also applied *fleur* to many different species, especially in their less-used languages. Notably, it is used more in language modes other than French.

Classifications that are not lexicalised are referred to as covert categories, classifications that can be shown to group together through methods such as pile sorts, a research method used in Ethnobiology to determine classifications by asking participants to sort species images. In multilingual settings, covert categories are also revealed through cross-linguistic analysis. For example, the category 'insects' is named in Gbaya but not Vute. The ethnobiological conceptual and relational system of a species may not be coded in certain lexical items of one language but may come through by examining other languages of a person's repertoire or by examining contrasting terminologies of different age groups. For example, 'praying mantis' in Vute is generally called nɨ̋ŋgɨ̏ŋ ((33) below) by adults and *jà ɲɔ̋ɔ̋ne* ((32) below), literally meaning 'mother of snake', by children and younger adults. This second term imparts information about the conceptual system of the relationship between 'snake' and 'praying mantis', reiterated

[35] Wawa speakers near Banyo also use *fleur* (fieldnotes, 2011).

through stories. During the elicitation of the ESS in French, several participants gave the calque *mère de serpent* ‘mother of snake’ ((34) below), again reifying the conceptual relationship amongst the two species. A similar example comes from variation in naming of ‘moth’ in Vute. Older adults refer to it as *ndʒandʒi* ((36) below), while children and young adults generally call it *jà ndʒane* ((35) below), literally meaning ‘mother of monkey’, reflecting the moth’s grey fuzziness resembling *ndʒane* ‘tantalus monkey’. Both terms denote the relationship, differing morphologically. Some participants calqued the latter term in French, calling it *mère de singe* ‘mother of monkey’ ((37) below). In general, the lexemes of older adults do not communicate information about species’ relationships having lost historical indexicality, whereas the transparent complex lexemes given by children and younger adults do.

(32)	*jà*	*ɲő̋ő̋ne*		(33)	nɨ̋-ŋgɨ̏ŋ
	mother	snake			CL-praying.mantis
	‘praying mantis’				‘praying mantis’

(34)	*mère*	*de*	*serpent*
	mother	of	snake
	‘praying mantis’		

(35)	*jà*	*ndʒane*		(36)	*ndʒan-dʒi*
	mother	tantalus.monkey			moth-?
	‘moth’				‘moth’

(37)	*mère*	*de*	*singe*
	mother	of	monkey
	‘moth’		

5.6.8.2 Children

Children’s classification schemes differ from adults. They learn and reify inherent classifications through childhood games, such as naming species based on habitats or generic categories like ‘bird’. In the ESS, children would select a term for a species and categorically apply it to other species based on certain criteria. It was not uncommon to cross language boundaries in selecting these categorical terms. Children applied an intermediate classification based on size, such as any large bird or any large animal. They also categorised species that *trompe les enfants*, a grouping of animals and plants that scare children and come into their dreams, such as praying mantis and stick insects. If a child did not know a species’ name in Vute, they often gave *ɲəm*, a GENERAL CATEGORY equivalent to ‘animal’.

It was common for young children to categorise animals into a 'large animal category' or choose several species' names and divide species among them. 7FV categorised all monkeys into two Vute categories, *luku* and *ndʒane*, names for two specific species. She also borrowed French *papillon* 'butterfly' to apply to any winged insect. The salient French term is more applicable since language-specific lexemes for 'butterfly' are less widely known. Very young children tend to categorise unknown large animals as *ginnaadʒi*, a Fulfulde term meaning 'fool' and apply this term cross-linguistically.

Often, a culturally salient species is generalised to all other similar species. In Gbaya, *gbà gɔ́k* 'python', literally 'big snake', is highly culturally salient and its name was often extended to any large snake species. Similarly, children lump any large birds into one category named after the iconic 'hammerhead stork', a well-known bird species living adjacent to the village. Children will also group all insects with the general name for grasshopper, a highly culturally salient insect. Children generalised *ndʒàá* 'buffalo' and *ndʒù* 'elephant' into one category *ndʒàá*.

Their classification schemes reflect their perspectives as they learn to organise and scale their environments, creating more connections and activation potentials in their cognitive mapping. As they develop, children shift from thematic classifications to taxonomic classifications. They acquire templatic constructions, often involving classification or specifications of the species, then later master the component concepts. For example, 3MV named 'palm tree' in Vute as *siŋ bɨ́ɨ́r*, in which *siŋ* denotes 'stalk', a categorical lexeme applied to certain tall species like 'palm'. Other participants varied in their use of *siŋ*, many omitting it, reflective of their knowledge of its categorical use and ability to extract the component concepts.

This section has given a brief overview of the complexity of multilingual ethnobiological classification. Classifications were not elicited in detail in each language and much remains to be understood about the interactions of languages in forming the conceptual and lexical aspects of such a complex classification system.

5.6.9 Conclusion

The conceptualisation of multilingual cognition as a gestalt system informs the interactions of languages and the inextricable link of languages and ethnobiological knowledge. These complex relationships and the multivariate social factors involved maintain linguistic diversity and language vitality, to which I now turn, as they are important topics for understanding small-scale multilingual settings.

5.7 Multilingualism, lexical variation, ethnobiology, and language vitality

For many decades now linguists have been raising concerns on the endangerment of the world's languages, heightening the cause to language documentation. Language endangerment discourse concerning small-scale multilingual settings requires conceptualisations beyond discussions of discrete languages. "Multilingualism goes hand in hand with very small language size (Singer & Harris 2016: 165)." This statement aptly applies to Cameroon where many local languages exist as part of extensive linguistic repertoires. One of the intentions of this thesis and research is to exemplify the essentiality of understanding the language ecologies in which these vulnerable languages co-exist and to apply ethnographic and better-informed sociolinguistic methods in understanding the complex social situations in which these languages function. There exists a need to better understand sociolinguistic practices in these types of small-scale multilingual settings in a wide range of contexts to best understand the diversity of these settings across Cameroon and beyond. Di Carlo et al. (2019) suggest that social patterns are more vulnerable than the languages themselves, making it important to understand the social mechanisms in these settings. Others also stress social practices as nurturing linguistic diversity (Lüpke and Storch 2013) and that the practices that create multilingualism also maintain it (Lüpke 2018a). A combination of a feature-based approach and assessment of social factors rather than just discrete languages better informs language endangerment. Lüpke (2010c) stresses the need for more documentation on the world's languages and improved heuristics for assessing language endangerment as well as questioning assumptions about pre-established cross-linguistic categories, terms, and theoretical approaches that influence claims as linking rarity of features to endangered languages. She also stresses that "their features, whatever this is meant to signify, should always be regarded as endangered (Lüpke 2010c: 138)." Many languages throughout Cameroon are vulnerable to language loss due to their small size and even larger languages like Fulfulde have dialects and registers often overlooked in language documentation due to their perception as a widely spoken language (Lüpke & Storch 2013).

The type of setting in Nyanjida proves difficult to gauge language endangerment with the diversity and asymmetry of people's linguistic repertoires. The continuum of dialects in this region of Cameroon adds to complications of assessing vulnerability. For example, in Nyanjida, nearly everyone uses the Vute term *ŋɨ̀r-ma* 'gorilla', whereas those in Yoko tend to omit the noun class suffix *-ma*. Likewise, speakers of the dialect in Nyanjida use a noun class prefix in *mɨ-mèé* 'catepillar', whereas those in Yoko omit it. Another added dimension involves determining whether age differences are a result of simply age differences or actual language endangerment, especially in Vute, where multiple tiers of language acquisition exist and as people get into their thirties and forties, they gain more linguistic knowledge, paralleling the Vute belief that males

are not considered fully mature until around age twenty-eight. A staged elicitation task like the ESS could be misleading in that a person might not be good at recall or the timing of the elicitation was not conducive. However, it gave a broad overview of generalisations with some insights into parts of languages that might be vulnerable. The ESS informed language and feature vulnerability. It helped to rank the vulnerability of the terminology of certain species. Ranking species by TARGET RESPONSE and analysing each language was informative for assessing language endangerment in Vute and Gbaya since they are the most frequently used languages in the village. However, it was not as useful for analysing endangerment in other languages, since they operate at a different level in people's repertoires. Species that ranked high for TARGET RESPONSE are less likely to be lost in a language due to their frequent use, high salience, and utility. For example, Gbaya *gbà gɔ́k* 'python' was given by ninety-four percent of participants and its salience is reflected in its cross-linguistic use. In contrast, the Vute term, *mjàándùú* ranks much lower, with only seventy-four percent of participants giving the TARGET RESPONSE. This points to a vulnerability of *mjàándùú*, but not necessarily to language loss, as Vute and Gbaya have permeable language boundaries in which the use of Gbaya *gbà gɔ́k* in Vute is additive, not replacive.

Table 43 shows the ranking of species based on the top ten TARGET RESPONSE in each language mode and written in English for ease of comparison. Excluding 'elephant' all species have high salience and utility throughout the village. Groundnuts have particularly high salience and utility; all participants named 'groundnut' in Vute and Mbum, ninety-three percent of participants in French, ninety percent in Fulfulde, and eighty-eight in Gbaya. Four species placed in the top ten for all languages: 'chicken', 'cow', 'maize', and 'pepper'.

Table 43 Ranking species by highest number of TARGET RESPONSE

	Language				
Rank	Vute	Gbaya	Fulfulde	Mbum	French
1	groundnut	chicken	papaya	groundnut	groundnut
2	maize	pepper	groundnut	yam	pepper
3	chicken	maize	sweet potato	dog	maize
4	mushroom	dog	cow	maize	dog
5	pepper	cow	chicken	mushroom	cow
6	shrimp	egg	yam	donkey	pineapple
7	yam	coop	pepper	cow	chicken
8	mouse	hibiscus	maize	chicken	beans
9	cow	hibiscus	donkey	pepper	yam
10	coop	python	okra	elephant	sweet potato

At the other end of the response spectrum are species which had few responses, often specialised lexemes known by a few participants. Species that ranked low for TARGET RESPONSE are vulnerable to loss in a language. Vute had one species with zero TARGET RESPONSE, 'goliath beetle'. Participants instead gave NON-TARGET WORD, DESCRIPTION, or the name in Gbaya. In contrast, participants named 'goliath beetle' in Gbaya, Fulfulde, and Mbum language modes. This leads one to believe that the lexical item has been lost or is known by very few but can only be confirmed through a larger sample size. Vute had thirty-four species with less than ten TARGET RESPONSE and Gbaya had twenty-four. These low numbers show that a select number of individuals have knowledge of the language-specific vocabulary for these species. In Vute mode, one participant gave the name for 'sunbird' and only two participants gave the names for 'green mamba' and 'papaya'. Each species had many NON-TARGET RESPONSE, including the NON-TARGET LANGUAGE use of French for 'sunbird' and 'green mamba' and Fulfulde for 'papaya'. In Gbaya mode, one participant gave the language-specific lexeme for 'colobus monkey' and two participants each for 'king fisher', 'sunbird', and 'cicada'. Participants instead gave NON-TARGET RESPONSE, including the use of French for 'king fisher' and 'sunbird'. The differences in naming for specialised nomenclature like Vute *bwarɨp* 'cocoon' reflect distance in cultural salience; an object such as a cocoon does not feature prominently in everyday life or conversations, whereas *ndű* 'red pepper' has a high consensus in naming. Species that are not commonly talked about, do not have cultural salience, or lack general utility are vulnerable and more prone to language loss. Borrowed terms, such as Fulfulde *dukuudʒi* 'papaya', saturate all languages in a person's repertoire and when just a few know the language-specific lexemes, they become less and less used until several generations pass and the lexeme is no longer remembered by anyone. In Vute and Gbaya there exists a loss of nomenclature for specific species, which in time become grouped under one name. The ESS showed that only a few older adults provided types of bats in Vute, including *gàì-dʒɨ̀rí*, *mbándɨ́b*, and *mgbər*, whereas nearly everyone else gave one general term *liím* to encompass any kind of 'bat'. The nomenclature for partonyms are also vulnerable in Vute. Only older adults gave the name for 'porcupine quill' in Vute, while all others did not know it. The names for animal and insect homes also showed stark differences across the age spectrum. The complexity and use of variation also complicate assessment of a language's vulnerability. In the ESS several species were often not named, rather most participants used a borrowed term and often these borrowed terms permeated all languages. For example, only two male adults ages fifty and sixty-two gave the Vute name *tòrò* 'papaya', whereas everyone else gave *dukuudʒi*, borrowed from Fulfulde. Their cognitive salience makes them more available to speakers who also know the language-specific lexemes but those have less cognitive salience. These types of vulnerabilities, where lexemes are known by only a few speakers, prove complex to assess how far they are on the spectrum of language loss, as it is normal for these lexemes to

not be known widely, making it difficult to draw a neat line delineating vulnerability versus loss. Many of these lexemes that permeate all languages are simply additive, invoking a reconfiguration of the cognitive language system as a whole, which does not necessarily lead to language loss.

Thwing & Thwing (1979) state that many Vute villages in the Adamawa region have been "Fulani-ised" and that younger generations only speak Fulfulde. This was not the case in Nyanjida and the results of the ESS show otherwise, where speakers use Fulfulde alongside Vute and other languages. When speakers engage in heteroglossic practices they cross language boundaries and access features from multiple languages. Language change is apparent in Vute as old practices are abandoned and generations differ in their ways of speaking. Vute comprises terms relating to war, reflective of their war practices before the arrival of the Germans (Siran 1980). This formed a large part of their culture, the memory of which has been erased by current generations who promote peaceful practices. Their social and cultural changes have invoked a change in lexicon, where lexemes relating to war are no longer used. Thwing (1987) mentions several language change phenomena involving simplification, both phonological and grammatical, that point to language change and possibly endangerment. She discusses language change in which the distinction between [o] and [ɔ] is falling out of use. Guarisma (1978) also mentions that one of her assistants did not distinguish the two sounds. Thwing (1987: 13) gives another example of old speakers having more phonological distinctions, where some speakers vary in their use of [l] and [r] in final position, such as *ŋgár* and *ŋgál* 'hand'. She gives another example of age variation in one type of Vute plural, where the medial vowel is lengthened and the final consonant dropped before adding plural *-b*, such as bɨ́r → *bɨ́ɨ́b* 'oil palm' (Thwing 1987: 32). Older speakers add an *h* between the lengthened vowels, whereas younger speakers do not.

One of the things at stake for language endangerment is knowledge and awareness of generational language change for small-scale multilingual settings. The ESS helped to identify some of those categories. For the majority of the world's languages we do not have records of this, especially not for longitudinal studies across multiple generations. This proves difficult to document with the intensity of small-scale multilingual settings. The core community of practice identified in this thesis presents a group of young males that explores language boundaries, accesses and creates variation, and manipulates language. Their flexibility provides a way to understand and master language practices and transition into ways of speaking associated with mature and respected speakers. Their positions are linked to older associated participants, several of which are considered specialised knowledge keepers. Their link to younger associated participants and the emerging community of practice reflects these younger speakers' transitioning and navigation of social and linguistic practices. The ESS showed that specialised

lexical knowledge in Nyanjida lies with a few older people. Elicitation of 'worm' reflects this, as the three oldest male participants, ages sixty-two, sixty, and fifty gave Vute *soŋne*, along with two other male associated participants, ages thirty-three and twenty-nine, and two core community of practice members. All others employed a borrowed term, as was also the case in Gbaya, excepting two males who gave *sə̃sə̃-pèŋ*, 62MV and his son 33MV. The simplex lexeme *jàá*, designating a snake species, *Typhlops punctatus*, was given by just four participants in Vute, all males, ages sixty-two, sixty, thirty-three, and twenty-seven. All other participants who responded gave the descriptive phrase *njə̋ə̋ ŋgwéjam* 'headless snake' reflecting the snake's physical appearance. The five older male associated participants often correlated in their responses to specialised terminology in the ESS and at times correlate with 50FV, core community of practice members, the emerging members, and 10FV who spends most of her time with her grandparents. These associations between people transmit certain types of knowledge that is relegated to just a few members of the village. Species with low salience and utility like 'moth' are often not named or only know by a few individuals. ESS data revealed two variants for 'moth' in Vute, *ndʒandʒi* and (*jà) ndʒane*. The first variant is a morphologically related to *ndʒane* 'tantalus monkey', reflecting their similar grey hair. The second, literally meaning 'mother of monkey' reflects the two species' emic classification. Both variants were given by few participants and each is packaged with categorical information. Participants who gave *ndʒandʒi* are the three oldest males, ages sixty-two, sixty, and fifty, along with two of their sons, ages twenty and twenty-nine. The five participants who gave (*jà) ndʒane* range in ages fifteen to twenty-seven. This distribution of variation exemplifies that lexical knowledge can be held by just a few select individuals in a community.

These examples highlight the complexity of understanding language endangerment in small-scale multilingual settings like Nyanjida, where it is imperative to document linguistic variation across a community and give an in-depth documentation of the linguistic ecologies and social structures at play. Viewing languages as bounded, autonomous systems reduces diversity and clouds assessments of language vitality. On the other hand, viewing languages as unbounded, fluid systems enhances diversity, subsuming not only socioculturally constructed languages, but the boundaries between. With this view in mind, understanding linguistic ecologies and sociolinguistic factors involved in small-scale multilingualism will help us to better understand linguistic diversity and language vitality in these settings.

6 Conclusion

6.1 Research summary

This thesis is a culmination of research questions that arose from my first fieldwork in Cameroon examining the relationship of ethnobotanical knowledge and language endangerment, where I realised that understanding language vitality and vulnerability requires a holistic approach examining sociolinguistic factors and all languages in an individual's repertoire and that ethnobotanical knowledge must be expanded to include all biota, and even wider still to ecological knowledge. The research for this thesis provides a snapshot in time of some of these processes to understand the significance of multilingualism and lexical variation in the ethnobiological lexicon.

The small-scale multilingual setting in Nyanjida exemplifies Frontier processes on many levels, fostering the fluidity of multiple identities, ideologies, language, and associations–all stemming from historical processes that induced constant change and adaptability, requiring scalar movements in and across spaces. The historical importance and reliance of forming alliances is reflected today in language as the lexicon indexes alliances and affiliations. These processes construct multi-layered linguistic and social boundaries, the permeability and rigidity of which depends on multivariate factors. Multilingualism and lexical variation reflect this flexibility, expanding the choices available to speakers as they position in ever changing spaces. This thesis takes the stance of language as social practice, analysing how multilingualism and lexical variation reflect social differentiation by indexing characteristics, experiences, and associations. Multilingualism equips speakers with a range of resources and concepts to be accessed no matter the language. Code-mixing and crossing are pervasive, normal practices, facilitating the breadth of speakers' lexical choices. Monolingual mode is non-existent. Rather, speakers access features from all languages in their repertoire, activating multiple languages simultaneously as a whole system.

The multilingual ethnobiological lexicon was analysed through the use of an ESS to elicit species names in five common languages in Nyanjida. Language mode was employed as a heuristic to understand multilingual language practices as a whole system, a process beyond discrete languages, but also showing how participants conceptualise language boundaries. The analysis of primary responses shows that overall, participants committed to language mode, choosing to give NO REPSONSE far more than NON-TARGET RESPONSE. Most participants showed high accuracy in their responses, meaning they generally gave more TARGET RESPONSE compared to NON-TARGET RESPONSE. Analysis of secondary responses shows that participants used NON-TARGET WORD the most, followed by NON-TARGET LANGUAGE and GENERAL CATEGORY, with few DESCRIPTION. All the

secondary responses except of course NON-TARGET LANGUAGE act as tools to remain in language mode. Charting NON-TARGET WORD shows a clear delineation that marks age ten as when children start to use less of this category as they gain knowledge of referent-lexeme relationships. Most NON-TARGET LANGUAGE use occurred in Vute and Gbaya modes, much less in Fulfulde and Mbum, and very few in French mode, meaning participants in Vute and Gbaya mode accessed more of their linguistic repertoires, whereas Fulfulde, Mbum, and French modes have much stricter boundaries. French and Gbaya were the most used NON-TARGET LANGUAGE, followed by Fulfulde and Vute, and negligible instances in Mbum. Participants accessed NON-TARGET LANGUAGE asymmetrically across language modes. Vute mode has the most NON-TARGET LANGUAGE, yet as a NON-TARGET LANGUAGE, has low use in all language modes except French. French occurs the most as a NON-TARGET LANGUAGE, yet very little NON-TARGET LANGUAGE use occurs in French mode. Gbaya, as the second-most used NON-TARGET LANGUAGE, comprises half of NON-TARGET LANGUAGE use in Vute mode and about one quarter in all other language modes.

Analysis of the ESS offers a glimpse into the interaction of languages, the accessing of linguistic repertoires through heteroglossic practices, and the multivariate factors influencing speakers' choices within their ethnobiological lexicon. Participants move in and out of language modes often in patterned ways. The ESS shows how multilingualism both facilitates and hinders lexical borrowing. It also demonstrates that language use and lexical variation exhibit patterns attributable not only to traditional variables such as age and gender but that incorporating qualitative analysis reveals multivariate factors beyond traditional variables, some of which carry complex social meaning involving indexical orders on several levels. Analysis categories were not predetermined, instead were deduced from the data itself, as it was "important to focus on how individual repertoires are tied to specific life histories rather than to assume that groups that are salient to the outside researcher are the relevant units of analysis (Di Carlo et al. 2019: 2)." Personally knowing each ESS participant contributed to the qualitative analysis, making it so that their types of responses often became patterned and predictable, reflective of their individuality or associations with others. Linguistic and ethnobiological knowledge reflect an individual's life experiences. Idiosyncratic ESS responses were often easily linked to an individual's background or personal characteristics through qualitative analysis. Certain participants tended to rank similarly across language modes, reflective of their individual repertoires and cognitive mapping.

Shared responses reveal a core community of practice comprised of five young males whose responses often align with various associated participants and a younger emerging community of practice. These alignments are built on shared orientations, of ways of framing distinctions in the natural world. The core community of practice and associated participants became clearly apparent in analysis of Vute responses and lexical variation, and less so in Gbaya, a reflection of

their shared identities and experiences. Participants' responses comprise first- and second-order indices as they index not only affiliations and group membership, but more so characteristics, creating distinctions that position individuals and groups within micro Frontier processes setting them apart from the larger community as a whole while also aligning at times with specific individuals. These processes overlap, instituting a fluidity of adaptable alignments.

Lexical variation exemplifies the ways of framing and reframing ethnobiological knowledge through language and analysis thereof shows that particular participants tend to employ lexical variants. The core community of practice and associated participants are those most likely to give lexical variants and often give the marked variant. Variation occurred the most in Vute and Gbaya, with just a few in French, and no variation was given in Fulfulde and Mbum. The ESS has its benefits and drawbacks as an unnatural elicitation task. It only captured a segment of lexical variation, whereas in actual practice speakers readily access variation. Several variants exhibit iconicity, becoming emblematic of the core community of practice, reflecting their transitional position between older and younger generations as they maintain their shared experiences from growing up together.

Multilingual practices and the use of lexical variation involve a significant amount of cognitive control and the activation of languages is exemplified in ESS responses. Looking at language through the lens of activation allows us to go beyond traditional labels such as L1 and L2 to capture the complexity of language interaction in multilingual cognition. Speakers can know only a portion of a language and still have the ability to monopolise a small set of features in a multilingual setting, facilitated by heteroglossic practices. Speakers not only use language-specific features, but also linguistic forms not associated with any particular language, transcending beyond language boundaries and reflecting the simultaneous activation of languages. This is also reflected in the ways in which languages influence each other. Analysing the ethnobiological lexicon in all languages of an individual's linguistic repertoire offers a much broader picture of a multilingual's mind and gives a clear understanding of ethnobiological conceptualisations and classifications as a whole system. The complexities of linguistic repertoires spanning multiple languages, dialects, registers, and styles, along with multivariate social factors and metalinguistic and metapragmatic awareness in small-scale multilingual settings has much to inform multilingual cognitive research, showing that these processes act as a whole system, integrating all aspects of cognitive mapping, even beyond language networks.

This thesis navigates ideologies on many levels, those of the ESS participants as well as my own. In a way it is rife with contradictions, exploiting ideologies of separate languages while also promoting languages as part of a whole, integrated system, and at the same time disentangling speaker's ideologies of discrete languages from their actual linguistic practices. My academic

ideologies on multilingualism were constantly reconceptualised to aptly understand and capture the setting in Nyanjida. Scale and perspective played a constant role as I analysed and reanalysed data, scaling and rescaling to navigate my own and local ideologies.

This thesis provides a snapshot of multilingual ethnobiological knowledge of one moment in time, an inventory documenting the dynamic process of constant change. The ethnobiological lexicon not only directly references species, but also encodes an indexical field of potential inferences, of relationships, individual and group characteristics, ethnic affiliations, and ideologies. This dynamicity and multiplicity of the multilingual setting in Nyanjida embodies the inextricable link of language and ethnobiological knowledge.

6.2 Further research

The research for this thesis created more questions than answers, opening up possibilities for further research. The inextricable link between language and ethnobiological knowledge, especially in small-scale multilingual settings, has much to inform both Linguistics and Ethnobiology. The scope of this thesis could be up scaled to cover a wider range of research questions, such as a more detailed analysis of multilingual ethnobiological classification systems. This research just skims the surface of understanding multilingualism in this area of Cameroon. As other researchers (Lüpke 2010a; Di Carlo 2016) point out, long-term studies with interdisciplinary teams would ideally offer a more complete understanding, especially in analysing natural language interactions. The complexity of these types of multilingual situations requires detailed, local-specific research agendas and Africa-based research centres (Childs et al. 2014). Multilingual cognitive research should widen its scope to investigate this type of multilingualism that is so understudied world-wide yet so common, as these settings have much to inform. Rural settings like Nyanjida comprise an inextricable link of language and ethnobiological knowledge, making it imperative that language documentation thereof should include more ethnobiological documentation, as people in these settings depend on ethnoecological knowledge on a daily basis. As development increases in countries like Cameroon, this knowledge becomes vulnerable, prompting the urgency of documenting the complex relationships of language and ethnobiological knowledge.

References

Abutalebi, Jubin & David W. Green. 2016. Neuroimaging of language control in bilinguals: neural adaptation and reserve. *Bilingualism: Language and Cognition* 19(04). 689–698.

Adichie, Chimamanda N. 2007. *Half of a Yellow Sun.* London: Harper Perennial.

Aikhenvald, Alexandra Y. 2002. Traditional multilingualism and language endangerment. In David Bradley & Maya Bradley (eds.), *Language maintenance for endangered languages: An active approach*, 24–33. London: Curzon Press.

Aikhenvald, Alexandra Y. 2007. Grammars in contact: a cross-linguistic perspective. In Alexandra Y. Aikhenvald & Robert M. W. Dixon (eds.), *Grammars in Contact: A Crosslinguistic Typology*, 1–66. Oxford: Oxford University Press.

Arbonnier, Michel. 2009. *Arbres, Arbustes et Lianes des Zones Seches d'Afrique de l'Ouest.* Paris: Éditions Quae.

Atanga, Lem L. 2014. New perspectives on multilingualism workshop. Bamenda, Cameroon.

Atran, Scott & Douglas, L. Medin. 2008. *The Native Mind and the Cultural Construction of Nature.* Cambridge, Mass: The MIT Press.

Attia, Lilian M. 2006. *Degree of language endangerment and perspective of revitalization: the case of Vute-Banyo*. : University of Yaoundé I Masters.

Auer, Peter. 1998. *From code-switching via language mixing to fused lects: toward a dynamic typology of bilingual speech.* Freiburg.

Auer, Peter. 2006. Sociolinguistic crossing. In E. K. Brown & Anne Anderson (eds.), *The Encyclopedia of Language & Linguistics*, 2nd edn., 490–492. Amsterdam, Boston: Elsevier.

Auer, Peter. 2007. The monolingual bias in bilingual research, or: why bilingual talk is (still) a challenge for linguistics. In Monica Heller (ed.), *Bilingualism: A Social Approach* (Palgrave advances in linguistics), 319–339. Basingstoke [England], New York: Palgrave Macmillan.

Awagana, Ari, Ekkehard Wolff & Doris Löhr. 2009. Loanwords in Hausa, a Chadic language in West Africa. In Martin Haspelmath & Uri Tadmor (eds.), *Loanwords in the World's Languages*, 142–165. Berlin, New York: Walter de Gruyter.

Bailey, Benjamin. 2007. Heteroglossia and boundaries. In Monica Heller (ed.), *Bilingualism: A Social Approach* (Palgrave advances in linguistics), 257–274. Basingstoke [England], New York: Palgrave Macmillan.

Bakhtin, Mikhail. 1981. *The Dialogic Imagination.* Austin: University of Austin Press.

Balée, William & Denny Moore. 1989. Similarity and variation in plant names in five Tupi-Guarani languages (Eastern Amazonia). *Journal of Ethnobiology* 9(1). 1–24.

Barth, Fredrik. 1969. Introduction. In Fredrik Barth (ed.), *Ethnic Groups and Boundaries*, 9–39. London: Allen & Unwin.

Berg, Ilyssa. 2004. *Plant medicinal use and lexical variation within the folk classification system of the Highland Maya of Chiapas, Mexico*. Athens, Georgia: University of Georgia PhD.

Berlin, Brent. 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies.* Princeton, NJ: Princeton University Press.

Beyer, Klaus. 2010. Language contact and change: a look at social factors in an African rural environment. In Friederike Lüpke & Mary Chambers (eds.), *Multilingualism and Language Contact in West Africa: Towards a Holistic Perspective* (THEMA 3), 131–152.

Beyer, Klaus & Henning Schreiber. 2013. Intermingling speech groups: morphosyntactic outcomes of language contact in a linguistic area in Burkina Faso (West Africa). In Isabelle Léglise & Claudine Chamoreau (eds.), *The Interplay of Variation and Change in Contact Settings*, 107–136. Amsterdam/Philadelphia: John Benjamins.

Bialystok, Ellen, Michelle M. Martin & Mythili Viswanathan. 2005. Bilingualism across the lifespan: The rise and fall of inhibitory control. *International Journal of Bilingualism* 9. 109–119.

Blommaert, Jan. 2011. Small print: reflections on multilingual literacies in the global south. *Compare: a Journal of Comparative and International Education* 41(2). 293–299.

Blommaert, Jan & Ad Backus. 2011. Repertoires revisited: 'knowing language' in superdiversity. London: King's College. *Working Papers in Urban Language & Literacies* 67.

Blommaert, Jan, James Collins & Stef Slembrouck. 2005. Spaces of multilingualism. *Language & Communication* 25(3). 197–216.

Blommaert, Jan & Ben Rampton. 2011. Language and superdiversity. In Jan Blommaert, Ben Rampton & Massimiliano Spotti (eds.), *Language and Superdiversities* (13), 1–22.

Bobb, Susan C. & Judith F. Kroll. 2018. Words on the brain: the bilingual mental lexicon. In David Miller, Faith Bayram, Jason Rothman & Ludovica Serratrice (eds.), *Bilingual Cognition and Language: The state of the Science Across its Subfields* (Studies in Bilingualism 54), 307–324. Amsterdam: John Benjamins.

Boorman, John. 1981. *West African Insects.* Essex, UK: Longman Group Ltd.

Bourdieu, Pierre. 1991. *Language and Symbolic Power.* Cambridge: Harvard University Press.

Bucholtz, Mary & Kira Hall. 2009. Language and identity. In Alessandro Duranti (ed.), *A Companion to Linguistic Anthropology* (Blackwell Companions to Anthropology), 369–394. Oxford: Blackwell.

Burnham, Philip. 1980. *Opportunity and constraint in a savanna society: the Gbaya of Meiganga, Cameroon.* London: Academic Press.

Burnham, Philip. 1996. *The Politics of Cultural Difference in Northern Cameroon.* Washington, D.C.: Smithsonian Institution Press.

Cannon, Janell. 1993. *Stellaluna.* Boston: Harcourt.

Cansdale, George S. 1961. *West African Snakes* (West African Nature Handbooks). Longmans, Green and Co. Ltd.

Carr, Summerson & Michael Lempert. 2016a. Introduction: pragmatics of scale. In Summerson E. Carr & Michael Lempert (eds.), *Scale: Discourse and Dimensions of Social Life*, 1–24. Oakland, California: University of California Press.

Carr, Summerson E. & Michael Lempert (eds.). 2016b. *Scale: Discourse and Dimensions of Social Life.* Oakland, California: University of California Press.

Casagrande, David G. 2004. Ethnobiology lives!: Theory, collaboration, and possibilities for the study of folk biologies. *Reviews in Anthropology* 33. 351–370.

Casagrande, David G. 2017. Ethnoscientific implications of classification as a sociocultural process. In Helen Kopnina & Eleanor Shoreman-Ouimet (eds.), *Handbook of Environmental Anthropology* (Routledge International Handbooks), 55–68. London, New York: Routledge.

Childs, G. T., Jeff Good & Alice Mitchell. 2014. Beyond the ancestral code: towards a model for sociolinguistic language documentation. *Language Documentation and Conservation* 8. 168–191.

Chirio, Laurent & Matthew LeBreton. 2007. *Atlas des Reptiles du Cameroun* (Publications scientifiques du Muséum national d'histoire naturelle). Paris: Muséum national d'histoire naturelle; IRD.

Cobbinah, Alexander, Abbie Hantgan, Friederike Lüpke & Rachel Watson. 2016. Carrefour des langues, carrefour des paradigmes. In Michelle Auzeanneau (ed.), *Pratiques Plurilingues, Mobilités et Éducation*, 79–97. Édition des Archives Contemporaines.

Cobbinah, Alexander Y. 2013. *Nominal classification and verbal nouns in Baïnounk Gubëeher*. London: SOAS PhD.

Collins, Darron. A. & Jarmo R. Liukkonen. 2002. What's in a name?: Plant lexical variation among the Q'eqchi' Maya Alta Verapaz, Guatemala. In John R. Stepp, F. S. Wyndham & R. K. Zarger (eds.), *Ethnbiology and Biocultural Diversity: Proceedings of the 7th International Congress of Ethnobiology*, 614–627. Athens, Georgia.

Connell, Bruce. 1998. Moribund languages of the Nigeria-Cameroon borderland. In Matthias Brenzinger (ed.), *Endangered Languages in Africa*, 207–225. Köln: Rüdiger Köppe Verlag.

Connell, Bruce. 2001a. An introduction to the Mambiloid languages. In Ngessimo M. Mutaka & Sammy B. Chumbow (eds.), *Research Mate in African Linguistics: Focus on Cameroon: A Fieldworker's Tool for Deciphering the Stories Cameroonian Languages Have to Tell*. In honor of Professor Larry M. Hyman, 79–92. Köln: Rüdiger Köppe Verlag.

Connell, Bruce. 2001b. Endangered languages of Central Africa. In Matthias Brenzinger (ed.), *Language Diversity Endangered*, 163–178. Berlin: Mouton de Gruyter.

Connell, Bruce. 2009. Language diversity and language choice: a view from a Cameroon market. *Anthropological Linguistics* 51(2). 130–150.

Cook, Frances. 1995. *Economic Botany Data Collection Standard.* London: Royal Botanic Gardens, Kew.

Costa, Albert. 2017. *The Bilingual Brain: And What it Tells Us about the Science of Language.* UK: Allen Lane.

Council of Europe. 2000. Common European framework of reference for languages: learning, teaching, assessment. http://www.coe.int/t/dg4/linguistic/CADRE_EN.asp.

Cummins, Jim. 2007. Rethinking monolingual instructional strategies in multilingual classrooms. *Canadian Journal of African Studies / Revue Canadienne des Études Africaines* 10(2). 221–240.

de Groot, Annette M. B. 2011. *Language and cognition in bilinguals and multilinguals: an introduction.* New York, NY, Hove: Psychology Press.

Depierre, Daniel. & Jacques. Vivien. 1992. *Mammifères Sauvages du Cameroun.* France.

Di Carlo, Pierpaolo. 2016. Multilingualism, affiliation and spiritual insecurity: from phenomena to processes in language documentation. *African Language Documentation: New Data, Methods and Approaches, ed. Mandana Seyfeddinipur* 10. 71–104.

Di Carlo, Pierpaolo. 2018. Towards an understanding of African endogenous multilingualism: ethnography, language ideologies, and the supernatural. *International Journal for the Sociology of Language* 257. 139–163.

Di Carlo, Pierpaolo & Jeff Good. 2014a. What are we trying to preserve?: Diversity, change, and ideology at the edge of the Cameroonian Grassfields. In Peter Austin & Julia Sallabank (eds.), *Endangered Languages: Beliefs and Ideology*, 231–264. Oxford, New York: Oxford University Press.

Di Carlo, Pierpaolo & Jeff Good. 2014b. What are we trying to preserve? Diversity, change, and ideology at the edge of the Cameroonian Grassfields. In Peter Austin & Julia Sallabank (eds.), *Endangered languages: beliefs and ideologies in language documentation and revitalisation*, 231–264. Oxford: Oxford University Press.

Di Carlo, Pierpaolo, Jeff Good & Ojong Diba. 2019. Multilingualism in rural Africa. In *Oxford Research Encyclopedia of Linguistics*.

Eckert, Penelope. 2000. *Language Variation as Social Practice: the Linguistic Construction of Identity in Belten High* (Language in Society 27). Malden, Mass, Oxford: Blackwell.

Eckert, Penelope. 2008. Variation and the indexical field. *Journal of Sociolinguistics* 12(4). 453–476.

Eckert, Penelope. 2012. Three waves of variation study: the emergence of meaning in the study of sociolinguistic variation. *Annual Review of Anthropology* 41(1). 87–100.

Eckert, Penelope & Sally McConnell-Ginet. 1992. Communities of practice: where language, gender, and power all live. 89–99.

Eckert, Penelope & Sally McConnell-Ginet. 2013. *Language and gender,* 2nd edn. Cambridge: Cambridge University Press.

Edwards, John. 1992. Sociopolitical aspects of language maintenance and loss: towards a typology of minority language situations. In Willem Fase, Koen Jaspaert & Sjaak Kroon (eds.), *Maintenance and Loss of Minority Languages* (Studies in Bilingualism 1), 37–54. Amsterdam, Philadelphia: J. Benjamins.

Ellen, Roy F. 1979. Introductory essay. In Roy F. Ellen & David Reason (eds.), *Classifications in Their Social Context*, 1–32. London: Academic Press.

Ellen, Roy F. 1986. Ethnobiology, cognition and the structure of prehension: Some general theoretical notes. *Journal of Ethnobiology* 6. 83–98.

Ellen, Roy F. 1993. *The Cultural Relations of Classification: An Analysis of Nuaulu Animal Categories from Central Seram.* Cambridge: Cambridge University Press.

Ellen, Roy F. 2003. Variation and uniformity in the construction of biological knowledge across cultures. In H. Selin (ed.), *Nature Across Cultures: Views of Nature and the Environment in Non-Western Cultures*, 47–74. London: Kluwer.

Evans, Nicholas. 2013. *Multilingualism as the primal human condition: what we have to learn from small-scale speech communities*. Keynote lecture (International Symposium on Bilingualism). Singapore.

Fakuade, Gbenga, Matudi Gambo & Abdullahi Bashir. 2003. Language shift from mother tongue towards Fulfulde in Adamawa State, Nigeria: causes and consequences. *Anthropological Linguistics* 45(3). 296-225.

Fardon, Richard & Graham Furniss. 1994. Introduction. In Richard Fardon & Graham Furniss (eds.), *African Languages, Development and the State*, 1–29. London: Routledge.

Ferguson, Charles A. 1959. Diglossia. *Word* 15. 325–340.

Fishman, Joshua A. 1967. Bilingualism with and without diglossia; diglossia with and without bilingualism. *Journal of Social Issues* 23. 29–38.

Fishman, Joshua A. 1991. *Reversing Language Shift: Theoretical and mpirical Foundations of Assistance to Threatened Languages.* Clevedon: Multilingual Matters.

François, Alexandre. 2012. The dynamics of linguistic diversity: egalitarian multilingualism and power imbalance among Northern Vanuatu languages. *International Journal for the Society of Language*. 85–110.

François, Alexandre. 2015. Trees, waves and linkages: models of language diversification. In Claire Bowern & Bethwyn Evans (eds.), *The Routledge Handbook of Historical Linguistics* (Routledge Handbooks in Linguistics), 161–189. London, New York: Routledge.

Gal, Susan. 2016. Scale-making: comparison and perspective as ideological projects. In Summerson E. Carr & Michael Lempert (eds.), *Scale: Discourse and Dimensions of Social Life*, 91–111. Oakland, California: University of California Press.

García, Ofelia & Li Wei. 2014. *Translanguaging: Language, Bilingualism and Education.* Basingstoke: Palgrave Macmillan.

Garrett, Paul B. 2009. Language contact and contact languages. In Alessandro Duranti (ed.), *A Companion to Linguistic Anthropology* (Blackwell Companions to Anthropology), 46–72. Oxford: Blackwell.

Gausset, Quentin. 2010. *Constructing the Kwanja of Adamawa (Cameroon): Essay in Fractal Anthropology.* Berlin: LIT Verlag.

Goffman, Erving. 1981. Footing. In *Forms of Talk*, 124–159. Philadelphia: University of Pennsylvania.

Goffman, Erving. 1986. *Frame analysis: an essay on the organisation of experience.* Boston: Northeastern University Press.

Goheen, Miriam. 1995. *Men Own the Fields, Women Own the Crops: Gender and Power in the Cameroon Grassfields.* Madison, Wis., London: University of Wisconsin Press.

Goodchild, Samantha. 2016. "Which language(s) are you for?" "I am for all the languages.": Reflections on breaking through the ancestral code: trials of sociolinguistic documentation. *SOAS Working Papers in Linguistics* 18. 75–91.

Green, David W. 1998. Mental control of the bilingual lexico-semantic system. *Bilingualism: Language and Cognition* 1(2). 67–81.

Green, David W. 2011. Language control in different contexts: the behavioral ecology of bilingual speakers. *Frontiers in Psychology* 2(2-4).

Green, David W. & Jubin Abutalebi. 2013. Language control in bilinguals: the adaptive control hypothesis. *Journal of Cognitive Psychology* 25(5). 515–530.

Grosjean, François. 1982. *Life with Two Languages: An Introduction to Bilingualism.* Cambridge, Mass., London: Harvard University Press.

Grosjean, François. 2004. Studying bilinguals: methodological and conceptual issues. In Tej K. Bhatia & William C. Ritchie (eds.), *The Handbook of Bilingualism*, 32–63. Malden, MA: Blackwell.

Grosjean, François. 2008. *Studying Bilinguals* (Oxford linguistics). Oxford, New York: Oxford University Press.

Grosjean, François. 2013a. Bilingualism: A short introduction. In François Grosjean, Ping Li & Ellen Bialystok (eds.), *The Psycholinguistics of Bilingualism*, 5–25. Chichester, West Sussex, Malden, MA: Wiley-Blackwell.

Grosjean, François. 2013b. Speech production. In François Grosjean, Ping Li & Ellen Bialystok (eds.), *The Psycholinguistics of Bilingualism*, 50–69. Chichester, West Sussex, Malden, MA: Wiley-Blackwell.

Guarisma, Gladys. 1978. *Études Vouté Langue Bantoïde du Cameroun: Phonologie et Alphabet Pratique, Synthématique, Lexique Vouté-Français* (Bibliothèque de la SELAF66-67). Paris: SELAF.

Gullberg, Marianne. 2012. Gesture analysis in second language acquisition. In Carol A. Chapelle (ed.), *The Encyclopedia of Applied Linguistics*. Oxford, UK: Blackwell Publishing Ltd.

Gullberg, Marianne. 2013. Bilingualism and gesture. In Tej K. Bhatia & William C. Ritchie (eds.), *The Handbook of Bilingualism and Multilingualism* (Blackwell handbooks in linguistics), 417–437. Chichester, West Sussex, UK: Wiley-Blackwell.

Gumperz, John J. 1982. *Disocurse Strategies.* Cambridge: Cambridge University Press.

Haspelmath, Martin. 2009. Lexical borrowing: concepts and issues. In Martin Haspelmath & Uri Tadmor (eds.), *Loanwords in the World's Languages*, 35–54. Berlin, New York: Walter de Gruyter.

Haspelmath, Martin & Uri Tadmor (eds.). 2009a. *Loanwords in the World's Languages.* Berlin, New York: Walter de Gruyter.

Haspelmath, Martin & Uri Tadmor. 2009b. The loanword typology project and the world loanword database. In Martin Haspelmath & Uri Tadmor (eds.), *Loanwords in the World's Languages*, 1–34. Berlin, New York: Walter de Gruyter.

Haugen, Einar. 1972. *The Ecology of Language.* Stanford: University of Stanford Press.

Haviland, John. 2006. Documenting lexical knowledge. In J. Gippert, N. P. Himmelmann & U. Mosel (eds.), *Essentials of Language Documentation*, 129–162. Berlin: Mouton de Gruyter.

Hayakawa, Sayuri & Viorica Marian. 2019. Consequences of multilingualism for neural architecture. *Behavioral Brain Functions* 15(6). 1–24.

Hebdige, Dick. 1984. *Subculture: The Meaning of Style.* New York: Methuen.

Heller, Monica. 2007. Bilingualism as ideology and practice. In Monica Heller (ed.), *Bilingualism: A Social Approach* (Palgrave advances in linguistics), 1–22. Basingstoke [England], New York: Palgrave Macmillan.

Himmelmann, Nikolaus P. 1998. Documentary and descriptive linguistics. *Linguistics* 36(1). 161–196.

Hino, Shun'ya. 1978. *The Classified Vocabulary of the Mbum Language in Mbang Mboum: with ethnographical descriptions.* Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Holden, Michael & William Reed. 1972. *West African Freshwater Fish.* London: Longman Group Ltd.

Howard, Patricia. 2003. Women and plants: an exploration. In Patricia Howard (ed.), *Women and Plants*, 1–48. London and New York: Zed Press and Palgrave-Macmillan.

Hunn, Eugene S. & Cecil H. Brown. 2011. Linguistic ethnobiology. In Eugene N. Anderson, Deborah M. Pearsall, Eugene S. Hunn, Nancy J. Turner & Richard I. Ford (eds.), *Ethnobiology*, 319–333. Hoboken, New Jersey: Wiley-Blackwell.

Hurault, Jean. 1993. Clan et lignage dans les populations de l'Adamaoua occidental: exemple des Bouté et des Wawa. In Jean Boutrais (ed.), *Peuples et Cultures de l'Adamaoua (Cameroun): Actes du Colloque de Ngaoundéré du 14 au 16 Janvier 1992*, 170–176. Paris: ORSTOM/Ngaoundéré-Anthropos.

Hurault, Jean. 1998. Land crisis on the Mambila Plateau of Nigeria, West Africa. *Journal of Biogeography* 25(2). 285–299.

Hymes, Dell. 1961. Functions of speech: an evolutionary approach. In F. C. Gruber (ed.), *Anthropology and Education*, 55–83. Philadelphia: University of Pennsylvania.

Irvine, Judith T. 2001. "Style" as distinctiveness: the culture and ideology of linguistic differentiation. In Penelope Eckert & J. Rickford (eds.), *Style and Sociolinguistic Variation*, 21–43. Cambridge: Cambridge University Press.

Irvine, Judith T. 2016. Going upscale: scales and scale-climbing as ideological projects. In Summerson E. Carr & Michael Lempert (eds.), *Scale: Discourse and Dimensions of Social Life*, 213–232. Oakland, California: University of California Press.

Irvine, Judith T. & Susan Gal. 2000. Language ideology and linguistic differentiation. In Paul V. Kroskrity (ed.), *Regimes of Language: Ideologies, Polities, and Identities*, 35–83. Santa Fe: School of American Research Press.

Ji, Li-Yun J., Zhiyong Zhang & Richard E. Nisbett. 2004. Is it culture or is it language? Examination of language effects in cross-cultural research on categorisation. *Journal of Personality and Social Psychology* 87(1).

Jørgensen, J. N. 2008. Polylingual languaging around and among children and adolescents. *International Journal of Multilingualism* 5(3). 161–176.

Jørgensen, J. N. & Kasper Juffermans. 2011. Languaging. http://www.toolkit-online.eu/docs/languaging.html.

Jørgensen, J. N., Martha Karrebæk, Lian M. Madsen & Janus S. Møller. 2011. Polylanguaging and superdiversity. In Jan Blommaert, Ben Rampton & Massimiliano Spotti (eds.), *Language and Superdiversities* (13), 20–37.

Kiesling, Scott F. 2010. *Sociolinguistic Variation and Change.* Edinburgh: Edinburgh University Press.

Kingdon, Jonathan. 2015. *The Kingdon Field Guide to African Mammals.* Bloomsbury Publishing.

Kopytoff, Igor. 1987. The internal African frontier: the making of African political culture. In Igor Kopytoff (ed.), *The African Frontier: The Reproduction of Traditional African Societies*, 3–86. Bloomington/Indianapolis: Indiana University Press.

Kroll, Judith F., Paola E. Dussias, Kinsey Bice & Lauren Perrotti. 2015. Bilingualism, Mind, and Brain. *Annual Review of Linguistics* 1. 377–394.

Kroskrity, Paul V. 2009. Language ideologies. In Alessandro Duranti (ed.), *A Companion to Linguistic Anthropology* (Blackwell Companions to Anthropology), 496–517. Oxford: Blackwell.

Labov, William. 1972. *Sociolinguistic Patterns, Conduct and Communication.* Philadelphia: University of Pennsylvania.

Lave, Jean & Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation.* Cambridge: Cambridge University Press.

Le Page, Robert B. & Andrée Tabouret-Keller. 1985. *Acts of Identity: Creole-Based Approaches to Language and Ethnicity.* Cambridge, New York: Cambridge University Press.

Léglise, Isabelle & Claudine Chamoreau (eds.). 2013. *The Interplay of Variation and Change in Contact Settings.* Amsterdam/Philadelphia: John Benjamins.

Lüpke, Friederike. 2009. At the margin - African endangered languages in the context of global endangerment discourses. *African Research and Documentation* 109, http://eprints.soas.ac.uk/7882/1/Luepke_2009_ARD_109.pdf. (2 July, 2014.)

Lüpke, Friederike. 2010a. Language and identity in flux: in search of Baïnouk. In Friederike Lüpke & Mary Chambers (eds.), *Multilingualism and Language Contact in West Africa: Towards a Holistic Perspective* (THEMA 3), 155–174.

Lüpke, Friederike. 2010b. Multilingualism and language contact in West Africa: towards a holistic perspective. In Friederike Lüpke & Mary Chambers (eds.), *Multilingualism and Language Contact in West Africa: Towards a Holistic Perspective* (THEMA 3), 1–14.

Lüpke, Friederike. 2010c. Rare and endangered - languages or features?: an African perspective. *Journal of West African Languages* XXXVII. 119–139.

Lüpke, Friederike. 2010d. Research methods in language documentation. *Language Documentation and Description* 7. 55–104.

Lüpke, Friederike. 2014-2018. Crossroads Project.

Lüpke, Friederike. 2015a. Denorthernising multilingualism and multilingualism research framing language in the north: from the monolingual nation state to acknowledging (super)diversity. http://eprints.soas.ac.uk/21945/1/944. (3 July, 2018.)

Lüpke, Friederike. 2015b. Ideologies and typologies of language endangerment in Africa. In James Essegbey, Brent Henderson & Fiona Mc Laughlin (eds.), *Language Documentation and Endangerment in Africa*, 59–105. Amsterdam, Philadelphia: John Benjamins.

Lüpke, Friederike. 2016a. Pure fiction - the interplay of indexical and essentialist language ideologies and heterogeneous practices: a view from Agnack. *Language Documentation and Conservation* 10. 8–39.

Lüpke, Friederike. 2016b. Uncovering small-scale multilingualism. *Critical Multilingualism Studies* 4(2). 35–74.

Lüpke, Friederike. 2017a. African(ist) perspectives on vitality: Fluidity, small speaker numbers, and adaptive multilingualism make vibrant ecologies (Response to Mufwene). *Language* 93(4). e275-e279.

Lüpke, Friederike. 2017b. Language endangerment and language documentation in Africa. In Ekkehard Wolff (ed.), *The Cambridge Handbook of African Linguistics*. Cambridge: Cambridge University Press.

Lüpke, Friederike. 2018a. Multiple choice: language use and cultural practice in rural Casamance between convergence and divergence. In Jacqueline Knörr & Wilson T. Filho (eds.), *Creolization and Pidginization in Contexts of Postcolonial Diversity: Language, culture, identity* (Brill's Studies in Language, Cognition and Culture 17), 181-208. Leiden: Brill.

Lüpke, Friederike. 2018b. personal communication.

Lüpke, Friederike & Anne Storch. 2013. *Repertoires and Choices in African Languages.* Boston, Berlin: De Gruyter.

Matras, Yaron. 2009. *Language Contact* (Cambridge textbooks in linguistics). Cambridge, UK, New York: Cambridge University Press.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International Journal of American Linguistics* 70. 369–415.

Milroy, James & Lesley Milroy. 1985. *Authority in Language: Investigating Language Prescription and Standardisation* (Language, education and society). London: Routledge & Kegan Paul.

Milroy, Lesley. 1980. *Language and Social Networks* (Language in society (Oxford) 2). Oxford: Blackwell.

Milroy, Lesley. 1987. *Language and Social Networks,* 2nd edn. (Language in society (Oxford) 2). Oxford: Basil Blackwell.

Milroy, Lesley & M. Gordon. 2003. *Sociolinguistics: Method and Interpretation* (Language in Society). Malden, MA: Blackwell Publishers.

Moerman, Michael. 1974. Accomplishing ethnicity. In R. Turner (ed.), *Ethnomethodology*, 54–68. Harmondsworth: Penguin.

Mohammadou, Eldridge. 1986a. *Traditions d'origine des peuples du Centre et de l'Ouest du Cameroun.* Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Mohammadou, Eldridge. 1986b. *Traditions d'Origine des Peuples du Centre et de l'Ouest du Cameroun.* Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Moore, Leslie C. 2004. Multilingualism and second language acquisition in the northern Mandara mountains. In George Echu & Samuel G. Obeng (eds.), *Africa meets Europe: Language Contact in West Africa*, language contact in West Africa, 131–148. Nova Publishers.

Mufwene, Salikoko S. 2001. *The Ecology of Language Evolution* (Cambridge Approaches to Language Contact). Cambridge: Cambridge University Press.

Mufwene, Salikoko S. 2017. Language vitality: The weak theoretical underpinnings of what can be an exciting research area. *Language* 93(4). e202-e223.

Mühlhäusler, Peter. 1996. *Linguistic Ecology: Language Change and Linguistic Imperialism in the Pacific Region.* London: Routledge.

Noss, Philip A. 1971. Wanto: the hero of Gbaya tradition. *Journal of the Folklore Institute* 8(1). 3–16.

Noss, Philip A. 1979. Fula: a language of change. In Ian F. Hancock (ed.), *Readings in Creole Studies* (Studies in the Sciences of Language Series 2), 173–188. John Benjamins.

Noye, Dominique. 1975. Langages secrets chez les Peul. *African languages/Langues Africaines* (1). 81–95.

Noye, Dominique. 1989. *Dictionnaire foulfouldé-français: dialecte peul du Diamaré du Nord-Cameroun.* Paris & Maroua (Cameroun): Librairie Orientaliste Paul Geuthner; Procure des Missions.

Oates, John F. 2010. Primates of West Africa: Pocket Identification Guide. Bogotá, Colombia: Panamericana Fromas e Impresos S.A.

Onana, Jean M. 2010. Etat de connaissance de la flore du Cameroun. In Xander van der Burgt, J. van der Maesen & Jean M. Onana (eds.), *Systématique et Conservation des Plantes Africaines*, 557–569. Royal Botanic Gardens, Kew.

Parietti, Giuseppe. 1997. *Dictionnaire Français-Foulfouldé et Index Foulfoudé: Dialecte Peul de l'Extrême Nord du Cameroun.* Guidiguis (Cameroun): Mission Catholique.

Pawley, Andrew. 2011. What does it take to make an ethnographic dictionary: on the treatment of fish and tree names in dictionaries of Oceanic languages. In L. Geoffrey, J. Haig, Nicole Nau, Stefan Schnell & Claudia Wegener (eds.), *Documenting Endangered Languages*, 263–287. Berlin/Boston: De Gruyter Mouton.

Pennycook, Alistair. 2010. *Language as a Local Practice.* London, New York: Routledge.

Puri, Rajindra K. 2010. Documenting local environmental knowledge and change. In Helen Newing (ed.), *Conducting Research in Conservation: A Social Science Perspective*, 126–152. London: Routledge.

Rampton, Ben. 1995. *Crossing: Language and Ethnicity Among Adolescents.* London: Longman.

Rampton, Ben & C. Charalabous. 2010. Crossing: a review of research. *Working Papers in Urban Languages and Literacies* (58), www.kcl.ac.uk/ldc. (12 July, 2018.)

Rehbein, Jochen, Jan D. ten Thije & Anna Verschik. 2012. Lingua receptive (LaRa): remarks on the quintessence of receptive multilingualism. *International Journal of Bilingualism* 16. 248–264.

Reyes-García, Victoria, Neus Marti, Thomas McDade, Susan Tanner, Vincent Vadez & (None). 2007. Concepts and methods in studies measuring individual ethnobotanical knowledge. *Journal of Ethnobiology*. 182–203.

Romney, A. K., Susan Weller & William Batchelder. 1986. Culture as consensus: a theory of culture and information accuracy. *American Anthropologist* 88. 313–338.

Rosch, Eleanor H. 1978. Principles of categorization. In Barbara B. Lloyd & Eleanor H. Rosch (eds.), *Cognition and Categorization*, 27–48. Hillsdale, NJ: Lawrence Erlbaum Associates.

Ross, Malcolm. 1988. *Proto Oceanic and the Austronesian Languages of Western Melanesia.* Canberra: Pacific Linguistics.

Ross, Malcolm. 1996. Contact-induced change and the comparative method: cases from Papua New Guinea. In Mark Durie & Malcolm Ross (eds.), *The Comparative Method Reviewed: Regularity and Irregularity in Language Change*, 180–217. New York: Oxford University Press.

Ross, Malcolm. 1997. Social networks and kinds of speech-community event. In Roger Blench & Matthew Spriggs (eds.), *Archaeology and Language* (1), 209–261. London: Routledge.

Roulon-Doko, Paulette. 1997. *Parlons Gbaya* (Collection Parlons). Paris: L'Harmattan.

Roulon-Doko, Paulette. 1998. *Chasse, cueillette et culture chez les Gbaya de centrafrique.* Paris: L'Harmattan.

Roulon-Doko, Paulette. 1999. Les animaux dans les contes gbaya (République Centrafricaine). In Catherine Baroin & Jean Boutrais (eds.), *L'homme et l'animal dans le bassin du Lac Tchad: actes du colloque du réseau Méga-Tchad, Orléans, 15-17 octobre 1997* (Colloques et séminaire), lloques et séminaires, 183–192. Paris: Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM).

Roulon-Doko, Paulette. 2008a. *Dictionnaire gbaya-français.* Paris: Karthala.

Roulon-Doko, Paulette. 2008b. *Dictionnaire Gbaya-Français (République Centrafricaine).* Paris: Karthala.

Sapir, Edward. 1921. *Language: an introduction to the study of speech.* New York: Harcourt, Brace.

Schippers, Rudy R. 2002. *African Indigenous Vegetables.* Aylesford, UK: Natural Resources International Limited.

Schreiber, Henning. 2009. Social networks, linguistic variation and micro change in an African context: a case study in the borderland of Mali and Burkina Faso. *Sprache und Geschichte in Afrika* 20. 209–229.

Serle, William, Gérard J. Morel & William Hartwig. 1977. *A Field Guide to the Birds of West Africa.* Lexington, MA: The Stephen Greene Press.

Silverstein, Michael. 1976. Shifters, linguistic categories, and cultural description. In Keith Basso & Henry A. Selby (eds.), *Meaning in Anthropology*, 11–55. Albuquerque: University of New Mexcio Press.

Silverstein, Michael. 1985. Language and the culture of gender: at the intersection of structure, usage and ideology. In Elizabeth Mertz & Richard Parmentier (eds.), *Semiotic Mediation: Sociocultural and Psychological Perspectives*, 219–259. New York: Academic Press.

Silverstein, Michael. 2003. Indexical order and the dialectics of sociolinguistic life. *Language & Communication* 23(3-4). 193–229.

Silverstein, Michael. 2015. How language communities intersect: is "superdiversity" an incremental or transformative condition? *Language & Communication* 44. 7–18.

Simons, Gary F., Charles D. Fennig & David M. Eberhard. 2018. Ethnologue: Languages of the World. http://www.ethnologue.com.

Singer, Ruth & Salome Harris. 2016. What practices and ideologies support small-scale multilingualism: a case study of unexpected language survival in an Australian Indigenous community. *International Journal for the Society of Language* 241. 163–208.

Siran, Jean L. 1981a. Eléments d'ethnographie Vouté pour servir à l'histoire du Cameroun Central. In C. Tardits (ed.), *Contribution de la Recherche Ethnologique à l'Histoire des Civilisations du Cameroun* (1), 265–272. Paris.

Siran, Jean L. 1981b. Système de parenté Vouté. *L'homme* (XXI(3)). 39–69.

Siran, Jean-Louis. 1980. Emergence et dissolution des principautés guerrières voûté (Cameroun Central). *Journal des africanistes* 50(1). 25–57.

Starr, Alan. 1989. Sociolinguistic survey of Wawa: a Mambiloid language of Cameroon. Yaoundé, Cameroun.

Stennes, Leslie. 1967. *A reference of grammar of Adamawa Fulani* (African Language Monographs 8). East Lansing: African Studies Center.

Stepp, John R. 2002. Wasps' claws and jaguars' whiskers: animal names in Tzeltal Maya ethnobotanical nomenclature. In John R. Stepp, F. S. Wyndham & R. K. Zarger (eds.), *Ethnbiology and Biocultural Diversity: Proceedings of the 7th International Congress of Ethnobiology*, 171–179. Athens, Georgia.

Tadmor, Uri. 2009. Loanwords in the world's languages: findings and results. In Martin Haspelmath & Uri Tadmor (eds.), *Loanwords in the World's Languages*, 55–75. Berlin, New York: Walter de Gruyter.

Tagliamonte, Sali. 2012. *Variationist Sociolinguistics: Change, Observation, Interpretation.* Chichester: Wiley-Blackwell.

Taylor, Frank W. 1953. *Grammar of the Adamawa Dialect of the Fulani Language.* Oxford: Clarendon Press.

Taylor, Insup. 2005. The mental lexicon: The situation with regard to multilingualism. In D. A. Cruse, F. Hundsnurscher, M. Job & P. R. Lutzeier (eds.), *Lexcikologie: Ein Internationales Handbuch Zur Natur und Struktur von Woertern und Wortschaetzen 2*, 1773–1781. Berlin: Mouton de Gruyter.

Thurston, William. 1989. How exoteric languages build a lexicon: esoterogeny in western New Britain. 555–579.

Thwing, Rhonda. 1982. A preliminary analysis of Vute kinship terminology. Yaoundé.

Thwing, Rhonda. 1987. *The Vute noun phrase and the relationship between Vute and Bantu*. Arlington, TX: University of Texas at Arlington MA.

Thwing, Ron & Rhonda Thwing. 1979. A phonology of Vute (Babute). Yaoundé: SIL.

Tibati, Commune d. 2013. *Plan Communal de Developpement de la Commune de Tibati*.

Trudgill, Peter. 2011. *Sociolinguistic Typology.* Oxford: Oxford University Press.

Turner, Nancy J. 2015. *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous Peoples of Northwestern North America* (McGill-Queen's native and northern series 74). Montreal & Kingston: McGill-Queen's University Press.

Turner, Nancy J., Iain J. Davidson-Hunt & Michael O'Flaherty. 2003. Living on the edge: ecological and cultural edges as sources of diversity for social-ecological resistance. *Human Ecology* 31(3). 439–461.

UNESCO. 2003. Language vitality and endangerment. http://www.unesco.org/culture/ich/doc/src/00120-EN.pdf.

Virtanen, Tea. 2003. *Performance and performativity in pastoral Fulbe culture*. Helsinki: Helsinki University PhD.

Vivien, Jacques & Jean J. Faure. 1985. *Arbres des Forêts Denses d'Afrique Central.* France.

Walker, James A. 2010. *Variation in Linguistic Systems.* New York: Routledge.

Watson, Rachel. 2018. Patterns of lexical correlation and divergence in Casamance. *Language & Communication* 62. 170–183.

Watson, Rachel. 2019. Language as category: using prototype theory to create reference points for the study of multilingual data. *Language and Cognition* 11(1). 125–164.

Wei, Li. 2011. Moment analysis and translanguaging space: discursive construction of identities by multilingual Chinese youth in Britain. *Journal of Pragmatics* 43. 1222–1235.

Weinreich, Uriel. 1953. *Languages in Contact: Findings and Problems.* New York: Linguistic Circle of New York.

Weinreich, Uriel, William Labov & Marvin Herzog. 1968. Empirical foundations for a theory of language change. In W. Lehman & Y. Malkiel (eds.), *Directions for Historical Linguistics*, 95–188. Austin: University of Texas Press.

Wenger, Etienne. 1998. *Communities of Practice: Learning, Meaning, and Identity* (Learning in doing). Cambridge, U.K, New York, N.Y: Cambridge University Press.

Williamson, Kay. 1971. The Benue-Congo languages and Ijo. *Current Trends in Linguistics* 7(series ed. by T. A. Sebeok). 245–306.

Wolff, Ekkehard. 2015. *Language and Development in Africa: Perceptions, Ideologies and Challenges.* Cambridge: Cambridge University Press.

Wolfram, WALT. 1993. Identifying and interpreting variables. In D. Preston (ed.), *American Dialect Research*, 193–221. Amsterdam/Philadelphia: John Benjamins.

Woodbury, Anthony C. 2005. Ancestral languages and (imagined) creolisation. *Language Documentation and Description* 3. 252–262.

Woodbury, Anthony C. 2011. Language documentation. In Peter Austin & Julia Sallabank (eds.), *The Cambridge Handbook of Endangered Languages*, 159–186. Cambridge: Cambridge University Press.

Woolard, Kathryn A. 2009. Codeswitching. In Alessandro Duranti (ed.), *A Companion to Linguistic Anthropology* (Blackwell Companions to Anthropology), 73–94. Oxford: Blackwell.

Wurm, Stephen A. 1991. Language death and disappearance: causes and circumstances. In R. H. Robins & E. M. Uhlenbeck (eds.), *Endangered Languages*, 1–18. Oxford: Berg Publishers Ltd.

Yu, Ziying & John W. Schwieter. 2018. Recognizing the effects of language mode on the cognitive advantages of bilingualism. *Frontiers in Psychology* 9. 366.