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Exploring multilingualism in Senegal: a multimodal approach to the expression of caused motion

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Abstract

Languages are not discrete, nor do they exist as such separate entities in a multilingual's mind – they interact (Grosjean 1989; 1994; 2010; Cook 1991; 1992; 2003; Cook et al. 2006; Kellerman & Sharwood Smith 1986; Odlin 1989; 2003). Bilingual speakers of European contexts have been shown to drop specific information when compared to their monolingual counterparts as a result of crosslinguistic influences (Berthele 2012; Alferink & Gullberg 2014; Alferink 2015). Yet most research in this domain has focused on Western speakers of standardised languages (Henrich et al. 2010), limiting what we know about the reality of multilinguals of different contexts. Speakers of the Lower Casamance in Senegal, West Africa, for example, know an average of 6 languages and may use these languages on a daily basis (Juillard 1995; Tabouret-Keller & Juillard 2000; Dreyfus & Juillard 2004). The question thus arises whether the nature of the speakers' linguistic system is still one of generality considering their linguistic repertoires.

This study explores how placement events are expressed by multilingual speakers in the Lower Casamance by investigating the semantic information displayed multimodally. 18 multilingual speakers residing in the Lower Casamance participated in this study. The study targeted Joola Kujireray and French, the former using both broad- and fine-grained information (*sit, stand, lay, and put*), and the latter encoding broad-grained information (*put*). I describe the linking of thematic roles to syntactic constituents and provide a lexical semantic description and comparison of placement and removal verbs in Kujireray and French following a Cognitive Linguistics framework. The information expressed in co-speech gestures is then described.

Findings reveal speakers' preference of displaying semantically specific information in gesture, while expressing semantically general information in speech – contrary to

Western bilinguals. The thesis concludes with a discussion of adapting gesture-speech models to account for multilingualism and multimodal patterns.

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Abbreviations

Ø	zero
1	first person
2	second person
3	third person
ABSTR	abstract
AGR	agreement
ATR	advanced tongue root
ASSOC	associative
AUX	auxiliary
C	consonant
CL	noun class prefix
COMP	complementizer
CONN	connector
COP	copula
DEM	demonstrative
DIR	directional
DIST	distal
EXCL	exclusive

HAB	habitual
INCL	inclusive
INDEF	indefinite
INTR	intransitive
LOC	locative
MED	medial
MID	middle voice
NCP	noun class prefix
NEG	negative
O	object
P	plural
PASS	passive
PERF	perfective
PN	pronoun
POSS	possessive
PROX	proximal
QUANT	quantifier
RECIP	reciprocal
REDUP	reduplication

REFLEX	reflexive
REL	relativizer
S	singular
SUBORD	subordinator
TR	transitive
V	vowel
VN	verbal noun

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1 Introduction

The nature of the multilingual mind holds many questions for linguists and psychologists alike. Until the late 20th century, speakers of more than one language were believed to have separate, discrete linguistic systems for each language which co-existed in the bilingual's mind without influence on each other (Tulving & Colotla 1970; Taylor 1971). However, as more recent research has shown, multilinguals do not equate to two monolinguals in one: bilinguals exhibit evidence of having linguistic influences from other languages seen on many linguistic levels and modalities (Grosjean 1989; Cook 1992; Alferink & Gullberg 2014). The question now remains as to what this linguistic system looks like for bi- and multilinguals as it differs from those of monolinguals. The nature of this merged system has been shown to converge to a more general system, with Belgian bilingual speakers of French and Dutch dropping more fine-grained information when compared to their monolingual counterparts (Alferink & Gullberg 2014). However, speakers in West Africa see a high level of multilingualism as the norm, with some individuals using up to 13 languages on a daily basis (Juillard 1995; Tabouret-Keller & Juillard 2000; Dreyfus & Juillard 2004). These languages are rarely spoken in monolingual contexts – they are almost always spoken in multilingual speech communities (Lüpke & Chambers 2010). Furthermore, the majority of the languages spoken in this region encode fine-grained semantic information in the domain of placement and removal events. Bearing in mind the diversity of West African speakers' linguistic repertoires on both societal and individual levels, the question arises as to whether multilinguals prefer a more general expression or if they exhibit a different pattern due to their linguistic repertoires.

Using gesture as a window into the cognitive system, the thesis investigates this research question by focusing on the domain of placement events expressed by highly multilingual speakers in Senegal of the Casamance region. Placement and removal events are defined as events in which “an Agent [moves] a Figure with respect to a particular location” (Talmy 1985, p.71). Yet, languages vary crosslinguistically as to how they encode placement events, both on a semantic and syntactic level: speakers of various languages express different information in verbs and or in adverbial phrases. Speakers retrieve particular lexical items depending on the varying features found within a placement or removal event, such as an entity’s size, shape, or canonical versus noncanonical position, or features of the Ground such as whether or not the Figure entity is visible, contained, or on a flat, horizontal surface. The current study targets Joola Kujireray, a local language spoken in the village Brin, and French, an official language of Senegal. While Kujireray uses both broad- and fine-grained information to encode placement events, French mainly uses broad-grained information. Multimodal data collected from 18 participants in two director-matcher tasks were analysed to observe whether fine-grained or broad-grained information is expressed in speech and gestures.

In sum, the three main objectives of the methods used to carry out this research are:

1. to deepen the lexicosemantic and morphosyntactic description of the domain of placement and removal events in Joola Kujireray and Senegalese French,
2. to understand the make-up of participants’ linguistic repertoire, and

3. by using both speech and gesture as a diagnostic tool, to investigate the nature of the linguistic system of multilingual speakers of languages that display both fine- and broad-grained semantic information.

The speech analysis reveals a strong preference to semantically general verbs in both languages. The gesture analysis across participants showed that speakers used gestures displaying specific hand shapes for the majority of placement events, thus displaying more fine-grained information in both languages. Furthermore, when speakers select a semantically general placement verb across languages, it is more likely to be accompanied by a gesture that displays information about the Figure entity. The findings suggest that fine-grained, semantic information may be motivating and influencing this system as seen in the gesture modality.

The thesis is divided into 6 content chapters. The first content chapter (chapter 2) of this thesis provides an overview of the theoretical framework for this investigation, mainly following a Cognitive Linguistics framework. I present caused motion events and explain how languages vary crosslinguistically in their encoding of these events. I then explain the role of co-speech gestures as a diagnostic tool for investigating how speakers express events. Next, I advocate that this avenue of multimodal research include multilingual speakers of under-studied areas, focusing on speakers of the Lower Casamance in Senegal. The field site and speakers are introduced, highlighting notable historical events that led to the shaping of the linguistic landscape, the classification of the languages spoken in the region, and patterns that help to maintain multilingualism.

I then summarise the literature on how research developed into the understanding that bilinguals are not, as Grosjean (1982; 1989; 2008; 2010) explains, two monolinguals in one, and the evidence supporting the more recent theories of multicompetence and

crosslinguistic influences. The role of multimodal analysis is introduced, revealing that gestures are useful for observing crosslinguistic influences of multilingual speakers. I present the research rationale and some of the theoretical and methodological challenges posed due to the multilingual context of the Casamance. I conclude the chapter with an overview of the ways in which some of the languages encode placement events and what we may expect to find in speakers' multimodal expressions.

In chapter 3, I detail the triangulation of methods and methodologies I used to collect a comprehensive data set. I describe the stimuli-based data sets I used in the field, give a short biographical and sociolinguistic overview of the participants of the study, and explain how I went about assessing their multilingual repertoires and fluency. I also describe the coding scheme I applied to both speech and gesture to extract an analysis, giving examples of both. Finally, I present the process for managing the data collected and storing it in a secure and accessible place.

In chapter 4, I take a descriptive approach to the language spoken namely in the field site, Joola Kujireray. I first describe the argument structure and constructions in which placement and removal verbs occur in while presenting relevant grammatical descriptions of the language. The lexical semantics of placement verbs, followed by removal verbs, are then presented. I conclude with a discussion of some of the main semantic distinctions made in Kujireray.

I take a similar approach to describing French in chapter 5 by describing placement and removal constructions and argument structure, followed by a description of the lexical semantics of both placement and removal verbs. I speculate on crosslinguistic influences from local languages such as Joola Kujireray and other areal features creating this variation, especially in regards to how postural information is used in this variety's

morphosyntactic constructions. I present the key findings, such as the variation between speakers, and discuss the frequency of certain verbs used.

Chapter 6 joins the descriptive analyses of the two target languages, Joola Kujireray and the Senegalese variety of French, together with an analysis of gesture. I first compare the overarching semantic distinctions between the two languages based on data from the previous two chapters by focusing on the semantics carried by main verb types. I then present the speech results of speakers' placement descriptions used to analyse multimodal patterns of expression. An analysis of the speakers' gestures follows, providing a full picture of how speakers express placement events. The naturalistic data collected is then introduced, revealing similar patterns as those found in staged communicative events. I discuss the findings, which is followed by some of the limitations of the research as well as future research that could further investigate hypotheses of the multimodal pattern.

In the conclusion chapter (7), I discuss the results from the lexical semantic comparison of the verb types in Kujireray and French with regard to some of the main theories presented in the introduction chapter. In particular, how multilinguals organise information of multiple languages in their mental lexicon in light of the findings is reflected upon within the cognitive linguistics framework. In this final chapter, I reintroduce a gesture-speech model and explain how the model could account for the multimodal data of this research. I also suggest adaptations to the model to better explain the underlying mechanisms of the gesture-speech interface of multilinguals. I conclude with ideas to further the research in this avenue of multimodality and multilingualism. In sum, the thesis presents a unique avenue of research to broaden our understanding of multilingual speakers in understudied areas.

2 Theoretical framework: language, thought, and culture

What is the relationship between thought and language, and to what extent does culture play a role? The idea that one's environment could influence or shape one's language and cognition sparked two well-known hypotheses in the 20th century: language determinism and language relativity. According to the hypothesis of language determinism, Benjamin Lee Whorf claimed that the language one speaks can affect the speaker's "world view", writing, "Language and culture are constantly influencing each other...language is the factor that limits free plasticity and rigidifies channels of development in the more autocratic way," (Whorf, 1941/1956, p.156). In other words, the hypothesis purports that if a language does *not* encode certain information about a real-world event or referent, the speaker thus does not recognise this concept and therefore has a different world view from speakers of other languages. Due to a lack of empirical evidence supporting these claims and the exoticification of speakers of minority languages, many criticisms of language determinism and language relativity surfaced and these Whorfian ideas were dismissed as incredible (Pinker 1994). Linguistic relativity then emerged as a softer variation, suggesting that a speaker's thoughts are less constrained to language but can be *influenced* by language (Levinson & Gumperz 1996; Lucy 2015). Slobin (1996) reviewed linguistic relativity and modified the argument from *language influences thought* by suggesting that the information encoded in language draws the speaker's attention to those elements in the real-world event while speaking. Known as the Thinking for Speaking hypothesis, Slobin examines the process occurring *while* one is speaking and the elements attended to as a result of the typology of the language.

However, others argue against the influence of culture and human experience in the shaping of underlying cognition (Pinker 1994; Li & Gleitman 2002; Gleitman &

Papafragou 2013). Opponents to the linguistic relativity claim that there is an innate cognitive system that all humans share, writing:

‘...these linguistic categories and structures are more-or-less straightforward mappings from a preexisting conceptual space, programmed into our biological nature: humans invent words that label their concepts’ (Li & Gleitman 2002, p.266).

Instead, they propose that language reflects universal semantic concepts that are innate to humans (Evans & Green 2006) – just as it is a spider’s instinct to weave a web, it is a human’s instinct to learn and use language (Pinker 1994). Levinson and colleagues (Levinson 2003b; Levinson & Gumperz 1996; Levinson & Meira 2003a; Bohnemeyer & Levinson 2011) refute this idea of universality, or as Levinson calls “simple nativity” (2003a, p.26), arguing that as soon as crosslinguistic variation is considered, the hypothesis does not hold. More specifically, Levinson (2003a, p.26) points out three fundamental flaws to the theory’s logic:

‘First, it is impossible to reconcile with the facts of variation across languages. Second, it is a theory of innate...endowment outside biology. There is no biological mechanism that could be responsible for providing us with all the meanings of all possible words in all possible languages...Third, it misses the most fundamental biological specialization of our species: the species has coevolved with culture – we cannot survive without it, but with it we have evolved a method of adapting to new ecological niches with much greater rapidity than our genome.’

His third point on the irrefutable interaction between humans and their cultural environment is a crucial notion within the Cognitive Linguistics framework, a framework followed in this research. Bohnemeyer and Levinson (2011) also assert that the diversity, “adaptability”, and flexibility of our cognitive system is what makes human cognition so

unique. Instead of focusing on the similarities of the world's languages, we ought to be using the areas where there are linguistic differences as a starting point. While supporting Slobin's Thinking for Speaking hypothesis (Levinson 1997, p.99), Levinson proposes that although language does not necessarily shape the way people think, languages "impede, facilitate, or require underlying mental operations" (Levinson 2003a, p.34). To demonstrate the relation between language and cognition, let us turn to some of Levinson and his colleagues' influential work on spatial cognition.

Frames of reference, or coordinate systems, are composed of three main types: intrinsic, relative, and absolute and deal with the way humans reference entities in space, mainly involving perspective. The intrinsic frame of reference relies on a prior assignment of inherent parts and facets to the object, such as in English, the *bottom* of a shoe. The relative frame of reference describes referents in relation to one's self as coordinates. For example, a referent's location as being *in front of* the speaker relies on the speaker's coordinates as well as an intrinsic frame of reference in that the speaker has a *front* versus a *back* facet. The absolute frame of reference uses coordinates that are fixed, such as *north, south, east, and west* (Levinson 1996; 2003b; Levinson & Wilkins 2006). Thus, all frames refer to a referent in space, but each frame uses a different perspective.

Crosslinguistically, the use of the three frames of reference varies: speakers of English and Dutch, for example, have a greater tendency to use the relative frame of reference, (Levinson 2003b; Pederson et al. 1998) while speakers of Guugu Yimithirr (Haviland 1993; Levinson 2003b) and Arrernte (Pederson et al. 1998), both Aboriginal languages, use absolute frames of reference. To see whether the way language encodes space has an effect on speakers' cognition, speakers carried out a non-linguistic task where they replicated the order in which three entities appeared on a table. Speakers of the varying

languages turned 180 degrees and replicated the scene: those who spoke a relative frame of reference language such as English or Dutch reflected this perspective in the order they reproduced the three entities (*left to right*) (Levinson 1997; 2003b; Pederson et al. 1998). Speakers of the absolute frame of reference languages patterned similarly in the non-linguistic task by organising the objects along the north to south vector (Levinson 1997; Pederson et al. 1998), contrary to the speakers of English and Dutch. Similar results were found among speakers of other languages, not limited to Tamil (Pederson 1995), Japanese, Longgu, and Tzeltal, where the speakers' performances in the non-linguistic experiment yielded the same frame of reference as in their respective language (Pederson et al. 1998; Majid et al. 2004).

The findings reveal that speakers must know their own locations as well as their orientation according to certain frames of reference, clearly demonstrating cognitive consequences due to how language structures concepts and how speakers interact with their environment. This empirical evidence directly negates the simple nativism claim that humans have a "universal conceptual system" to which humans use language to label (Li & Gleitman 2002). Rather, it presents a glimpse at the wealth of cognitive diversity among speakers crosslinguistically and some of the ways in which language and cognition are related. As I will explain throughout this chapter, I endorse a Cognitive Linguistics theoretical approach to the analyses of this research, as it acknowledges humans' unique interaction with the environment, the role culture plays in shaping language, and the cognitive consequences that arise from linguistic diversity.

2.1 A Cognitive Linguistics approach to language

In this section, I put forth that a Cognitive Linguistics framework approach can respond to questions involving the relationship between culture, language, and cognition. I

describe several core theories that underpin the Cognitive Linguistics framework and how they answer to how humans and their languages categorise and express events and referents. By following this theoretical framework, we may distinguish between conceptual, semantic, and syntactic dimensions and appreciate how they are interwoven.

Section 2.1.1 focuses on the relationship between the organisation of knowledge on the conceptual level and how it is projected in language. I begin by discussing Rosch's Prototype Theory (1973; 1978; Mervis & Rosch 1981) to understand how we as humans categorise and make sense of the world around us. How the meaning of a knowledge structure is organised in language is then presented through the work of Fillmore's (1977; 2006) and Langacker's (1987) semantic frames and domains, respectively. Next, I introduce argument structure and explain why a construction grammar approach (Fillmore et al. 1988; Goldberg 1995; Kay & Fillmore 1999) is productive in understanding the semantics-syntax interface, as well as the variability of semantic to syntactic mappings both within language and crosslinguistically. Finally, Talmy's (1985; 1991; 2000; 2016) lexicalisation patterns are presented to demonstrate the one-to-many semantic to syntactic mappings, with a focus on placement events to illustrate crosslinguistic variation.

In section 2.1.2, I argue for a multimodal approach to analysing the links between mental representations, meaning, and grammar. I sketch an introduction to the study of gesture and its classification while identifying the type of gestures useful for a cognitive approach to language and semantic expression. I present McNeill's (1992b; 2005; McNeill & Duncan 2011) Growth Point Theory as well as the Interface Hypothesis (Kita & Özyürek 2003) to discuss how gestures reflect semantic information provided in speech. Two studies that apply a multimodal approach to understanding how speakers express semantic information are then reviewed, demonstrating that a multimodal approach is

essential to understanding the interplay of conceptual, semantic, and syntactic dimensions.

2.1.1 *Taking a cognitive semantics perspective*

The world is full of boundless information, patterns, and detail. As humans, we use language to discuss this information with each other on a daily basis. But how do we sift through the rich data of the world around us and identify the pieces of information pertinent for the communicative task at hand? The answer lies in our ability to categorise information. As Taylor (2003, p.163) writes:

‘Humans excel at categorizing... We are able to create and operate with... hundreds of thousands of categories, ranging from the extremely fine-grained to the highly general. Moreover... we can create new categories whenever the need arises’.

Through categorisation, we can better differentiate and discuss events and referents of the world, and its flexible nature allows us to alter the boundaries of existing categories to accommodate new experiences. Yet, how we go about developing categories and the nature of these categories has been a matter of some debate.

Many theories stemming from an Aristotelian school of thought have been proposed to explain how humans go about categorising events and referents such as birds, based on attributes that these referents share, such as the ability to fly and having feathers (Lakoff 1987). However, these theories were met with limitations in explaining the “fuzziness” of groups – for example, how some members of a category can be questionable, such as a ‘penguin’ in the category of BIRD, as both have the attributes of [having wings] but not the [ability to fly] (Geeraerts 2006).

In the 1970s, Eleanor Rosch developed a theory that sought to explain how humans group events and referents while responding to some of the limitations of previous theories (Rosch 1973; 1978; Rosch et al. 1976; Mervis & Rosch 1981). Her Prototype Theory addressed questions such as how humans can conclude that certain referents like ‘robins’ and ‘penguins’ are considered BIRDS whilst some members demonstrate more typicality than others (such as a ‘robin’ versus a ‘penguin’, where a ‘robin’ is more typical of a BIRD than a ‘penguin’). The approach to categorisation under this theory allows for individual variation as it considers both the lived experience and other “cognitive capacities” of the speaker as having an influence on how one groups objects and events (Geeraerts 2006). In essence, the prototype of a category serves as the “best example” of the group and can share any number of attributes with other members of the category. Note, however, that the notion of a single prototypical entity of a category does not exist – Rosch emphasises that it is rather the *degree* to which an entity is representative of a category in the prototypical sense. It is not to claim that a ‘robin’ is more prototypical than a ‘sparrow’, but that these referents are more prototypical of a BIRD than a ‘penguin’ (Rosch 1978). This modification in her theory stands in contrast to the Aristotelian approach where all members of a category must share the same features and attributes, i.e. fulfil necessary and sufficient conditions. In practice, the latter approach does not explain how a penguin can be considered as part of the category BIRD for many speakers, as the creatures do not fly nor do they have feathers. In the prototype approach to categorisation, members are put on a cline, allowing for continuation between categories and members. Finally, a crucial notion of the Cognitive Linguistics framework is also highlighted in Rosch’s work: she notes the fact that not all languages categorise the events and objects of the real-world in the same way. In this observation, she emphasises

the importance of the culture and context to answer to this crosslinguistic variation (Rosch 1978).

Fillmore's (1977; 2006) Frame Semantics uses a similar Cognitive Linguistics approach to understanding how different concepts, or basic units of knowledge (Evans & Green 2006, p.223) are associated to each other, and the role language plays in "projecting" these concepts (Jackendoff 1983, p.29). A frame denotes a knowledge structure that is shaped by human experience and culturally-specific attributes and is represented at the conceptual level. Examples are events such as (MOTION¹), which may be denoted by verbs, verbal nouns, and a variety of other grammatical roles. Fillmore (1977) explains that the semantics of a lexical item or construction cannot be understood without its associated frame – for instance, we cannot know the meaning *buy* if analysed independently of the COMMERCIAL frame event which evokes the semantic participants of a buyer, goods, money, etc. In similar work, Langacker (1987) uses the term *domain* to refer to these "cognitive entities", while also noting that concepts and domains are not one to one, but can be one to many in what he calls a domain matrix, i.e., *penguin* can be associated with both ANIMAL and BIRD. Furthermore, he argues that domains can be hierarchical (Langacker 1987) – one domain can encompass another domain subset, such as the domain ANIMAL can encompass BIRD. Together, Fillmore (1977; 2006) and Langacker's (1987) theories contribute to the foundation of encyclopaedic semantics, in which the meaning of words and constructions considered part of a network based on associated meanings shaped by human experience and culture (Evans & Green 2006).

¹ Small, uppercase letters are used to denote the conceptual level and initial capital letters are used to denote the semantic level (i.e., Agent).

Semantic and syntactic levels are language-specific: the semantic level refers to how the meaning of an event is organised and is linked to the syntactic level, the interaction between the two levels is the semantics-syntax interface. Frame semantics provides us with an explanation of this interface by looking at a verb's argument structure (Evans & Green 2006). Crucial to crosslinguistic analyses of the semantic-syntax interface is that semantic participants map onto argument structure in different ways in different languages. Table 1 presents the terminology used in this thesis to discuss argument structure according to the conceptual, semantic, and syntactic levels which I detail below.

Table 1 Terms used to distinguish among conceptual, semantic, and syntactic levels²

Conceptual	Semantic	Syntactic
scene	event	verb
force-dynamic relation	transitivity	valence
entity	participant	argument
conceptual role	thematic role	grammatical relation

Events and states, on the semantic level, can be linked to verbs (among other grammatical roles such as verbal noun, adjectives, etc.) on the syntactic level. To illustrate, placement events (see 2.1.1.1) can be denoted by the verb *put* in English, among other verb types such as *place* and *set*. Yet to learn and use a verb to express information about an event is to also know its argument structure and semantic frame. For example, speakers of English

² Adapted from Watson (2015, p.109).

know that the transitive verb *put* requires at least three participants: a ‘putter’, something that is being put, and a location. An intransitive verb such as *sleep*, on the other hand, requires one participant: the ‘sleeper’ (e.g., *she sleeps*). Let us consider the argument structure of the following phrases in English:

- (1) (a) **He put*.
(b) **He put the apple*.
(c) *He put the apple in the bag*.

Thus, speakers of English reject the phrases (a) and (b) because they know the number of participants the verb *put* requires, which the first two examples lack. Speakers accept example (c) as the verb *put* requires three participants (the ‘putter’, something being relocated, and the location, realised as *he*, *apple*, and *bag* respectively). The number of participants a verb occurs with on a syntactic level is referred to as valency: *put* occurs in a trivalent construction. However, not all semantic participants that a verb evokes are obligatory. Consider the participants of the verb *run* as in, *she runs* in contrast to *she runs to the train*. The verb must occur with an argument that denotes the ‘runner’ participant (realised as *she*), but an optional argument – an adjunct – may also occur with the verb (*to the bus*). Finally, speakers must know to which arguments or adjuncts the participants are linked, i.e., **the table put the girl in the room* versus *the girl put the table in the room*. Verb types also depend on the semantic features of *thematic roles*: while the two verbs *scatter* and *hook* involve the thematic roles of, minimally speaking, an Agent and Figure,

the verb *scatter* may be used to denote the caused motion of a Figure entity of several small pieces, whereas *hook* may denote the suspended spatial relation of a Figure entity.

The mapping of thematic roles to grammatical relations, such as subject, object, preposition, is variable, both crosslinguistically and within a language. But before discussing the variability of thematic roles to syntactic constituents, the terms and definitions of thematic roles should be discussed as they have been a matter of some debate in the literature (Dowty 1991; Talmy 1991; 2000; Evans & Green 2006).

Thematic roles are “creatures of the syntax-semantics interface” (Dowty 1991, p.548). Dowty’s (1991) work on thematic roles parallels with Rosch’s Prototype Theory (1973; 1978; Mervis & Rosch 1981) as he puts forth Proto-roles: an Agent proto-role and a Patient proto-role, rather than treating thematic roles as discrete entities. The Agent proto-role displays more ‘prototypical characteristics’ of an Agent – volition, movement, and causing a change of state among another participant, while the Patient proto-role is relatively immobile, can be affected by another participant (an Agent, for example), and undergoes a change of state. Thus, the thematic roles sit on a cline of prototypicality rather than assigned strict labels and definitions.

The relation of thematic roles to syntactic constituents can be understood according to Langacker’s (2002) prototypical action chain model. The model is positioned around the potential for entities to either create motion-causing energy, or energy source, or to receive it, which he terms the energy sink. The causer entities are considered the Agent while the dependent and affected entity is the Patient. On the syntactic level, he uses the terms trajector (subject) and landmark (object) which refers to the participant in focus and the subordinate participant respectively. Consider the active (a) and passive voice (b) pairs below:

(2) (a) *She put the bottle on the table.*

(b) *The bottle was put on the table.*

According to Langacker's (2002) prototypical action chain model, in (a), the Agent – the energy source – is linked to the subject *she* and is the trajector. The Patient – energy sink – is linked to the object (*bottle*) and is considered the landmark as it is not of primary focus. However, in (b), the Patient is now linked to the subject which is the trajector as it is now brought into focus. As such, thematic roles can be assigned to participants with regards to a cognitive framework based on perspective and energy transfer.

Finally, meaning results from not only the verb in isolation, but from the grammatical construction the verb occurs in as well. Goldberg's (1995) construction grammar, mainly inspired by Fillmore's work (1986; Fillmore et al. 1988; Kay & Fillmore 1999), applies a cognitive approach in which it is argued that human knowledge stems from human experience. Let us consider the caused motion construction X MAKES Y TO MOVE Z. Whereas the verb *laugh* may be described as a typically intransitive verb, as in, *she laughs*, Goldberg (1995, p.1) considers the semantics of the same verb type in the caused motion construction: *she laughed him out of the bedroom*. By considering the construction as a whole, it is shown that individual verbs cannot be classified according to a categorical participant structure. The semantics now yields causation and transitivity, not based on the verb by itself as generative linguistics purports (Evans & Green 2006), but due to the construction in which the verb occurs. By using a construction grammar approach to semantics, we can understand nuanced meaning to verbs based on the

construction in which the verb occurs, rather than attempting to detail all possible meanings individual verbs may carry.

2.1.1.1 Caused motion events: placement

Let us return to the discussion on the one-to-many relation of semantics to syntactic constituents, focusing on the semantic information that is linked to the verb. Talmy (1985; 1991; 2000) proposes that motion events are comprised of four major “semantic elements”: Path, Figure, Ground, and Motion, and can further incorporate Manner and Causation³. He explains that thematic roles such as Path and Manner can be either conflated and linked to the verb, or can be distributed to other grammatical relations. Conflation and distribution of thematic roles give rise to lexicalisation patterns, which is when “a particular meaning component is found to be in regular association with a particular morpheme” (Talmy 1985, p.59). Languages whose verbs encode the thematic role of Path in the main verb are coined “verb-framed”, observed in languages such as Spanish and French (e.g., *il entre dans la cuisine en courant* ‘he enters into the kitchen running’ in French where Manner is linked to the adverbial *en courant* ‘running’ and Path is linked to the main verb, *entre* ‘enter’). These languages use particles outside of the main verb to describe the Manner of the motion (see Figure 1).

³ For the purpose of this discussion (and thesis), I focus on externally caused motion events.

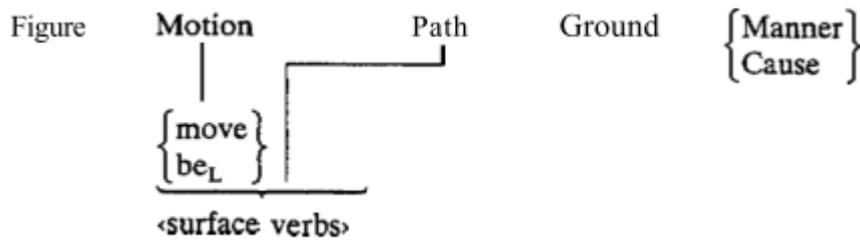


Figure 1 Talmy's (1985, p.69) verb-framed lexicalisation pattern

“Satellite languages”, such as Germanic languages including English, link the thematic role of the Path to elements outside of the main verb, such as adpositional or adverbial phrases, while Manner is linked to the verb (Figure 2) (Talmy 1985; 1991; 2000). This may be illustrated with the English example, *he runs across the yard*, where Manner is linked to the main verb *run* and Path is linked to the adposition *across*.

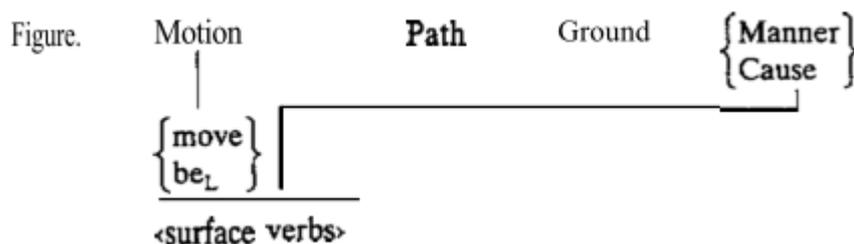


Figure 2 Talmy's (1985, p.62) satellite language lexicalisation pattern

Slobin (2004) introduces a third lexicalisation pattern, “equipollently-framed languages”, for which he cites serial verb constructions and bipartite verb languages, in which both Manner and Path are treated equally on a formal linguistic level as well as according to significance. Motion events in Mandarin Chinese, for example, are encoded in serial verb constructions, in which Path and Manner are each linked to a verb and the two verbs

occur in sequential order. However, this third lexicalisation pattern is a matter of debate, as Talmy (2016) argues for a broader range of criteria to assign “verb status”, suggesting that many of the “equipollent” languages can be categorised according to his original two lexicalisation patterns. Nevertheless, only Talmy’s verb-framed and satellite language lexicalisation patterns are relevant to the languages in the present research, and as such, I leave the discussion over equipollent languages open to debate.

In particular, these lexicalisation patterns are observed crosslinguistically in the domain of placement, a subset of externally caused motion events (Talmy 1985; Slobin et al. 2011; Kopecka & Narasimhan 2012). Placement and removal events are defined as events in which “an Agent [moves] a Figure with respect to a particular location” (Talmy 1985, p.71). Verbs denoting these caused motion events are used frequently (Gullberg 2013) and are learned at a young age (Chenu & Jisa 2006), demonstrating the event type’s prominence in a speaker’s mind and language.

I operationalise a subset of thematic roles relevant to placement events used in this thesis, given that the labels vary among the literature (Talmy 1985; 1991; Dowty 1991). The thematic roles and their definitions are mainly based on Talmy’s (1985; 2000) and Slobin et al.’s (2011) terminology.

Table 2 Operationalised thematic roles relevant to placement events

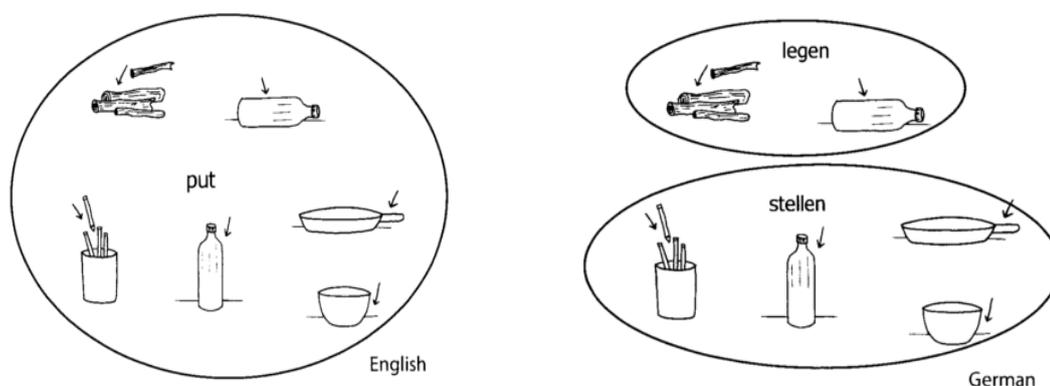
Agent	the entity that causes the relocation of the object
Figure	the entity undergoing the event or being relocated
Ground	the location to which or from which the entity is relocated
Source	a further specification of Ground: the location from which the entity is relocated
Goal	a further specification of Ground: the location to which the entity is relocated
Path	the trajectory or direction along which the object moves
Motion	the caused motion and relocation of an entity
Relation	the resulting spatial relation between Figure and Ground
Manner	how both the motion is carried out and the Figure is configured
Instrument	entity used to carry out the motion

The Agent is the entity causing the relocation of the object, and the Figure is the entity which is undergoing the event, or being caused to move. For example, in the English sentence *she put the apple on the table*, *she* is the Agent and *the apple* is the Figure. In lowercase letters, I use the term *figure* or *figure object* to describe the referent itself, independent of language. The Ground refers to the location to which or from which the Figure entity is moved – in the previous example, *the table* is the Ground. The Ground can be further specified as either Source to indicate from where the Figure is moved, or Goal to specify to where the Figure is relocated. For example, *she took the apple out of*

the bag and put it on the table, *the bag* is the Source while *the table* is the Goal. Both are considered as the Ground. The Path depicts the trajectory of motion the Figure moves along (i.e., *towards, away, across*). I further distinguish the Relation as the resulting or originating spatial relation of the Figure and Ground following Slobin et al.'s (2011) work. Motion refers to the act of relocating the Figure entity (*put, remove, stand, lay, etc.*). I consider Manner as a thematic role that denotes a range of semantic features including the configuration or position of the Figure entity and the intentionality of the motion (i.e., accidental *spill*, or intentional *put*). Finally, the Instrument refers to an entity used as a tool to relocate the figure, such as one's hand or a spoon.

Although all placement and removal events share the components of 'causing an object to move to a new location', languages vary greatly crosslinguistically in their structuring of this information. Not all placement and removal descriptions invoke all the thematic roles listed in Table 2, and the tendency to employ certain thematic roles over others also varies crosslinguistically. Notably, some languages such as German encode information about the figure's configuration by use of postural verbs (following a satellite-framed pattern) (Lemmens 2003; Newman & Rice 2004; Hellwig 2007; Ameka & Levinson 2007), while others use a semantically general verb mainly encoding Motion (i.e., verb-framed languages) such as French and English (Gullberg 2009a; Alferink & Gullberg 2014). Consider Slobin et al.'s (2011) illustrations below comparing the lexical categorisations of placement in English and in German.

Table 3 Categorisation of placement in English and German (Slobin et al. (2011, p.153))



English categorisation of placement:

put

German categorisation of placement:

legen ‘lie’; *stellen* ‘stand’

English speakers use the lexical item *put* to describe placement events, regardless of the size, shape, or orientation of the figure. Verbs such as *put* encode semantically general information about the entity’s movement and relocation. Speakers of German, however, make a distinction between figures that are long and are placed horizontally, versus figures that have a base and are placed vertically. The latter set of verbs is considered positional or postural verbs, and denotes the semantically specific information of the Figure entity’s configuration and shape. Postural verbs have an origin rooted in three basic anthropocentric human postures: sitting, standing, and laying (Lemmens 2003; Ameka & Levinson 2007). Newman and Rice (2004) name these three posturals the “cardinal posture verbs” and classify all other positional verbs such as hang, lean, squat and sprawl as “non-cardinal postural verbs”. For consistency, I refer to “cardinal posture

verbs” and “non-cardinal posture verbs” as positionals, and specify *sit*, *stand*, and *lay* as postural verbs.

2.1.2 *Gesture as an analytical tool*

Crosslinguistic variation can also be observed and analysed through co-occurring gestures. As Gullberg explains, “gestures open for a broader view of the mental lexicon, targeting the interface between conceptual, semantic, and syntactic aspects of event construal,” (2009b, p.161). Gestures are unique to humans (Kendon 1980; 2004; McNeill 1992b; Feyereisen & de Lannoy 1991; Goldin-Meadow 2003) and are acquired at the same time, if not before, a child begins to produce speech (Kendon 2004; Iverson & Goldin-Meadow 2005; Gullberg 2012b). But what exactly are gestures, and how can we identify and classify them for analytical purposes?

Attempts to classify “bodily movement” date back to the mid-20th century (Efron 1941/1972; Ekman & Friesen 1969; Kendon 1980; 1988; Feyereisen & de Lannoy 1991) which covered a broad range of movements and facial expressions. Yet the most influential classification can be attributed to McNeill (1992b) who bases his work on his predecessors. Inspired by Kendon’s (1988) notion of a continuum of bodily movement, McNeill proposes “Kendon’s Continuum”:

Gesticulation → *Language-like gestures* → *Pantomime* → *Emblems* → *Sign Languages*

Figure 3 Kendon's Continuum (McNeill, 1992b p.37)

The arrows indicate the decrease of necessary speech from left to right, while at the same time, gestures become more language-like – there are co-speech gestures to the left, and

sign languages on the right. He then breaks down manual gestures into 5 subtypes: iconic, metaphoric, deictic, beat, and cohesive (McNeill 1992a), (although he later drops the cohesive category) (McNeill 2005). For the purposes of this thesis, we are more concerned with iconic gesture types.

By taking both form and function of gestures into consideration, he identifies two overarching categories for gestures: *imagistic* and *non-imagistic* (McNeill 1992b).

Imagistic gestures include the iconic and metaphoric gestures which refer to the shape of an object, a movement, or action. Non-imagistic gestures include *beats* which align with rhythms in speech and have a repetitive nature, and *deictic gestures* that reference entities and are "prototypically" displayed by using the index finger (McNeill 1992b).

Conventionalised or emblematic gestures' meanings vary depending on the culture and language and have fixed forms. An example of such a gesture is the "thumbs-up" used in North America to communicate agreement or a positive value, whereas in other cultures, this form has an offensive meaning attached. These gestures fall under the non-imagistic category of gestures. Nevertheless, the classification of gesture is far from absolute. As Kendon (2004) explains, the nature of gestures does not lend itself to a strict typology as they are used according to a range of contextual and intentional factors.

The gestures that are examined in this research are *representational gestures*, defined as gestures occurring with speech that "depict action, motion, or shape, or that indicate location or trajectory," (Kita et al. 2017, p.1), and they exclude beat and interactive gestures (which indicate turn-taking, for example) (Hostetter & Alibali 2010). McNeill's (1992b) imagistic gestures – iconic, metaphoric, and deictic – are considered as part of a set of representational gestures as they relate to the content given in co-occurring speech (Kita 2000; Kita et al. 2017, p.1). Specifically, I look at gestures that are articulated

manually, as opposed to other articulators such as the lips (Orie 2009; Enfield 2001), nose (Cooperrider & Núñez 2012) or head (Kendon 2002). I refer to these gestures interchangeably as *co-speech gestures* and *co-occurring gestures*. As I explain in more detail later in this section, co-occurring gestures are noted as being closely coordinated with speech temporally and semantically, and thus, they help in mapping out crosslinguistic variation (McNeill 1992b; McNeill & Duncan 2000; Kita & Özyürek 2003; Chui 2005; Levinson & Wilkins 2006; Hostetter & Alibali 2008; Gullberg & Narasimhan 2010). I discuss methodological approaches to analysing gestures in 3.5.2.

Growth Point theory establishes that the imagistic properties of gesture and the information provided in speech combine to express an event and is the “initial unit of the thinking-for/while-speaking” (Slobin 1996; McNeill & Duncan 2000; 2011, p.663): information provided in speech can be thus *similar* to that displayed in gesture, but not the same. Furthermore, the semantic component of Manner is distributed multimodally, not just in speech (McNeill & Duncan 2000; McNeill 2001; 2005). McNeill and Duncan (2000) introduce the notions of manner fog and manner modulation to denote the potential co-speech gestures have in expressing Manner in addition to its expression in speech (refer back to 2.1.1.1 for lexicalisation patterns of Path and Manner in speech). Manner fog refers to occurrences where Manner is absent from speech. Speakers can further omit manner in their co-speech gestures, or present it. On the other hand, manner modulation refers to the presence of Manner in speech, in which case it can be further expressed in gesture or toned down by its absence in gesture (McNeill & Duncan 2000; McNeill 2001). The notions of manner fog and modulation help ascertain the multimodal distribution of semantic elements.

In an influential study, Kita and Özyürek (2003) observe how speakers in Japanese, English, and Turkish express motion events in speech and gesture. While Turkish and Japanese speakers have a limitation on the linguistic resources available to express motion that occurs in an arc trajectory, speakers of English can use the verb *swing* which encodes this arc trajectory. The Turkish and Japanese speakers used verbs such as ‘to go’, ‘to fly’, and ‘to jump’ in their speech descriptions, thus not encoding the arc-trajectory lexically. The participants responded to a cartoon stimulus set depicting these types of motion events in the target languages. The researchers studied the participants’ speech and co-occurring gestures and found that the information encoded in language influences the gestural representation. Speakers of Japanese and Turkish did not display the arc trajectory in gesture as frequently as speakers of English and tended to produce a gesture that displayed a change in location, matching the semantic information encoded in co-occurring speech. Speakers of English, on the other hand, had a stronger tendency to display the arc trajectory in gesture in addition to the change of location, also pairing with the information expressed in speech.

In the same study, Kita and Özyürek (2003) also looked at how these speakers express the Manner of motion *rolling down*. This type of motion involves both the Manner of motion as well as the entity’s change of location. Japanese and Turkish encode Manner of motion *rolling* outside of the main verb, in adverbial phrases. English, however, has the lexical item *roll down* that encodes both the Manner of motion in the verb and the Path linked to the particle *down*. The Japanese and Turkish speakers were more likely to display gestures that express the Manner of motion *roll* when expressing this same information in speech in adverbial phrases. The speakers expressed information about the motion in gestures that accompanied the verb that expressed the same information. English speakers

conflated both Manner of motion and the change of location into one gesture that accompanied the verb which again expressed both Manner and change of location. The information displayed in the speakers' co-speech gestures pattern to the information provided in the languages spoken semantically (Manner and trajectory), and temporally (these gestures occur at the same time as the relevant information is given in speech).

Based on their findings, Kita and Özyürek (2003) present their gesture and speech Interface Hypothesis model. The model aims to articulate the interplay between gesture and speech that accounts for their observations of the English, Turkish, and Japanese speakers' multimodal patterns. Here I outline the main features of their model, followed by a summary of how it functions, and finally, I highlight some implications for speech and gesture studies.

Their hypothesis asserts that co-occurring gestures arise from an "interface representation between speaking and spatial thinking" and of which their contents are shaped at the same time by both the spatio-motoric information about the event or action itself, such as the trajectory or manner of a motion, and by how the information is structured and packaged in co-occurring speech (Kita & Özyürek 2003, p.17). The Interface Hypothesis is unique from previous gesture-speech models in that it provides an explanation for why speakers of Japanese and Turkish still demonstrate spatial information about the *swing* event in gesture in spite of its absence in co-occurring speech: the content of these gestures represents the spatial imagery of the swinging event itself (the trajectory). At the same time, however, there were tendencies for speakers of the specific languages to demonstrate co-expressive information in their gestures which matched how the information was packaged in speech – in other words, the content of their gestures varied just as the way the information was packaged linguistically in their speech. Thus, unlike

previous gesture-speech hypotheses, the Interface Hypothesis asserts the “simultaneous” interplay between both the way in which information is structured linguistically in on-line speech as well as the influence of the spatial imagery of the event itself, thereby accounting for the presence of information in gesture when it is not verbalised in speech as well as tendencies for gestural content to match the linguistic structuring of information in speech. Figure 4 presents the Interface Hypothesis model.

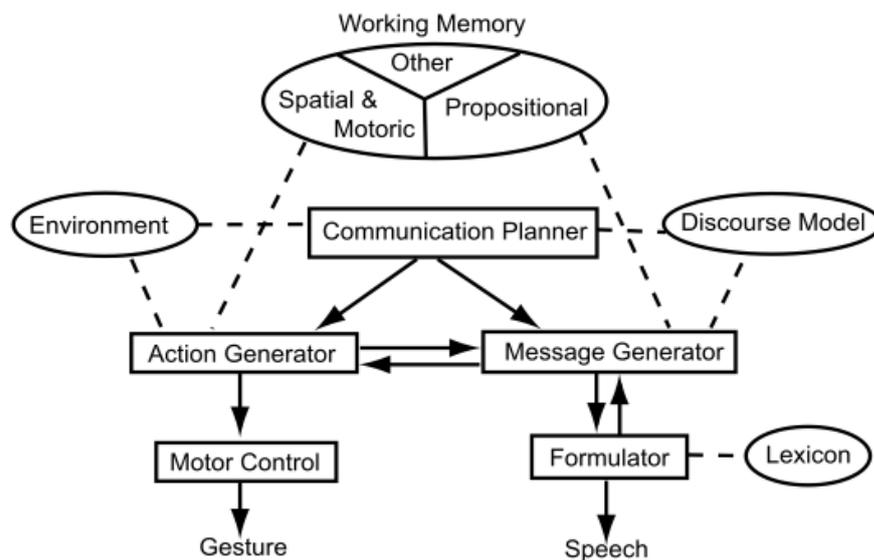


Figure 4 Proposed model of speech and gesture production (Kita & Özyürek 2003).

In the center of their model lies the “Communication Planner”. This planner approximates which information of an event will be expressed, its “ordering of parts”, and finally, it decides whether speech and/or gesture will be involved in the expression of the event. However, the Communication Planner does not determine what exact information is expressed in gesture versus speech. This “sketch” of information of the event to be expressed is then forwarded to the Action Generator and Message Generator. The Action

Generator is connected to the working memory in that it can access and retrieve spatio-motoric information about the event itself (in their case study, this information translates to the trajectory and directionality of motion depicted in the cartoon stimulus). The Message Generator sends the proposition to the Formulator whose role is to determine whether or not the message can be articulated via linguistic resources. The bidirectional arrows of their model among the Formulator, the Message Generator, and the Action Generator indicate that there is constant feedback and exchange of information as to which information is to be expressed and which modality has the resources to express the intended message. For example, if the information is not able to be expressed in speech, the Formulator notifies the Message Generator which then has the possibility of either dropping the information or notifying the Action Generator so that the information can be expressed in gesture. Once the exchange has reached a point of satisfaction, the speech is formulated and the “spatio-motoric representation” is carried out via Motor Control and, finally, via gesture. Although there is a certain extent of agreement as to the reflection of information expressed in speech to gesture as the Action Generator and Message Generator feed information back and forth until they are satisfied, such agreement can vary where the contents of a gesture can match co-occurring speech more precisely than at other times. Finally, the Action Generator also has access to the speaker’s environment which can shape the content of a gesture (i.e., considering factors such as speaker-addressee visibility).

The Interface Hypothesis thus bears several key implications for the way in which speakers express information multimodally. The gestures are shaped by the constant on-line exchange and feedback from linguistic expressions as well as by spatial imagistic information of the event itself via the speaker’s working memory. This allows for the way

in which language structures information linguistically to influence the contents of the co-occurring gesture. Furthermore, the content of gesture can be influenced by the imagery of the event itself independently of the communicative intent of the utterance. The Interface Hypothesis model provides a crucial foundation to understanding how the information expressed in gesture can coincide to the way it is organised in co-occurring speech based on the constant feedback between the two generators.

In similar studies to that of the Turkish, Japanese, and English monolinguals, Gullberg (2009a; 2011; 2013) found that monolingual speakers of Dutch, English, and French gesture differently from each other when expressing placement events, showing that co-speech gestures can be influenced by language-specific distinctions. When French speakers express locative information, for example, *il met le sac par terre* ‘he puts the bag on the floor’, speakers encode the caused motion in the verb *mettre* ‘put’, and more specific locative information in oblique arguments, such as *par terre* ‘on the floor’.

Monolingual speakers of Dutch indicate the configuration of the figure with regards to the shape of the object and whether it is ‘sitting’, ‘standing’, or ‘lying’ (Lemmens 2003; Alferink & Gullberg 2014).

Gullberg (2011) studied how monolingual speakers of French and Dutch express placement events in speech and in gesture. Findings revealed that monolingual French speakers used the general verb *mettre*, ‘put’ for over half of all tokens, whereas Dutch speakers displayed a preference for the positional verbs *zetten* ‘set’, *leggen* ‘lay’, and *hangen* ‘hang’. The monolingual French speakers’ gestures encoded simple Path information with a pointing gesture or with a flat hand shape moving in a given direction. The gestures of Dutch speakers displayed specific configuration of the Figure entity in the speakers’ hand shapes and superimposed them on the Path of the movement (Gullberg

2011). The results aligned with Kita and Özyürek's work (2003) in that the information displayed in gestures patterned with the semantic information produced in speech, and that the two modalities aligned temporally. The convergence of information between the two modalities support their Interface Hypothesis in that the content of gesture is shaped simultaneously by how the information is structured in the respective language.

Gestures are an integral part of speech and thought (Slobin 1996; McNeill & Duncan 2000) and can be used as an analytical tool to investigate the interface of conceptual, semantic, and syntactic dimensions. Based on the models and theories proposed by the Growth Point Theory and Interface Hypothesis model, we can understand that speech and gesture work together via a live interaction and feedback process to express information. The way in which language packages information can shape the informational content of the co-occurring gesture, mainly by providing similar information to that in speech. The content of gesture can also be influenced by the imagistic information present in the speaker's working memory of the event. What is pertinent to the current research, however, is that due to the live co-evolution between what is linguistically available in speech (via the Message Generator) and what is potentially able to be produced in gesture (via the Action Generator), the two modalities interact in an interface from which a multimodal expression arises. In sum, the gestural content can reflect the way information is structured and is available in co-occurring speech, and also reveals what is communicatively meaningful for the speaker.

2.2 Moving away from a W.E.I.R.D. context

The linguistic enterprise has boasted a long history of research focusing on monolinguals and the standardised languages they speak, such as English, French, and German (Jarema & Libben 2007; Grosjean 2008; Bohnemeyer & Levinson 2011), despite the fact that

multilingualism is the linguistic norm for speakers around the globe (Grosjean 1994; 2008; Gullberg 2012a). Indeed, one fundamental area that needs improvement concerns the selection of speaker participants. Both the academic fields of linguistics and psychology have noted a bias in their participant selection which then produces biased results. Psychologists have found that the majority of participants chosen for psychological studies are predominantly white, educated, industrialised, rich, and democratic (or, to use their abbreviation, W.E.I.R.D.). The researchers argue that the participants are not representative of the world's population since they overlook small-scale societies, and therefore the results are not accurate of human behaviour (Henrich et al. 2010). While this participant bias, as it currently stands, can lead to conclusions about the W.E.I.R.D. demographic, it limits our understanding of humans' linguistic and cognitive abilities on a global scale.

Henrich et al. (2010) call for a more representative selection of participants to gain a more accurate picture of human behaviour and cognition. Of the collection of linguistic research that has investigated bilinguals, these studies have mostly focused on language acquisition with particular attention to adults in classroom settings and children in natural settings (Gullberg 2012b). Research on multilingual speakers of non-standardised languages who simultaneously acquire 3 or more languages during childhood remains highly understudied. Again, this research bias limits our potential to better understand the nature and realities of multilingualism around the globe. I assert that by focusing on multilingual speakers in non-Western regions, research will yield results that offer a less subjective design toward the W.E.I.R.D. participants and ultimately complement the available research.

In particular, the West African region remains dramatically under-researched with regards to multilingualism and language contact, limiting what we know about multilingual speakers (Lüpke & Chambers 2010; Lüpke 2016a; Lüpke 2016b). In the following sections, I turn our attention to this complex setting by detailing its prominent characteristics of multilingualism. Section 2.2.1 introduces the field site where high levels of multilingualism are observed on both societal and individual levels (Juillard 1995; Dreyfus & Juillard 2004; Lüpke & Storch 2013) and describes some of its prominent characteristics with regards to identity and culture. Section 2.2.1.1 follows with an overview of key historical events that have led to the language landscape we see today. I then discuss several implications for linguistic classification of the languages of focus (section 2.2.1.2), and conclude with a qualitative description of some of the social and cultural factors that contribute to multilingualism today (section 2.2.1.3).

2.2.1 *Introducing the field site: small-scale multilingualism*

The Lower Casamance, part of the southern, humid region of Senegal, is well recognised for being the home to many ethnic groups such as the Joola and Baïnouk, and for people's high rates of multilingualism (Juillard 1995; Dreyfus & Juillard 2004; Juillard 2005; Lüpke 2016a; Cobbinah et al. 2016). There are several striking characteristics of the cultural and linguistic ecology of the Lower Casamance which, from a Western perspective, may appear paradoxical or even contradictory at first sight (Lüpke 2016a). Here, I first describe the linguistic diversity found on an individual and societal level. I then discuss how we can understand both the relationship between language and location and the problematic nature of applying and interpreting ethnic labels. Finally, I review the strategic social functions that both the diversity of multilingualism and the sharing of culture across various ethnic groups have offered speakers.

The Lower Casamance is well-known as a “hotspot” for linguistic diversity (Lüpke 2018). Speakers boast large multilingual repertoires: the average number of named languages in the repertoires of residents in the village of Brin for example is 6, with surrounding villages reporting similar numbers. Indeed, it is not uncommon to hear speakers report up to 10 languages in their repertoires, and speakers may use up to 5 different languages within a single day (Juillard 1995; Dreyfus & Juillard 2004).

Although an outsider to the region may assume that within each smaller region or village, speakers share the same sets of languages, this is not the case. Depending on the speaker’s previous migrations and experiences, each individual acquires a different set of languages. While repertoires tend to be comprised of various local languages such as varieties of Joola or Baïnouk and languages of wider communication such as Wolof and French, the overlap of shared languages between two speakers of the same family and village can even be as few as two named languages of a larger, combined total.

Furthermore, there is not simply a quantitative sense of there being diversity among “numerous languages spoken” on societal and individual levels, but the relationship between language and one’s ‘ethnic identity’ is not always one to one.

When describing the multilingual context of the Lower Casamance, it is of crucial importance to understand that language use or particular repertoires do not necessarily indicate one’s ethnic identity and that the application and interpretation of ethnic labels are themselves problematic. Most societies in the Casamance are patrilineal, meaning that children acquire the ethnic identity and identity language of their father (Lüpke 2016a). However, as Lüpke (2016a) points out, men who remain in their father’s villages through to adulthood can live out this ethnolinguistic ideology: migration, the custom of fostering children in different villages, social networks, and, specifically for women, exogamous

marriage patterns play a role in the actual shaping of language use and building of repertoires. In the village of Brin, characterised as a patrilineal society, some people describe themselves as the speakers of Joola Kujireray but being of Bāinounk heritage (Watson 2015). During my first field trip in 2015, speakers also identified as being Joola-Bāinounk, while asserting that their language is Joola Kujireray. Labels such as ‘Joola’ are thus better understood as “markers of identity or allegiance than indicators of some inherited bloodline” (Watson 2015, p.31). Furthermore, the relation of language, location, and identity must be described in more nuanced terms in order to not gloss over patterns of multilingualism and between-speaker variation: Kujireray, for example, is not the only language spoken in Brin, nor is it spoken by all habitants of Brin (e.g., some women married into the community), and, as it should go without saying, the language can be spoken outside of the village as its speakers are mobile. I follow Lüpke’s (2018) application of the term patrimonial language, based on the village’s founding fathers’ language of identity, to help describe the linguistic context and relation between language and identity. As such, we can understand Kujireray as being the patrimonial language of Brin, with certain members identifying more so with the language than others. It allows for a finer-grained discussion that does not exclude other languages spoken in Brin, and accounts for the fact that one can speak Kujireray without claiming the village’s identity, and vice versa due to the mobile reality of people.

Multilingualism has and continues to offer its speakers the ability to accentuate a particular identity, while at the same time providing the ability to conceal other aspects in order to negotiate alliances with others. Under a turbulent historical context of slavery and colonial expansion over centuries, habitants of the Lower Casamance swiftly adopted strategies of forming and breaking alliances with one another through cultural and

linguistic means. Lüpke (2018, p.3) describes the Lower Casamance as an area that harbours *small-scale multilingualism*, where multilingualism occurs “in a confined area where it has become part of the social mechanisms creating an ecology”. During the time of slave raids, one could draw on a certain identity by using the perpetrator’s language for protection from being kidnapped (Lüpke 2018). Accounts from a more recent conflict in the Casamance illustrate the same strategy – those who spoke a Joola language albeit being of a different ethnicity (say, Mandinka) would accentuate their allegiance to the Joola rebels through the use of the Joola language and declaring personal ties to Joola villages for protection (field notes 2017). Situations of bribery and negotiations are other prime examples of the modern-day context of this strategy, where speakers emphasise the identity shared between the groups to either get out of a bribe or to obtain lower a price for an item or service. Conversely, speakers can create distance between themselves and another party. Historical examples of slave raids illustrate this distancing tactic where perpetrators had to other victims in order to justify kidnappings (Lüpke 2018). Multilingual skills were crucial in the nuancing of in-group and out-group dynamics during times of Casamance history for both survival and aggression. Although different circumstances are presently at play, these mechanisms continue to be a core tool in many social contexts.

2.2.1.1 A historical shaping of the language landscape

One can understand the Lower Casamance’s present-day language landscape by considering the historical of shifts of power between local and other larger groups dating back to the 14th century⁴. The Casamance has an intricate history which cannot be fully

⁴ However, this is not to imply that multilingualism is a result of historical factors – multilingualism in the area is not a new phenomenon (Lüpke et al. submitted).

treated within the scope of the present research – I thus focus on key historical events that have moulded the make-up of speakers' linguistic repertoires.

The rich, natural resources of the Casamance have enticed groups across West Africa and Europe to settle and set up trade posts for centuries: thick forests, marshes, and mangroves provide a wide variety of flora and fauna yielding an abundance of materials and resources, including silk cotton trees, fruit trees such as mango, palm trees, rice paddies, and a lucrative groundnut business and fishing industry (Baum 1999). The wider region was also the first to witness the beginnings of the Trans-Atlantic slave trade, which had far-reaching effects on local social structures (Rodney 1966; Baum 1999; Green 2009; 2012).

The Mandinka of the Malian empire began their expansion farther east at the end of the 13th century, establishing trade while also having a significant impact on the region's culture throughout the 13th and 14th centuries (Green 2012). By the 15th century, the Mandinka had a strong presence as the group had settled along the Gambia River and to the east of present-day Gambia. During this time, the Jolof, Sereer, and Peul groups inhabited the sahelian region north of the Gambia River. The geographic region south of the river, which includes the Casamance, has been host to the tsetse fly and thus, the northern horse and cattle-herding groups such as the Peul could not immigrate to this area. Additionally, the abundance of wetlands in the Casamance impeded on any attempt to centralise power – as such, it fostered a high number of small groups, including the Baïnouk, Balant, among many others (Green 2012).

Baïnouk communities had a particularly strong base spanning from the River Gambia to the south where we call today northern Guinea Bissau throughout the 16th and 17th centuries, before losing power due to instabilities brought upon by the slave trade and

other political and social fluxes (Roche 1976; Juillard 1995; Baum 1999). Today, Bāinounk groups are few and far between in the Casamance, mainly surrounded by Joola communities: Djibonker is a prime example of a Bāinounk village located in the middle of Joola-identifying villages (Cobbinah 2010; 2013). The history of the Joola, however, remains more of a mystery (Roche 1976, p.32). It is speculated that their ancestors arrived before the 15th century where they took up residence along the coast (Bühnen 1994). Roche (1976, p.32) writes that the Joola describe themselves as coming from the east through the predominantly Bāinounk territory, however he acknowledges the Bāinounk's well-known hostility to newcomers and proposes that their origins could have also been from the south via Essil. The French may have first used the term 'Joola' to refer to a number of coastal wet-rice farmers in the Lower Casamance in the mid-1800s when reporting back to France on their colonisation efforts. These rice-growers only began referring to themselves as Joola "in the face of increasing integration into a multi-ethnic Senegal" (Baum 1999, p.26), and the label has since remained as a collective ethnic name for speakers of the many related Joola varieties.

The 15th century also witnessed the first European settlers in the region. Portuguese sailors arrived to Cabo Verde (or Cape Verde), a group of islands off the coast of today's Senegal. They settled in 1460 and set up a trading post between Africa and Europe which served as one of the first of many slave depots (Green 2009; 2012). Here, by the early 1600s, a Portuguese-based creole emerged as a vernacular language (Quint 2000), marking one of the first and oldest creole societies (Green 2012; Lüpke et al. submitted). Due to Europe's high demand for more slaves from Cabo Verde between the late 15th and early 16th centuries, the Cabo Verdeans migrated to Upper Guinea. The Portuguese referred to the relocated Cabo Verdeans (among others such as New Christians fleeing

prosecution in Portugal and Spain) as *lançados*, roughly translating to ‘the thrown’, as they “had literally ‘thrown themselves into’ African society and ‘out’ of the European orbit,” (Green 2012, p.141). They introduced the Portuguese-based creole to the mainland (Green 2012), where today there are several varieties of the creole spoken in the Casamance, Guinea Bissau, and of course Cabo Verde (Biagui 2012; Biagui & Quint 2013; Nunez 2015). In 1645, with the intent to unify the Portuguese merchants who were spread across the Upper Guinea region, the Portuguese founded Ziguinchor along the Casamance river (on what was originally Bainounk territory) and Farim in the north of Cacheu, in today’s northern Guinea Bissau (Roche 1976, p.67).

The Portuguese were not the only European power exploring economic potential in the Casamance at this time. The French began their Casamance explorations shortly afterwards during the 16th century (Roche 1976), although most of their activity was based in the north, well beyond the tsetse fly border in Saint-Louis in 1659 and on the island of Gorée in 1678⁵ (Sinou 1993). More significant expansion efforts in the Casamance by the French were carried out in the 19th century, often met with hostility from the *lançados*. Roche (1976) notes the presence of French officials in Mbering (or Brin, the field site of the present research) throughout the 1800s. In 1826, a French official travelled to the Casamance to assess the potential for French expansion and trade in the region, where he proposed the creation of a small depot in Brin (Roche 1976, p.74). In March 1828, a contract providing land to the French was signed between the Joola and the French. Two Frenchmen were subsequently sent to Brin to guard their territory – however, the two Europeans were found dead in August of that year, supposedly having been poisoned by the *lançados* (Roche 1976, p.75). 60 years later in 1884, the Portuguese

⁵ Both the Island of Gorée and Saint-Louis alternated between French and English rule until 1817 when the French officially took control of both territories (Sinou 1993).

and the French both arrived to Brin to retrieve 15 people⁶ who had been kidnapped. The French official, arriving after the Portuguese officer, learned through Brin's village chiefs that the neighbouring village of Djibonker had wanted to negotiate the people's release with the Portuguese officer. The Portuguese officer then threatened to set fire to Djibonker, but they replied that they were a French village, and so the officer left. The French officer returned to Carabane, a French occupied island along the Casamance river, and during his absence the Portuguese set fire to three wards in Brin: Jirer, Jeugele, and Butemol (Roche 1976, pp.202–203). These encounters reveal not only direct contact and negotiations with Europeans dating back to the 1800s, but the villages' strategies of creating and dismantling alliances for survival. Residents of Djibonker reinforced their alliances with the French to protect themselves from the Portuguese, using the hostile dynamic between the European powers to their advantage.

Meanwhile, during the Scramble for Africa, negotiations at the Africa Conference in Berlin 1884–1885 over land exchange took place between the two European powers, resulting in Portugal taking control over today's Guinea Bissau, and France's claim over the Casamance (Lambert 1998; Lüpke 2016a). In 1886, the French acquired Ziguinchor from the Portuguese merchants, which, after two years, officially became a part of French rule in April 1888. Ziguinchor had 1000 residents and was mainly surrounded by rice fields and dense forests (Roche 1976, p.207). During this time, France carried out an assimilation process that aimed to promote the French language and culture whilst discouraging any and all African languages, cultures, and religions (Ngom 1999), demonstrating another historical shaping of the language landscape.

⁶ It is not clear exactly who these 15 people were, nor who the kidnappers were, although we can deduce that they were of value to the Europeans based on their swift reaction to retrieve them.

The following 20th century witnessed both the height of France's colonisation in West Africa as well as the region's emergence as the independent Republic of Senegal in 1960. During the first half of the 20th century, France recruited men from their West African colonies to fight in the world wars (Ngom 1999) – some surviving elders in Brin can recall their participation in the French army (field notes 2015). The French also introduced their court system to the Casamance during this time, yet, due to little mutual understanding culturally and linguistically between the colonial power and the Casamance people, results of these trials were often indiscriminate (Baum 2004, pp.206–207). Baum (2004, p.207) notes that only religious missionaries attempted to learn the local languages, and just a small handful of “African notables” spoke French and could interpret between the groups.

Nevertheless, France's colonial presence left a long-lasting impression on the language landscape: French became the official language of Senegal after independence in part due to its standardisation, the fact that it had already been used in government sectors by the colonialists, and because of its ideology as being a language of science (Ngom 1999). Just 10 years after Senegal's independence, the international organisation of the Francophonie was established to promote the French language and culture (Francophonie). Today, France's presence throughout the Casamance is still widely visible, be it through privately owned French hotels and lodges, international aid organisations, or Francophone cultural centres such as the French Alliance in Ziguinchor. Ngom (1999) notes the role that French expats play in the maintenance and transmission of French, be they in Senegal for business or for tourism. A small number of French expats (4) also reside in Brin, one owning a small lodge for tourists at a crossroads, another recently opening a Joola

museum in 2017⁷. Tourism, one of the major economic industries in Senegal, declined during the Casamance conflict (Simpson 2003) and saw another drop in 2014 in the Casamance and in surrounding areas due to fears of Ebola (Williams 2015), but it has recently seen a slow recovery.

2.2.1.2 Linguistic classification and its limitations

There are over 30 named languages spoken in Senegal (Lüpke 2018; Lüpke et al. submitted), with the exact number being approximate as social and linguistic definitions of language are diverse. In the Lower Casamance, speakers may use an average of 6 languages on a daily basis, yet each speaker has a distinct linguistic repertoire due to social and cultural patterns (see 2.2.1.3 for a discussion). Observing speakers' linguistic repertoires reveals further diversity: the languages are not necessarily genetically similar (such as Mandinka and languages of the Joola cluster) nor are they always mutually intelligible. Of the Niger-Congo language phylum (Williamson & Blench 2000), languages representing the Atlantic family as well as the Mande family are predominately heard in the Lower Casamance and throughout Senegal. Of the Indo-European language family, English, French, and Portuguese are also spoken. Furthermore, as explained in 2.2.1.1, a Portuguese-based creole is spoken in the region (Biagui 2012; Biagui & Quint 2013; Nunez 2015). Given the extent of the linguistic diversity among individual repertoires, it is not possible to link speakers' repertoires to specific locations as one may do in European contexts, however if we recall the discussion of patrimonial languages in 2.2, as Lüpke (2018, p.4) explains, we can "assign ideological home bases to languages".

For a number of reasons discussed below, the classifications of languages of the Niger-Congo phylum stand in contrast to the state of those of well-documented Indo-European

⁷ Members of the Crossroads team and of the Brin community were invited to collaborate in this project.

languages. To begin, let us examine the Atlantic language family. Classifications of Atlantic languages have generally been characterised based on geographic location (being spoken and associated with West Africa), morphological features (for example, noun classification system, inclusive and exclusive distinction in pronouns, and verbal extensions), and phonological phenomena (consonant mutation) (Williamson & Blench 2000). Its contrasting typological features to the Mande family have also been considered as evidence for a separate group of languages (Lüpke 2016a). However, many challenges have faced the classification of Atlantic languages: due to the scarcity of written materials and the fact that many of these languages have not been described and thus lack proper documentation hinder a proper comparative approach, while intense language contact among languages blurs any claim on common ancestry (Williamson & Blench 2000; Pozdniakov 2007). The Atlantic language family itself is further disputed with regards to genetic affiliations between languages that were based on somewhat insignificant findings of lexicostatistic tests carried out by Sapir (1971) (Pozdniakov 2007; Cobbinah 2013; Segerer & Pozdniakov forthcoming).

Yet, thanks to an increase of documentation work of languages spoken in the Casamance such as languages of the Joola cluster, more theoretical and comparative studies of the region's languages, and the digitisation of lexical data, Segerer and Pozdniakov (forthcoming) propose an updated classification of the Atlantic family, modifying the otherwise widely accepted classification by Sapir (1971)⁸. They refrain from applying lexicostatistical methods as they point out that borrowings are incorrectly treated as cognates and therefore do not yield accurate results. Instead, they base their findings on phonetic, phonological, morphological and semantic innovations (Segerer & Pozdniakov

⁸ See Segerer & Pozdniakov (forthcoming) for a full review on the comparative work carried out since Sapir's (1971) classification.

forthcoming). The key difference in their classification (Segerer & Pozdniakov forthcoming) is the removal of what Sapir (1971) labelled the Southern branch. Furthermore, Segerer and Pozdniakov (forthcoming) identify the languages Sua, Limba, and Gola as isolates as they bear significant differences to other languages of the family. As such, languages of the Atlantic family are divided into two branches: Bak and North. See Figure 5 for their proposal of Atlantic classifications.

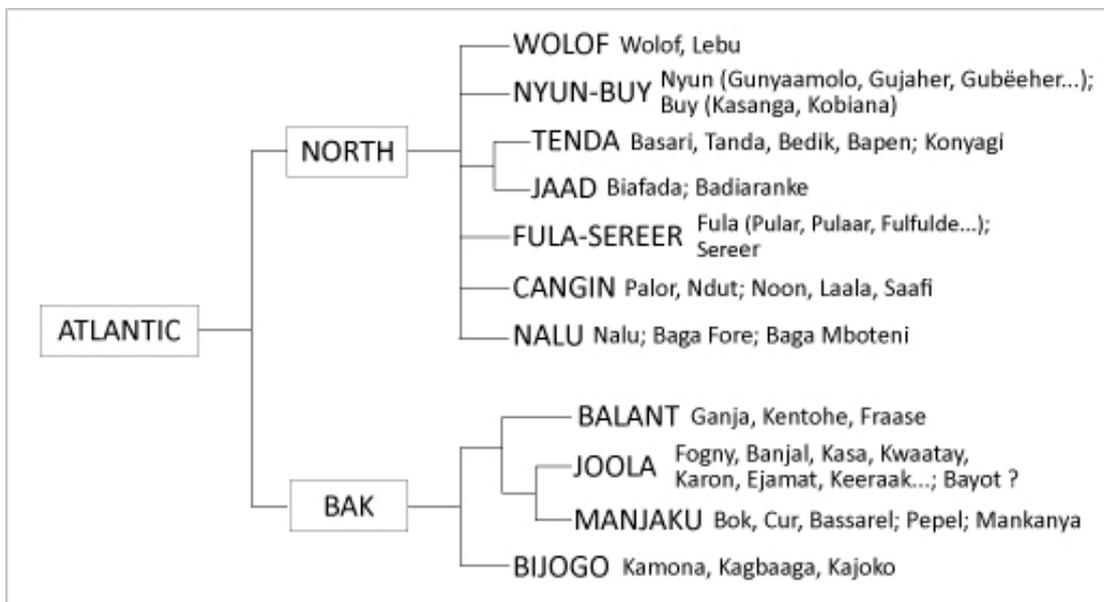


Figure 5 Segerer and Pozdniakov’s (forthcoming) proposed classification of Atlantic languages

Segerer and Pozdniakov (forthcoming) acknowledge that their proposed classification is not without its limitations: for example, issues relating to the Joola cluster include the classification of Bayot, which has a very “divergent lexicon” from other languages of the Joola group. Further research in this area is needed as the classification of these languages is still far from settled. For purposes of concision, I focus here on the classification of Joola Kujireray, one of the languages of central focus in this research, the languages

associated with the villages in proximity to the field site (Baïnounk Gubëeher and Joola Banjal) and finally, Wolof as it serves as the regional language of wider communication and is spoken by the majority of participants in this study.

The term Joola is used to refer to a cluster of roughly 15 related, but not all mutually intelligible, languages spoken in Southern Senegal, Gambia, and northern Guinea-Bissau (Sapir 1969; 1971; Segerer & Pozdniakov forthcoming). The Joola cluster is part of the Bak group (Sapir 1971; Segerer & Pozdniakov forthcoming) and is one of the largest clusters of the Atlantic group, regardless of whose classification one follows. Joola Kujireray, spoken by roughly 1,000 people, is one of these languages that make up the Joola cluster and is identified with the village of Brin (see Figure 6) (Watson 2015). One of the most closely related languages to Kujireray is Joola Banjal, spoken in Banjal (Figure 6) (Bassène 2007; Sagna 2008; Watson 2015; Goodchild 2016). However, as both Sagna (2008) and Watson (2015) point out, what can be perceived as a language label must not be taken at face value. For example, the term Fogny refers to a set of Joola varieties spoken in Ziguinchor, north of the Casamance river and through to Gambia, despite official recognition as its own language (Watson 2015). Similarly, ‘Banjal’ can also refer to a set of Joola varieties associated with villages in proximity to Banjal, each variety having its own label (Bassène 2007; Sagna 2008; Goodchild 2016; forthcoming). Even Kujireray comprises two varieties: one spoken in the Jegele quarter of Brin, the other spoken in Jire, another division of Brin (Watson 2015; field notes 2015), although for the purposes of this research, I do not differentiate between the two Kujireray varieties unless speakers make a point to identify them. Variation aside, it is clear that Kujireray features many of the characteristics of the Atlantic language family grouping with the

exception of consonant mutation, and can be considered part of the Joola cluster of languages (Watson 2015).

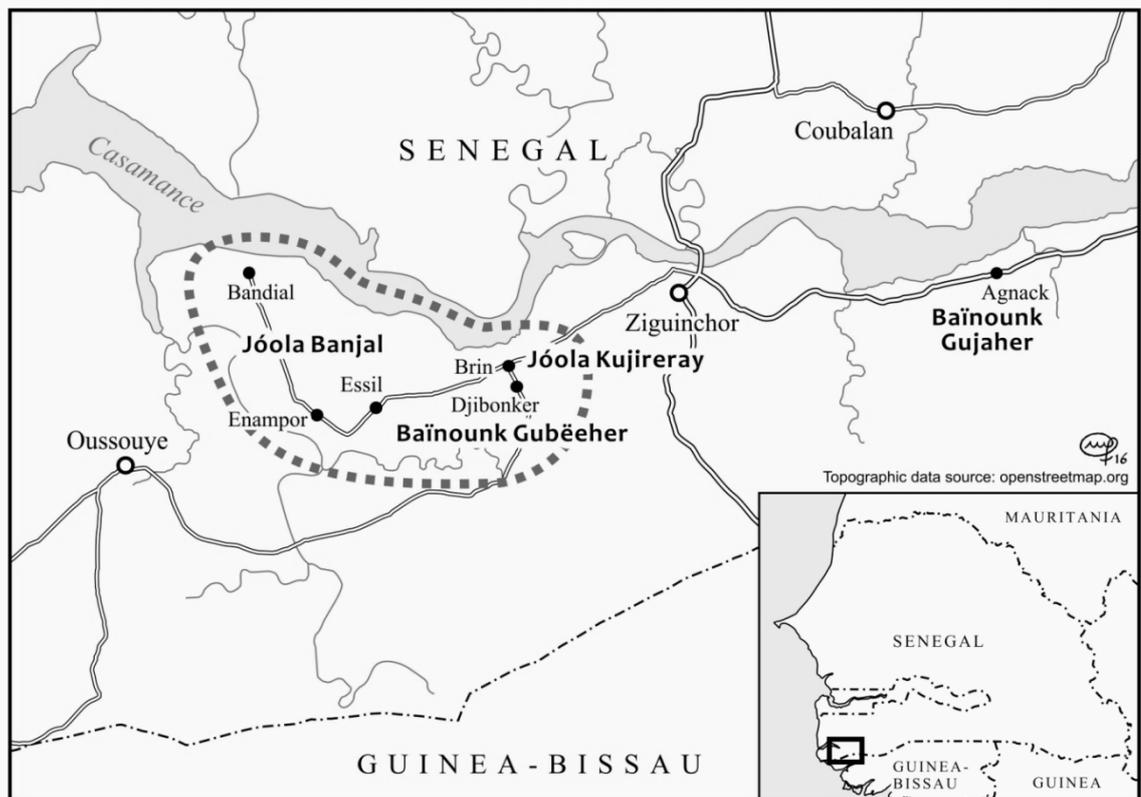


Figure 6 Map of field site villages

Baïnouk Gubêeher is associated with the village Djibonker and is spoken by about 1,000 speakers (Cobbinah 2010), some of whom also speak Joola Kujireray. It belongs to the Nyun subgroup of languages (Sapir 1971; Segerer & Pozdniakov forthcoming) and, according to Segerer and Pozdniakov's (forthcoming) classification, is grouped within the North branch of Atlantic languages (see Figure 5).

The villages of Brin and Djibonker sit in a more remote location in comparison to the region's riverside capital of Ziguinchor and are surrounded by dense forests and mangroves (see Figure 6 which illustrates the area of the Lower Casamance where the fieldwork was carried out). The villages, noted in the map by a dotted circle that also encompasses Banjul, are located approximately 10 kilometres southwest of Ziguinchor and share a main public road that leads directly to the capital and to the coastal tourist town, Cap Skirring. Proximity to this road is not to be underestimated in terms of language contact: both the road and crossroads located in Brin serve as a public, open space where travellers and speakers of various languages stop and converse. The crossroads alone provides a rich environment for socialising as a church, two shops, a bar, and a traveller's lodge are all located along the main road. It also provides a prime location for securing public and private transportation, and hosts a daily fish and vegetable market.

Other languages spoken in the Casamance region are French, which is the official and ex-colonial language of Senegal (Ngom 1999; Mbaya 2005) and Wolof (Swigart 2000; Mc Laughlin 2001; 2009; 2018; Dreyfus & Juillard 2001; 2004), a language classified as part of the Atlantic family and, according to Segerer and Pozdniakov's (forthcoming) classification, belongs to the North branch. Neither language is associated with the Casamance at the patrimonial level, unlike the Joola and Baïnounk clusters of languages previously discussed, although they are spoken in this region. Today, French and Wolof serve to form a modern identity linked with urban Senegalese culture (Mbaya 2005; Mc Laughlin 2009) and these two languages are most often heard on national and local radio stations and television programmes.

French is used in a small range of domains such as education and the media. Its use is typically limited to urban middle classes and, although it is a widely learned language in formal contexts throughout Senegal, speakers may choose this language as a language of wider communication. Ngom (1999) describes there being two varieties of French spoken in Senegal: the standardised, high prestige variety which is used in official domains and a non-standardised variety which is used by those with limited formal education mainly as a vehicular language. I have observed its use as a vehicular language especially between elders who either do not speak Wolof or ‘protest’ against its use and young ‘outsiders’ to Brin who do not speak the patrimonial language. As Mbaya (2005) further explains, this variety of French is not the same as standardised, metropolitan French – it has been influenced from contact with local languages and has very little association with the European French culture. One may consider there to be a cline between the two French varieties.

Yet, while standardised French has been losing popularity among speakers, acting as a vehicular language only marginally, urban Wolof has been gaining popularity (Swigart 2000; Dreyfus & Juillard 2001; Mc Laughlin 2009). Wolof can also be identified as two varieties: urban Wolof and ‘pure’ Wolof (Ngom 1999; Swigart 2000; Mc Laughlin 2001), where urban Wolof is characterised by code-switching particularly with French while speakers of ‘pure’ Wolof are more conservative in its use and is referred to as the identity language of the Wolof people who reside in the north (Swigart 2000; Mc Laughlin 2001). Urban Wolof is spoken predominantly in Dakar but since the 1980s, it has a strong, growing presence in the Casamance, especially among youth (Dreyfus & Juillard 2004; Juillard 2010). It often serves as the role of the language of wider communication and is referred to as Senegal’s national language (Ngom 1999; Lüpke & Storch 2013, p.19; Mc

Laughlin 2001; 2009; 2018). Indeed, as will be shown in chapter 3, the vast majority of participants of this research report speaking Wolof.

The majority of children residing in the area highlighted in Figure 6 attend school in Djibonker or in the region's capital city, Ziguinchor. For Brin and Djibonker's youngest students, aged 3 to 5, parents, older siblings, or neighbours accompany them to Brin's kindergarten, a group of three small buildings hidden behind the village's football field. One can note that the multilingual speech is very much an apparent characteristic of their teaching and learning style, despite the pedagogical ideology of a monolingual French-based system that many teachers try to propagate. As Lüpke (2016a) observes, young children arrive to school with very basic vocabulary and "formulaic sentences" in French, and are expected to be fully immersed in the language. Additionally, French, Kujireray and other Joola languages are spoken in the local church in Brin, yet it is important to note the naturally occurring multilingual practices at the close of the service with people speaking Baïnounk Gubëher, Wolof, and other Joola varieties. Another characteristic of the small-scale multilingual ecology is the lack of a hierarchical status of languages and domains of use (Lüpke 2018; Lüpke et al. submitted). For one, it is rare to observe a language being used in a monolingual context (Lüpke & Chambers 2010). Moreover, languages are not confined to specific domains of use, such as the classroom, at home, or in government. The use of language largely depends on one's social network, or, to whom one is speaking and the sociolinguistic background of the interlocutors (Lüpke 2018).

In addition to the spoken languages, sign language also makes up a part of some speakers' linguistic repertoires. Most sign languages, however, are severely under-researched in the whole of Africa – research in this area is desperately needed (Nyst 2010; 2013).

Predominantly based in Ziguinchor, a large group of deaf Senegalese people have formed

an association which organises social events with another deaf community in Cap Skirring. While all members of the Ziguinchor-based group have developed a local sign language, some also attended a deaf school in Dakar where a “hybrid” of American Sign Language (ASL) adapted to French Sign Language (FSL) was taught to them. We can certainly consider the deaf community to be multilingual, aligning with characteristics of other deaf communities in West Africa (Nyst, personal communication). One individual who lost hearing later in childhood speaks and can lip-read Wolof.

Several deaf individuals rely more so on a local sign language, particularly those who have limited interaction with the Ziguinchor deaf community. For example, a young man who was raised in Djibonker relies mainly on a local sign language that bears many semantic and formal properties with hearing peoples’ gestures, such as deictic gestures contrasting proximal to distal locations and gestures. As such, many residents of villages around and in the field site can understand and communicate well with him. In more recent years, he has frequented the more established deaf community in Ziguinchor, with whom he attends social events such as football games, dances, and school together. Yet, when asked about the use of ASL/FSL, he explains that while he is familiar with this taught sign language, he finds it unhelpful when navigating outside of the deaf community and, as a consequence, barely uses it. Many of the signs he uses to communicate to others bear the same semantic and formal properties found in iconic gestures of the hearing community, such as gestures to indicate the washing of one’s face (a side to side movement with the hand from the forehead to chin) and sleeping (by putting one hand next to the face and tilting the head). Although home sign and sign language are not the focal point of this research, I do put forth that understanding the interface of co-speech gestures and this use of sign language is a fruitful topic for future

research, as is the extent to which there is mutual intelligibility with members of the hearing community.

2.2.1.3 Fostering multilingual patterns

A rich tradition and history of exogamous marriage, child fostering, and migration patterns have led to the maintenance of multilingualism in the Lower Casamance (Lüpke & Storch 2013; Lüpke 2016a). Let us first look at the large role women play in the spread and exchange of linguistic repertoires throughout the region. For many women in the Casamance, their future homes where they live and start a family are not in the same village where they spent their childhood due to exogamous marriage practices. Many women in the Casamance marry men living in other villages and who practice a different culture to their own, and speaking languages that can also differ. The women learn new languages upon arrival to their husband's village, while at the same time introducing their own set of languages (Lüpke & Storch 2013). Some men, however, may stay in the village where they were raised, and when marrying a woman (sometimes from a different village presumably with a different set of languages), the linguistic repertoires of their children may include the patrimonial language of their father, yet the children will also acquire languages of their mothers' linguistic repertoire over time (Lüpke 2016a). The women keep in close contact with their childhood villages, returning often with their children for ceremonies and events, further fostering the children's multilingual practices via familial relations.

The wife of one participant in this study represents this exogamous marriage practice. She arrived to Brin 5 years ago when she married a resident of Brin for whom Kujireray is his patrimonial identity language. As she speaks Joola Kasa, another language of the Joola cluster, she has mastered the two languages to communicate easily with others since her

wedding, especially noted if she is put on the spot in playful language and required not to speak Wolof or French. Her husband spent most of his childhood in Brin, after migrating to the village upon fleeing the Casamançais conflict and settling down ever since. Their child is currently learning Kujireray at home with family and local visitors, French at the local nursery, and Joola Kasa with her mom. After a three month visit to Dakar to see family with her mother at the age of 4, she returned to Brin flaunting her new Wolof language skills.

Children are multilingual from an early age: mothers may speak to their children in the nominal language of their village, as well as Wolof, the national language. However, children's mothers are not the only linguistic input – children of different linguistic backgrounds and degrees of fluency play together, go to school together, and share chores and other household activities while exchanging and improving their linguistic skills. As mentioned, children leave their villages with cousins or adults to visit other family and friends in villages nearby, leading to the acquisition and use of other languages as well. Individuals' social networks play an influential role in language choices and use: one of the dynamic aspects of these social networks is moving to meet and live with different people who may speak different languages. Children are very often fostered into other relatives' homes and villages anywhere from a few months to several years (Lüpke 2016a). One example of child fostering comes from the household of a participant of the study, IT⁹. Of the 5 children who live with IT, two were fostered into the home from other family members due to a lack of financial support to take care of them. The younger of the two fostered children is the nephew of the father of the household. The child's mother is Joola, and the father is Mandinka. Throughout the school year the child stays in Brin to

⁹ All participants were ascribed anonymised, unique codes following the format of two letters and, where duplicate abbreviations, a number.

attend the local nursery, and occasionally for holiday he visits his father with whom he speaks some Mandinka and Wolof. At his fostered home in Brin, Joola Kujireray and Joola Banjal are the dominant languages spoken, along with Wolof, and French with his father who does feel comfortable speaking Wolof. Members of the family playfully tease the child for being the only one to understand Mandinka, nevertheless fully integrate him into the family and local Joola culture.

Another factor contributing to this fostering of multilingualism and linguistic diversity is migration. Here, I first describe the effects of the recent Casamance conflict on speakers' linguistic repertoires due to forced relocation. Following this, I sketch some of the main features of the Joola social and economic structure in order to contextualise other motivations for people to migrate to and from villages and urban cities.

People in the Casamance used their multilingual skills when taking asylum in other villages due to the Casamance conflict that overtook the region in the early 1980s (Lambert 1998; Foucher 2005; Clark 2011). The conflict began when the southern region sought independence and founded the Movement of Democratic Forces of the Casamance in 1982, fighting against the Senegalese army (Lambert 1998; Clark 2011). The Casamançais – those identifying with the Casamance region – cited economic, religious and ethnic reasons for seeking their independence from the state. As the Casamance is rich in its natural resources thanks to its tropical climate, standing in contrast to the drier, Sahel region in the north, it was argued that the capital of Dakar was profiting from the Casamance's resources. The Movement noted further differences between the dominant Muslim population in the north and the prevailing Christian community in the south as well as differences among ethnic groups between the two regions (Clark 2011). From a linguistic perspective, the effects of this conflict had an influence on people's linguistic

repertoires as they migrated to safer areas as refugees. For example, many residents of Brin did not spend much of this period in the village but left for other villages outside of the Casamance, in the Gambia, or in Dakar. Likewise, many left their villages farther to the east to find refuge in Brin and Djibonker and, at the time of this research, are still residing there. Sociolinguistic questionnaires and interviews with participants of this research point to some of the linguistic effects of this conflict in regards to language contact, language use, and language acquisition (for more discussion, see 3.3 on these data). Young newcomers to Brin had to adapt and accommodate to the local Joola Kujireray, while using the languages of wider communication such as Wolof, and those leaving Brin to other places such as Gambia or elsewhere in the north had to acquire new languages and varieties such as Joola Fogy, Mandinka, and even English.

Social and economic motivations for migration also support multilingualism. Joola communities are generally structured as an egalitarian society in which men and women organise meetings to discuss political and social issues facing the community. These meetings are carried out in a variety of languages: French, Wolof, Joola, and Bainouk, depending on a number of factors such as who is present at these meetings and what language their linguistic repertoires consist of. The villages of Brin and Djibonker have village chiefs, although these members serve to mediate village committee meetings and assist with group decisions rather than acting as the leader of the community (Sagna 2008; Watson 2015).

The youth also organise themselves in groups to be hired for agrarian work in nearby villages, or, when more help is needed in Brin, these youth committees will hire similar groups of young men from other villages, sometimes from neighbouring countries such as Guinea Bissau, to help in the fields in exchange for payment (Baum 1999; field notes).

The youth then spend time working while being immersed in a different set of languages, for example, Portuguese Creole if in Guinea Bissau, or Baïnounk Gubëeher if in Djibonker. During the holidays, the youth organise social dances at the local “foyer”, or community centre, in Brin. Funds collected are decided upon by the organising youth committee and are allocated to on-going projects in the villages. These dances attract many youth from neighbouring villages, again bringing in an exchange of languages and language varieties.

The search for economic opportunities drives many youth, men, and women to migrating to different towns and cities for work. Here I outline some of the common work one does in the village as well as the year-long agrarian process. Taking a closer look at the daily activities and duties carried out by residents of Brin, men and women tend to take on traditional roles when it comes to work: men are responsible for the construction of houses and fences, making charcoal, butchering livestock, and more general landscaping and farming duties. Women play an important role in rice farming throughout the year, and are in charge of household work such as cleaning, cooking, and taking care of children (Sagna 2008). However, these are not strict gender-based duties, as seen when, for example, the mother and older girls of a household are unavailable, the husband, father, or oldest male sibling will step in to prepare meals, clean, and babysit.

From about June until mid-September, these villages are inundated with rainfall and provide an adequate amount of water to hold through until the following May, marking the end of the dry season. The rainy season provides the Lower Casamance with crops and thick forests making it rich in vegetation. Baum (1999) explains that, within a historical context, all economic activities revolved around the annual schedule of rice harvesting, and can still be observed today. Beginning at the end of the dry season, men

ensure that the rice paddies have adequate drainage by ploughing and creating new furrows, otherwise the rice risks drowning during the rainy season. Between April and June, women begin carrying a fertiliser to the rice fields to give the new crop enough nutrients. Once the rains begin in June, women sow the rice and wait for growth. From November to February, nearly 9 months after having begun the process, women harvest the rice in small groups and men take turns standing watch for birds and other animals who eat the seed. Before leaving to tend to their fields, women ensure that a relative can take over traditionally female-dominated household duties such as cooking, cleaning, and child-rearing. This year-long process made rice the core of all economic activities: one could trade rice for palm wine, palm oil, fish, livestock, and when stored in granaries, it protected families against famine during dry spells, against physical sufferings, and against spiritual hardship by being used for rituals and sacrifices (Baum 1999).

In spite of the many economic activities taking place in villages in the Casamance, many youth, men, and women find that this work does not provide a sufficient income or a satisfactory education system to support their families and futures. Urbanisation is one of the most common forms of migration: young villagers will travel to Ziguinchor for secondary school as well as university, or will attend school in Dakar while staying with relatives in the capital. The search for a better paying wage is one of the most common reasons for residents of Brin, Djibonker and the surrounding villages to move to cities as there are more opportunities for work in these urban areas. Women seek more traditional roles such as housekeeping, nannying, and school teaching in Dakar and Ziguinchor, or find work as cooks, receptionists, waitresses, or cleaners in the hospitality sector (field notes). Men tend to look for both long-term and seasonal or short-term jobs in urban areas (Linares 2003; Lüpke 2016a). Most of these people who find long-term work in one of

the larger towns or cities outside of the village return during holidays to participate in cultural events and with rice cultivation.

This urbanisation has an effect on one's linguistic repertoire as different languages are needed to work different jobs in different areas. One of the male participants of this study falls under this migratory pattern: from July until August and sometimes early September he returns to Brin to help with construction projects, attend parties and other ceremonial events, and helps with cultivation. For the rest of the year, he lives with his Sereer aunts and cousins in Dakar and works at a French I.T. company, where mainly Wolof and French are spoken.

Other participants in this study describe taking short-term trips to the capital and to Ziguinchor, often returning to Brin to volunteer their time for the village. The busiest period for Brin is during the rainy season when most youth and other community members travel home from Dakar and other larger towns and cities to spend their holidays and to help with rice farming. Leisure time for habitants of Brin and the surrounding villages include participating in football games at the two local playing fields, located in both villages, drinking tea together, playing cards, or simply preparing meals together and discussing recent events. The traditional Senegalese wrestling matches also occur here during this period, inviting many spectators of neighbouring villages to join. Upon return to Brin and Djibonker, people take advantage of the season and partake in wedding ceremonies and other festivities.

Finally, the attitudes a speaker has of his or her language affects how that language is used. Lüpke and Storch (2013) argue that "multilingualism is an integral part of the identity of many speakers of African languages" (p.275) who express positive attitudes towards this linguistic trait. Speakers share patterns of multilingualism "by creating

routines [and] occasions for playful interactions in several languages and conventionalised contexts” (Lüpke & Storch 2013, p.19). These practices and positive attitudes contribute to the maintenance of individual and societal multilingual repertoires.

The acquisition of multiple languages is regarded very positively as each language provides the speaker with new opportunities on economic, social, and cultural levels. Indeed, in the villages of Brin and Djibonker, speakers express their positive attitudes towards being multilingual, noting the many benefits multilingualism brings to people. Lüpke (2010; 2016a) also finds positive attitudes towards speaking languages in another Baïnouk setting in the Lower Casamance and that it plays an integral part in one’s identity. A reflection of Brinois’ positive attitude towards multilingualism comes from a sociolinguistic interview with one of the participants. He asked which languages my family and my community spoke in my hometown (a predominantly monolingual, suburban town in the USA). I replied that although foreign languages are taught in public schools, not many people practice speaking them or any other language besides English. The participant then asked how one got by when people migrated to and from my hometown – wouldn’t one need to speak another language to talk to others? I explained that everyone else speaks English, so no, we are not obligated to learn and practice speaking another language. Taken by surprise by the characteristics of monolingualism, the transcriber proceeded to express his attitude towards it, calling it a “very boring way to live one’s life” (field notes, 2015).

2.3 Bilinguals are not two monolinguals in one

As I have presented throughout section 2.2, multilingualism is a prominent feature of the Lower Casamance and such understudied regions must be taken into consideration in linguistic research to grasp a more representative understanding of the realities of

multilingualism. One avenue of psycholinguistic research, which I review in the following sections in more detail (mainly in section 2.3.1), has focused on the effects of knowing more than one language and the consequences for not only how speakers' organise language-specific information with regards to the conceptual level, but also how we describe multilingual speakers. It has been famously argued that "a bilingual¹⁰ speaker is...not the sum of two monolinguals" (Grosjean 1989, p.6), recognising the literature on crosslinguistic influences that reveal languages are not discrete, separate systems, but that they interact in the mind of a multilingual speaker (Kellerman & Sharwood Smith 1986; Odlin 2003). Grosjean (1982; 1989; 2008; 2010) and Cook (1991; 1992) put forth a framework for describing L2 and bilingual speakers which I follow to describe the speakers of the Lower Casamance. Their notions of multilingual speakers emphasise that they:

1. are not the equivalent of two separate monolingual speakers in one, and
2. are considered as whole speakers with the knowledge of more than one language in their mind.

These two key components take on a positive, holistic perspective of a multilingual speaker: speakers are not viewed as 'partial' speakers as compared to monolinguals, but understood as being multicompetent in their languages and having high metalinguistic awareness (Cook 1992). Consideration can be taken into account for crosslinguistic influences between the languages of speakers' repertoire, and the social and cognitive benefits multilingualism has for these speakers. Furthermore, Cook (1992) asserts that multilingualism is the norm, and that it is the monolingual speaker who is deprived of a

¹⁰ In terms of L2 and bilingual distinctions, I follow the study's terminology under review. Otherwise, I use the term multilingual to refer to speakers of 2 or more languages, regardless of their progress in acquisition.

more diverse linguistic repertoire. Thus, the notion of multicompetence (Cook 1991; 1992; 2003) highlights bidirectional crosslinguistic influences (presented in 2.3.1), arguing for a more holistic approach to viewing these speakers, and that as Grosjean (1982; 1989) explains, bilingual speakers are not two separate monolinguals in one.

2.3.1 *Evidence of crosslinguistic influences: a review*

According to Slobin's (1996) and Levinson's (1996) crosslinguistic work, we can understand that culture and language have an effect on cognition. But what if we consider Grosjean and Cook's multicompetent speakers, such as those residing in the Lower Casamance? How do languages in the mind of these multilinguals interact and what role does crosslinguistic semantic diversity play on the conceptual level? The following two sections review the literature on multicompetent speakers and the effects that knowing and using more than one language have on a speaker. The review considers all speaker types and profiles except for monolinguals.

Compelling research has shown crosslinguistic influences or transfer effects – the resulting effects of languages coming into contact in a speaker's mind (Kellerman & Sharwood Smith 1986) – on a wide range of linguistic phenomena (Cook 1992), including but not limited to phonetic and phonological (Purcell & Suter 1980; McAllister et al. 2002; Flege & MacKay 2004), lexical (Ringbom 1978; 2007), and syntactic (Odlin 1990; Yip & Matthews 2000) levels. Albeit there is a biased focus on influences of the L1 on the L2 (Kellerman & Sharwood Smith 1986; Odlin 1989; 2005), more recent studies reveal that the L2 can also influence and alter how the speaker uses his or her first language (Pavlenko & Jarvis 2002; Cook 2003).

As Berthele (2012, p.155) points out, if languages are to be understood as interacting entities, one would ask how these speakers "...organise their respective language-specific

sets of knowledge together with the overarching conceptual content.” While researchers suggest that the conceptual component is indeed shared among language-specific lexicons (Kroll & Stewart 1994; Kroll & Sunderman 2003; Costa 2005; La Heij 2005), some propose a more nuanced understanding of how this component is organised by looking at the overlap or “equivalence” of conceptual categories (Pavlenko 2002; Ameel et al. 2005; 2009; Cook et al. 2006; Athanasopoulos 2006; 2007). For example, Ameel et al. (2005) found that Dutch monolinguals use the word *fles* to refer to the same concept that French monolinguals refer to as *bouteille* and *flacon* (~ *bottle* in English). After being presented with several real-world objects representing BOTTLE, bilingual French speakers were found to overextend the lexical item *bouteille* to more objects than their monolingual French counterparts. Meanwhile, *flacon* was used for a more restricted set of objects than the monolinguals’ use. Their study also revealed that little to no reorganisation of the mental lexicon occurred when the languages shared categorical boundaries of a concept (i.e., *bord* and *assiette* ‘plate’ in Dutch and French respectively) (Ameel et al. 2005). As such, we can observe crosslinguistic influences on conceptual boundaries at the lexical level in speakers of two languages, suggesting that indeed, the conceptual component is shared between language-specific lexicons. A more detailed review of relevant studies is provided in section 2.3.2 with a focus on multimodality.

Several models describing the bilingual lexicon have been proposed to account for these language transfer effects (de Groot 1992; Kroll & Stewart 1994; Dong et al. 2005; Pavlenko 2009). Here I briefly present two models – the Revised Hierarchical Model (RHM) (Kroll & Stewart 1994) and the Modified Hierarchical Model (MHM) (Pavlenko 2009). The RHM (Kroll & Stewart 1994) aims to explain how lexical items, or word forms, are linked by a similar concept, or a meaning, taking into account a speaker’s

proficiency in that language. Their model explains that word forms in language-specific lexicons are linked through these shared concepts and meanings, and the more proficient a speaker is in the two languages over a period of time, the stronger the links are between the lexical items and the concept. RHM thus accounts for the more dynamic aspects of multilingualism, taking into consideration the way languages develop in time. Critics of the RHM, however, point to the speech production of multilinguals and claim that these models lack convincing evidence of having two or more separate lexicons per language (Brysbaert & Duyck 2010). They also discuss that this model is mainly based on L2 learners rather than on speakers who acquire languages simultaneously at a young age. Indeed, for the multilingual context found in the Lower Casamance, such a model remains inadequate considering many speakers will have acquired more than three languages at a very young age. Building on the RHM, Pavlenko (2009, p.146) proposes the MHM in which “conceptual representations may be fully shared, partially overlapping or fully language-specific”. Her model accounts for both the dynamic process of L2 language acquisition while incorporating the degrees of conceptual equivalence between languages. This model is more suited to understanding how multilingual speakers of the Casamance organise their language-specific lexicons with regards to the conceptual level, as it allows for varying degrees of similarities and differences in how the conceptual representations are organised.

However, the understanding that languages interact and bear influence on each other in a multilingual speaker’s mind has not always been the accepted viewpoint. Rather, earlier speech production models and research into the bilingual mental lexicon supported the notion that language-specific lexicons are kept separate. Here I review some of the influential research that has served as a cornerstone to the work on crosslinguistic

influences and our current understanding of multilingual speakers. I point out that not only do current frameworks and evidence on crosslinguistic influences negate the earlier findings, but that the models cannot be applied to small-scale multilingual contexts such as the Lower Casamance setting.

The core speech production model and mental lexicon construct can be attributed to Levelt (1989; 1992; 1999), whose model ties together the conceptual level, semantic and syntactic levels, and phonological formation. The model aims to describe the complex process of lexical access, retrieval and production that speakers carry out. The first step to his model is the input of the lexical concept (or, mental representation) to the ‘Formulator’. The Formulator is broken down into two steps, a lexical selection followed by the lexeme’s phonological encoding (Kempen & Huijbers 1983). Both of these components access the mental lexicon – the process of lexical selection taps into the mental lexicon’s *lemmas* which comprises the semantic and syntactic information of the concept. The phonological encoding then acquires the lexeme’s phonological properties in the second step of the Formulator. Lastly, the lexeme is articulated resulting in phonetic surface forms.

While Levelt’s (1989; 1992; 1999) speech production model provides a straightforward description of how words and concepts are connected and produced, it is unclear how this process is carried out for L2 learners and bilinguals – let alone multilingual speakers of the Lower Casamance – in two main aspects. For one, the model does not consider to what extent do language-specific lexicons interact and secondly, it overlooks how the language-specific lexicons relate to the conceptual level – are the conceptual components shared in any way, or are they also kept separate (Keatley 1992)? Another early model of the mental lexicon pointed to language-dependent lexicons (Tulving & Colotla 1970;

Taylor 1971). According to this model, the speakers' languages subsume a separate lexicon, yet share the conceptual space or representation of the event. Tulving and Colotla (1970) assert that the languages of a multilingual do not interact and are rather isolated from each other. The language-dependent theory of the mental lexicon describes a system in which multilingual speakers keep their languages separate, without showing interference in speech. But as current research demonstrates, there is empirical evidence that strongly suggests languages *do* interact in the mind of a multilingual speaker (Kellerman & Sharwood Smith 1986; Odlin 1989; 2003), and that even some knowledge of a second language can result in such influences (Brown 2007; Brown & Gullberg 2008). Thus, a more nuanced model such as Pavlenko's (2009) MHM captures not only the dynamic aspects of language acquisition, but of the ways in which conceptual representations can be shared among language-specific lexicons.

Weinreich's (1953) typology of multilinguals also serves as a fundamental contribution to this research avenue. He defines three types of multilingual speakers: compound, coordinate, and subordinate. He describes compound speakers as those who learn two languages in the same context (for example, learning both Spanish and English at school and at home), and thus share the conceptual component. Coordinate speakers acquire the languages in contrasting contexts (for example, German at home and English at school), and thus have different conceptual components that are specific to each language. Finally, the subordinate speakers learn the L2 via the L1, mainly relying on the conceptual component of the L1 as a base for the L2. But as Pavlenko (2009, p.142) points out, a model of a L2 or bilingual speaker's mental lexicon must not only deal with the manner of language acquisition, but also account for how the languages relate in their structuring and categorisation of concepts. Moreover, this model does not accurately represent the

ways in which speakers use their languages in the Lower Casamance, as languages share equal status and are not domain-specific. It would also be a simplistic viewpoint to assume that the speakers are ‘subordinate’, as multiple languages are acquired at the same time, suggesting a more complex process. I thus take the position aligning with Grosjean (1982; 1989; 2008; 2010) and Cook’s (1991; 1992) holistic perspective of a multilingual speaker, understanding that languages interact on many linguistic levels.

2.3.2 Multimodal approach to L2 learners and bilinguals

Crosslinguistic influences have been shown not only in speech (2.3.1) but in gesture as well (Kellerman & van Hoof 2003; Brown 2007; Brown & Gullberg 2008; Alferink 2015). In this section, I review studies that look at how bilingual speakers express placement events (recall section 2.1.1.1) in speech to understand the organisation of the mental lexicon. Although the present research focuses on multilingual speakers who drastically differ from the profile of an L2 speaker, research in the domain of second language acquisition is pertinent to understanding multimodal crosslinguistic influences that use placement events as a test bed. I therefore present work which applies a multimodal approach to investigate the effects of crosslinguistic influences from the L1 to the L2. Conversely, the influences of semantic distinctions in a L2 on a L1 are then reviewed, focusing on a study incorporating both speech and gesture. The L2 studies reveal that crosslinguistic influences occur bidirectionally: the L1 influences the L2, and the L2 influences the L1, and that the study of gesture functions as an important analytical tool. Finally, multimodal research carried out on bilingual speakers is reviewed, demonstrating that not only do languages interact and carry influences on the organisation of the mental lexicon, but illustrating the characteristics of this organisation.

Alferink and Gullberg (2014) and Berthele (2012) examine how bilingual speakers who acquired two languages simultaneously, rather than a L2 speaker, organise their mental lexicon to express placement events. Looking at the nature of expressing placement events in these bilinguals, the research focused on bilingual speakers of German and Sursilvan Romansh (Berthele 2012), and bilingual speakers of French and Dutch (Alferink & Gullberg 2014). Romansh has a general verb *metter* for 'put', comparable to French, whereas German uses three postural verbs (*setzen*, 'sit', *legen*, 'lay', *stellen*, 'stand'), like Dutch (Berthele 2012; Alferink & Gullberg 2014). Speech analysis from these investigations revealed that the speakers' languages influence each other and this can be observed in speech and gesture.

As all speakers of Romansh are multilingual due to the speakers' sociolinguistic context, unlike speakers of Dutch and French among whom monolinguals can be found, Berthele (2012) selected the most proficient speakers of Romansh and German, respectively, for the two control groups. Those who were seen as "equally proficient" in the two languages were assigned to the bilingual group.

The German-dominant group showed a high preference for using the three postural verbs in speech production when speaking German, displaying semantic specificity, whereas the Romansh-dominant group preferred the general verb *metter*, 'put' when speaking Romansh (Berthele 2012). These "dominant" groups were then compared to speakers of Romansh and German who showed "equal proficiency" in the two languages. Their finding among 'dominant' speakers was similar to the monolingual groups of Dutch and French in Alferink and Gullberg's study (2014). The Dutch monolingual group distinguished between horizontal and vertical orientation in the verb choice, using postural verbs, and was more likely to include orientation information outside of the verb

which already indicates the orientation of the figure. The monolingual French speakers used the more general verbs, *poser* ‘put’ and *mettre* ‘put’, the most frequently (Alferink & Gullberg 2014). These speakers were then compared to French-Dutch bilingual speakers who grew up speaking both simultaneously.

For Berthele’s (2012) balanced bilingual Romansh-German group, the German speech production tended to overextend the verb *legen*, ‘lay’ for scenes in which the German-dominant group used other posturals, in particular *setzen*, ‘sit’. This overextension of the postural verb is similar to that of the bilingual French-Dutch group, as when speaking Dutch, bilinguals used *leggen*, ‘lay’, for both horizontal and vertical orientation of the figure, and expressed fewer semantic contrasts. These bilingual speakers also had a higher tendency to use a more general verb *tun*, ‘to do’, which was not used in the German-dominant group. For the speech analysis of bilingual Romansh speakers, it was only noted there were “sporadic instances of influence” of German onto Romansh. To compare to other work in this domain, bilinguals in the French-Dutch group (Alferink & Gullberg 2014), when speaking French, used the general verb *mettre* ‘put’ for over half of the utterances produced, significantly more than the monolingual French group. Indeed, these balanced bilingual speakers have a different linguistic system than monolinguals due to crosslinguistic influences and the knowledge of more than one language bearing contrastive features in the domain of placement events, and display characteristics of a system that converges to a more general system in speech.

When looking at the semantic information produced in gesture in L2 learners, it is observed that speakers gesture not to compensate for the lack of a particular word in speech but to emphasise or enhance the spoken information (Gullberg 2009a). Depending on the language spoken, speakers display different types of semantic information in

gesture. Gullberg (2009a) examines how English speakers learning Dutch as a L2 express placement. Speakers of English have a high use of the semantically general verb *put*, whereas Dutch speakers, as previously mentioned, encode the object's configuration by using the verbs *zetten* 'set' and *leggen* 'lie'. Dutch does not have a general verb such as *put*. 6 English speakers learning Dutch as a second language were asked to respond to a stimulus set that depicted placement events.

Results showed that when speaking the L2 Dutch, most speakers preferred using the verb *zetten* 'set' over *leggen* 'lie', as well as the verbs *gaan* 'go' and *doen* 'do'. The speakers' gestures also showed a focus on the caused motion of the placement event, revealing that these L2 Dutch speakers do not express fine-grained information. Their gestures pattern with the semantic information of the English verb *put*. However, the L2 speakers who used *zetten* 'set' and *leggen* 'lie' appropriately to describe placement events (according to horizontal and vertical positions of the figure) produced co-occurring gestures similar to Dutch speakers (Gullberg 2009a, p.21). The study revealed when speakers moving from an L1 that does not make specific semantic distinctions (i.e., *put*), to a language that does (i.e., postural verbs), speakers tend to overgeneralise verbs in the L2. It is to say that speakers prefer a broad-grained lexical pattern of expressing placement when they have the choice. Traces of the speakers' L1 appear in co-speech gestures when speaking the L2.

The use of co-speech gestures was also applied as an analytical tool to understand whether the knowledge and use of a L2 influenced the speaker's use of their L1 (Brown & Gullberg 2008). Both monolingual and L2 speakers of Japanese and English were investigated to understand if the L2 group of speakers differed in their speech and gesture production to their monolingual counterparts. English and Japanese contrast in how the

languages encode Manner of motion. Whereas English encodes Manner of motion in the main verb (such as *roll*), Japanese encodes Path in the main verb, and Manner of motion in adverbial phrases. 4 different speaker groups were identified: 1 group of monolingual Japanese speakers, 1 group of monolingual English speakers, and finally 2 groups of L1 Japanese speakers with L2 English. One of these two latter groups comprised of speakers living in Japan, where the other group lived in the United States. This was done to control for culturally-specific gestures. Speakers responded to the same cartoon stimuli set that was used in Kita and Özyürek's (2003) work that depict motion events.

Monolingual English speakers encoded more Manner in speech than the monolingual Japanese group and the L2 groups. The L2 learners of English were analysed when they spoke their L1 (Japanese) to observe any L2 influence on the L1. This data shows that when speaking Japanese (their L1), these L2 learners produced more Manner in speech than monolingual Japanese speakers. There were fewer Path-only gestures than monolingual English speakers, but more than monolingual Japanese speakers. Brown and Gullberg (2008) explain that monolingual speakers and speakers with knowledge of a L2 show significant differences in both speech and gesture. Their findings suggest that the knowledge of a L2 can have an influence on the L1, showing that languages interact bidirectionally.

Alferink (2015) observes bilingual speakers of Dutch and French and their expression of motion in speech and gesture. Dutch patterns as a satellite-framed language, typically encoding Path outside the main verb in motion events, while French is a verb-framed language (although see Kopecka (2006) for an analysis of Path linked to verbs' prefixes). Monolingual Dutch speakers overall preferred a more fine-grained description of motion while monolingual French speakers preferred encoding Path in the verb. The bilingual

Dutch speakers displayed evidence of convergence, or, more similarities in their language structure to the French pattern of encoding Path and no Manner. Bilinguals speaking French, however, did not display significant difference from the French-speaking monolinguals. Co-speech gestures of French monolinguals demonstrated co-expressivity, or, the matching of semantic elements in both speech and gesture, mainly in the form of Path-only expressions. The same pattern was found for French bilinguals. The Dutch monolinguals, while expressing a pattern of conflation in speech (Path and Manner), their gestures overall tended to display Path-only information, while the Dutch-speaking bilinguals had a much stronger preference for this pattern, thus converging to a more French-like system.

Considering the findings of L1/L2 and bilingual studies, we can support the holistic perspective of multilinguals as put forth by Grosjean (1982; 1989; 2008; 2010) and Cook (1991; 1992; 2003; Cook et al. 2006). Table 4 summarises the findings of the relevant literature reviewed thus far. (+) refers to the specific encoding of Manner in the languages' verb, (e.g., Manner verbs such as *sit*, *stand*, *lay*, or *roll*), whereas (-) refers to semantically general verbs, (e.g., verbs such as *go*, or *put*) according to the motion event analysed.

Table 4 Overview of crosslinguistic influences in multimodal approaches

Speaker type	Encoding of Manner in target event			Characteristics of organisation in speech	Characteristics of organisation in gesture
	L1	L2	Bilingual		
bilingual	n/a	n/a	(-) Romansh (+) German; (-) French (+) Dutch	(-) dropping of fine-grained semantics	n/a
L2 speakers	(-) English	(+) Dutch	n/a	(-) dropping of fine-grained semantics	(-) preference of Path-only hand shapes
L1 speakers	(-) Japanese	(+) English	n/a	(+) more Manner verbs when speaking Japanese	(+) more Manner incorporated gestures than monolingual Japanese
bilingual	n/a	n/a	(-) French (+) Dutch	(-) dropping of fine-grained semantics	(-) preference for Path-only hand shapes

In sum, these studies reveal that crosslinguistic influences are bidirectional (both L1 to L2, and L2 to L1). Furthermore, evidence for language transfer can be found in co-speech gesture, as they are temporally and semantically integrated with speech. Most notably

about the findings of the accumulated studies reviewed thus far, however, is the pattern that speakers tend to drop semantically specific information (Manner) across modalities as a characteristic of convergence, with the exception of the Japanese L1 speakers who displayed influences from the English L2. But of course, these speakers do not only represent the W.E.I.R.D. demographic, overlooking speakers of understudied regions, but they also demonstrate a more simplistic linguistic repertoire as compared to those of speakers residing in the Lower Casamance.

2.4 Research rationale

While Gullberg (2009b, p.178) argues for the use of co-speech gesture in understanding the bilingual lexicon, she also writes:

‘Multilingual speakers should also be considered. Currently, gesture studies have only examined cases of two coexisting languages, although in reality many participants have probably been multilingual. What happens in speech and gesture when a third, fourth, and fifth language enters into the equation, and what role does typological distance play?’

This question motivates the core of the present research. As it has been shown among bilingual speakers of one language that display a semantically general encoding of placement (i.e., such as *mettre* ‘put’), and a second language that encodes this information in a more specific Manner (i.e., using postural verbs), these bilingual speakers converge to a more general system. They drop fine-grained semantic information in both speech and gesture. Furthermore, we understand that languages interact bidirectionally, from the L2 to the L1 and vice-versa.

But what happens when we move away from the W.E.I.R.D. bilingual speakers to multilingual speakers – not language learners – of longer and more diverse linguistic repertoires? In such a context as the Lower Casamance’s small-scale multilingual setting,

we would like to investigate whether convergence to a more general system is the resulting characteristic for multilingual speakers, regardless of the breadth of linguistic repertoires and typological diversity, or if speakers exhibit a different pattern of expression as a result of their multilingual repertoires.

2.4.1 *Theoretical and methodological implications*

Moving to a complex linguistic context as that found in the Lower Casamance (explained throughout 2.2) requires rethinking of certain notions in the L2, bilingual, and crosslinguistic influence literature. How does one investigate phenomenon such as bidirectional influence when the speakers are not L2 learners, nor are they L5, L6 or L7 speakers, but they present us with an intricate and individuated network of languages, both in the order in which they are acquired as well as in their social contexts of use? Is it possible to identify crosslinguistic influences and discuss convergence when there are a) no non-contact varieties of the languages spoken by monolinguals and b) a wider linguistic repertoire which complicates the ability to identify the origin of an influence? Finally, can we divide speakers into groups according to language fluency, proficiency, or dominance as a methodological approach to identifying crosslinguistic influences, provided again with speakers' intense individual variation in areas such as language acquisition, language use, and the make-up of linguistic repertoires?

I explain that the theories and methods cannot be applied to such a multilingual context, and that the majority of these models (see 2.2) are based on L2 speakers and bilingual speakers of 2 languages, at best. Regardless of the 'number' of languages spoken, all studies reviewed used non-contact varieties (spoken by monolinguals) as a means to measure the extent of crosslinguistic influences in the L2 or bilingual speaker. I instead put forth a more descriptive and exploratory investigation of how multilingual speakers

display semantic information across modalities. Furthermore, I argue for the need of more research of such multilingual settings to advance the theoretical and methodological frameworks and models of multilingual speakers. In section 2.4.1.1, I discuss how I go about analysing speakers' linguistic repertoires, and in 2.4.1.2, I address the implications of crosslinguistic influences and convergence while providing my approach to describing multilingual speakers' mental lexicon.

2.4.1.1 Profiling speakers and their repertoires

In order to understand the cognitive system of a speaker, one must first understand his or her repertoire of the languages used, spoken, and understood. This information includes the speaker's language history: how long s/he has been learning and using the language, in which contexts the language was acquired, the speakers' attitudes towards the language, and with whom the person speaks with language. Grosjean (2008) explains the need for psycholinguistic research to present the language profiles of the participants of studies, as he cites several cases in which readers do not have access to this information, thereby rendering the results somewhat ambiguous. It is therefore both a matter of transparency and good research practice to describe speakers' repertoires and the sociolinguistic relation of the language to the speaker.

Many studies use control groups to understand differences among monolingual speakers, L2 learners, and bilingual speakers of the same languages (Brown 2007; Brown & Gullberg 2008; Alferink & Gullberg 2014). When monolinguals of a language are not found in a certain context, researchers look for the "dominant" speakers of a language to compare to "dominant" speakers of a different language (Berthele 2012; Berthele & Stocker 2016). This appellation – X language-dominant speaker – does not disregard the

other languages spoken, but serves to highlight the speaker's ability in the language targeted in contrast to other languages of the speaker's repertoire.

Deciding the group the speaker belongs to, however, requires assessing their language abilities. These assessments can take the form of proficiency tests, fluency tests, and self-reported questionnaires or surveys. Proficiency tests measure the speaker's performance in 4 language skills – listening, speaking, reading, and writing (Grosjean 2008). These tests are commonly found in pedagogical settings, where learners of a language are required to pass a proficiency exam to demonstrate their mastery of a language: questions can simulate real-world situations, such as broadcasts and newspaper articles where the learner must use language skills to respond (Clark 1975). This assessment is problematic for the multilingual context of the Lower Casamance as proficiency assumes a standardised language equipped with a standard orthography. Many languages are still undergoing initial description and documentation and there is no standardised orthography for many of the languages. A proficiency test is therefore poorly suited for the Lower Casamance's multilingual context.

Assessing speakers' fluency is also a common practice in the field of linguistics to understand how well someone speaks and understands a language. These fluency measures can take the form of reaction time tests (Runnqvist et al. 2012). It has been shown that a speaker's abilities to search, select, and retrieve a lexical item from the mental lexicon depends on the speaker's frequency of using that lexical item: the more frequently produced that lexical item is, the closer the lexical item is to its resting level of activation and the easier it is for a speaker to access it. Conversely, the farther away the item is to its resting level of activation (the less recently and frequently it is used), the more difficult it is to retrieve and produce the lexical item (Runnqvist et al. 2012, p.244).

Runnquist et al. (2012, p.244) demonstrate that “picture-naming in a non-dominant language is slower compared to the dominant language, even when the task is performed exclusively in one language”. The basic notion underlying this method is the longer it takes a speaker to retrieve and produce a word, the less fluent that speaker is in that domain of the language. Conversely, the quicker it takes a speaker to retrieve and produce a lexical item, the more fluent the speaker is.

Self-reported assessments of speakers’ language abilities are another popular method of collecting data on speakers’ repertoires. Previous studies (Berthele 2012; Alferink & Gullberg 2014) investigating the linguistic system of bilingual speakers developed control groups based on self-reported speech that was collected with a sociolinguistic questionnaire. These groups were divided into two monolingual groups and one “balanced” bilingual group – speakers who acquired the two target languages simultaneously. The information from the questionnaire covered areas of not only self-reported proficiency, but of language use, information about speakers’ attitudes towards the languages, and the age at which the language was acquired. This method allows for a more qualitative understanding of one’s linguistic repertoire.

Here I discuss how developing control groups are not the most suitable method for the current research on multilinguals in the Casamance, and why some measurements of speakers’ language abilities are not applied. I then present the methods used to describe these speakers’ linguistic repertoires and the reasoning behind these methods.

Understanding that bilinguals are not two monolinguals in one person (Grosjean 1982; 1989; 2008; 2010), there is a need for a method more representative of multilingual speakers, as assigning speakers to control groups creates a sense of discreteness between the use of the languages and effects of transfer. Furthermore, these control groups have

mainly been developed for the purpose of comparing bilinguals to their monolingual counterparts, thus excluding speakers of 5 or 6 languages. Proficiency tests assume a described and documented language which can be formally assessed – a concept which does not fit the given context of the Lower Casamance. As Lüpke (2016) describes, the acquisition of these languages occurs when speakers are young, learning several languages simultaneously. Depending on the context for learning one of the languages – be it in school, at home, or among certain social networks – speakers can become stronger within a certain domain of a language. Fluency and reaction time tests are also not a viable option for several reasons. While carrying out fieldwork in the village, it can be very challenging to find a location that is controlled tightly enough for external interferences. For example, even while carrying out certain staged communicative events in a private area, one can often hear passer-by's talking to each other, and other unintended interruptions occur. Testing fluency based on reaction times also assumes a described language, which is not the case for most of the languages spoken by speakers in the Casamance. With so much individual variation and code-switching, judging whether or not a speaker “correctly” responded to a stimulus would be opening Pandora's Box. Finally, the words and phrases speakers use on a daily basis are not produced at an equal frequency – a speaker may use a set of words significantly more often one day over another. Therefore, to carry out a proficiency test or reaction time test would most likely demonstrate how often a speaker uses a particular word or phrase in the targeted language(s).

I instead follow the notion that there are “degrees of multilingualism” that are on a cline (Berthele & Stocker 2016). In this way, multilingual speakers are not artificially grouped according to proficiency or fluency results. Data from self-reported questionnaires are

used to identify individual differences among speakers' multilingual practices, rather than proficiency and fluency measurements. This approach places an emphasis on the motivations for learning and using the language in question. It focuses on the initial context and motivations for which the languages were acquired, the age of the speaker when first learning the language, and with whom the speaker uses the language. As such, the issue of whether or not the speaker is using the language "correctly" is no longer a question. Individual variation is not treated as a matter of a lack of proficiency nor of fluency, but can point to the link between the motivations and contextual information for which a speaker uses a language to the speaker's production of the language.

2.4.1.2 Identifying crosslinguistic influences and convergence

Given the substantial research into the crosslinguistic effects among L1, L2, and bilingual speakers, it becomes clear that languages are not discrete, bounded entities, but that they interact. L2 speakers and bilinguals offer researchers ample evidence for this interaction and further pinpoint how and where crosslinguistic influences occur, i.e., phonological, lexical, or syntactic level, the direction of the influence, and the nature of the mental lexicon – whether bilinguals converge to a more general system or more specific.

However, these notions become problematic for linguistically complex settings as found in small-scale multilingualism in the Lower Casamance.

Let us begin with the languages themselves. Centuries of intense language contact have led to convergences and divergences that are still being described (Tabouret-Keller & Juillard 2000; Cobbinah 2010; Lüpke 2010). Furthermore, there is great inter-speaker variation within a single 'Joola language', making it difficult to identify one variety from another when dealing with multilingual speech data (Watson, personal communication). One cannot definitively describe the way Kujireray structures semantic information as an

absolute. We must presume that significant convergences and divergences among languages have already been made in the semantic domain in question and describe them as such.

It is not only beyond the scope of the present research to determine the exact origins of crosslinguistic influences, but is rather moot given the high levels of individual variation among speakers' linguistic repertoires. While one speaker may have one or more Joola and/or Bainounk languages, Wolof, and French in their linguistic repertoires, a sibling may have Joola, Wolof, Mandinka, and English, depending on their individual experiences. So, if speakers of both repertoires pattern similarly multimodally when expressing a semantic domain, how do we determine what typological distinction among which languages is the cause of the influence? If the speakers pattern differently, then we may be able to look at the contrasts between their repertoires, but even so, much description work has yet to be done on many of these languages to be positive of the source. Finally, we can reasonably assume that all languages of speakers' repertoires have undergone convergence and divergence to some extent as all speakers are multilingual. How does one then claim that that pattern is the result of language(s) X and Y, when X and Y have probably been influenced by other languages of one's repertoire – which we would also presume to vary between individual speakers.

We must also leave behind the notion of bidirectional influences, as we are dealing with a much more intricate linguistic network. It is not only near impossible to find a large enough group of speakers who share the *exact* same linguistic repertoires, but is a distraction from the actual multilingual context. Individual variation is part of what makes the Lower Casamance such a “hotspot” for multilingualism (Lüpke 2018) – to artificially group speakers directly takes away from the sort of linguistic variation that multilingual

studies lack. In future studies, perhaps grouping speakers by well-described typological features would be of use, provided that there is a clear theoretical and methodological motivation.

Finally, it nearly goes without saying that there are no monolingual speakers of Kujireray, nor of Baïnouk, or of any other language spoken in the Lower Casamance. However, to discuss types of convergence is to also imply that the language has a “non-contact variety” (Alferink & Gullberg 2014, p.33). Thus, how can one claim that multilingual speakers of Joola Kujireray are converging to a certain system if *all* speakers of Joola Kujireray are multilingual? Due to the multilingual context of the Casamance, a non-contact variety of the majority of these languages does not exist. By following the perspective of multilinguals proposed by Grosjean (1982; 1989; 2008; 2010) and Cook (1991; 1992; 2003; Cook et al. 2006), this is a very expected and unsurprising linguistic situation: multilingualism is the norm and the monolingual speaker is not just the outlier but is non-existent in this case. This is not to say that convergence is not a valid argument for multilingual speakers of a language for which there are monolingual speakers.

Language transfer and convergence yield strong evidence for the nature of bilingual speakers as previously described. Simply put, the notions and models become obsolete for contexts in which there are no comparative monolingual speaker groups. A rethinking of theoretical and methodological frameworks for small-scale multilingual settings are essential to the furthering of this field.

I therefore approach the research through a descriptive lens which falls under the presumption that languages interact in a multilingual’s mind. Speakers are described according to self-reported speech. The categorisation and structure of semantic domains and lexicalisation patterns in named languages are based on the extent of agreement

among a set of speakers. Rather than discussing bidirectionality and convergence, I avoid the use of these terms and instead present the characteristics of the multimodal patterns as they emerge (specific versus general, fine-grained versus broad). As far as a discussion on the motivations of these patterns, I look at the overall typology of language features. Section 2.5 presents preliminary findings and an overview to how some languages spoken in the Casamance encode placement events and lays out predictions on the multimodal patterns that could emerge from multilingual speakers.

2.5 Encoding of placement in languages spoken in the Casamance

The main research question seeks to understand the characteristics of multilingual speakers' mental lexicon. More specifically, we want to know whether the result of multilingualism is a semantically general system in which speakers drop fine-grained semantic information, as generally observed among bilingual speakers in European contexts (Berthele 2012; Alferink & Gullberg 2014; Alferink 2015), or whether speakers prefer expressing fine-grained semantic information across modalities. I do so by investigating the lexicalisation patterns exhibited in speech descriptions of placement events and in co-occurring gesture in two typologically distinct languages: Joola Kujireray and Senegalese French.

The languages were chosen based on their potential for crosslinguistic variation. Given their genealogical distance – Joola Kujireray belongs to the Niger-Congo phylum and French belongs to the Indo-European phylum – it would be more likely that the languages display a range of typological differences, including in the domain of placement events, than comparing Baïnouk Gubëeher and a Joola variety, where language contact also plays a significant role in convergences and divergences (Cobbinah 2010).

I carried out research on how the two languages encode placement events before my first field trip to collect data. While preliminary data was mainly based on research concerning metropolitan French, revealing semantically general verbs such as *mettre* ‘put’ (Chenu & Jisa 2006; 2007; Kopecka 2006; Hendriks 2008; Alferink & Gullberg 2014), I looked at data collected by my colleague Dr. Rachel Watson for her thesis (Watson 2015), as she has produced the only description and corpus to date on Joola Kujireray. Searches of her corpus were carried out for lexical items such as *put*, *place*, *sit*, *stand*, *lie*, as well as *lay*. Results of the corpus search revealed one semantically general denoting placement, *e-kan*, glossed as ‘make, do, enter’ as well as a series of postural verbs that were used among a set of staged communicative events, namely Mesospace (Bohnenmeyer 2008), a Director-Matcher task. The purpose of the task was to investigate various frames of reference by which the Director described the location of a series of stickers on a set of novel objects. The Matcher, equipped with the same novel object as the Director, must reproduce the locations of the stickers without being able to see the original novel object. As such, placement verbs were used by both Director and Matcher to describe how to position the novel object. Examples from these tasks are presented here, illustrating the use of postural verbs in causative constructions: *e-ilen* ‘stand’ (example (3)), *e-roben* ‘sit’ (example (4)), and *e-filen* ‘lay’ (example (5)).

(3)	<i>inje</i>	<i>b-e-</i>	<i>il-</i>	<i>en-</i>	<i>-e</i>	<i>j-o</i>
	1S	PURP-CL:e	stand	CAUS	PERF	AGR:j-PN
	‘I stand it up.’					

MSRWNOS37, 4:01, O7

(4) *meme nu- rob -en -e yo mat u-jux yo*
 even 2S sit CAUS PERF PN NEG.FUT 2S-see PN

‘Even if you sit it down, you won't see it.’

MSRWNOS32, 2:37, O2

(5) *nu- fas -e yo e- fil- en- i- fil- en*
 2S know PERF PN CL:e lie CAUS PASS lie CAUS

‘You know it has been laid down until now?’

MSRWNOS31, 7:00, O1

As such, the early stages of the research suggest that Kujireray uses postural verbs and a semantically general verb *e-kan* ‘make, do, enter’ to describe placement. In sum, initial findings showed a potential contrast in the use of semantically specific postural verbs in Kujireray as well as a semantically general verb *e-kan* ‘make, do, enter’, while French relies on mainly semantically general verbs such as *mettre* ‘put’.

To get a general sense of how placement descriptions are structured in some of the languages spoken in the Casamance, here I present other preliminary findings mainly collected through field notes, participant observation, colleagues’ shared data, and staged communicative events (see chapter 3 on methods). Of course, it is emphasised that these findings are far from definitive language descriptions. They instead serve to background some of the possibilities in which this domain is organised among a selection of languages spoken in the region.

Languages of both the Joola and Baïnounk clusters as well as Wolof appear to encode placement in both postural verbs as well as semantically general verbs that mainly focus on Motion/the relocation of the figure. Other languages, such as Sereer and Mandinka are also reported as using postural verbs to express placement – preliminary research did not elicit any semantically general placement verbs for these languages. A detailed, typological description of placement across the many languages spoken in the region is certainly a promising topic for future research. Here I present examples of placement descriptions in several of the languages spoken by participants: Wolof, both Joola and Baïnounk languages, and Mandinka.

Nearly all participants of this study report speaking Wolof (see section 3.3 for a detailed description of the participants’ linguistic repertoires). Here I present findings that suggest Wolof speakers use both semantically specific, positional verbs, as well as a general placement verb *teg* ‘put’ which does not express the configuration of the object. The following two examples display the use of a semantically general verb and a postural verb.

(6)	<i>teg-na</i>	<i>butel</i>	<i>ci</i>	<i>tabal</i>	<i>bi</i>
	put-3S	bottle	on	table	CL:bi-DEF

‘She puts the bottle on the table.’

AC_CK_Clip28_Wolof

(7)	<i>tedel-na</i>	<i>kas</i>	<i>bi</i>	<i>ci</i>	<i>souf</i>
	lie-3S	cup	CL:bi-DEF	on	sand

‘She lays the cup on the ground.’

field notes 2017

Both of these examples were in response to a placement event in which the figure was placed in a noncanonical position, example (6) being a description of a stimuli video clip where the figure was placed on its side, while example (7) refers to participant observation in which a child placed a plastic cup on its side on the ground. I asked a speaker how to describe what the child did in Wolof, and thus was his response, using a postural verb. A further participant observation revealed the use of the postural verb *stand* to describe placement, illustrated in example (8). Here, a woman is telling her younger sister to put a glass bottle of palm wine in an upright position in the kitchen, as the lid had not been securely fastened.

(8)	<i>jog-al</i>	<i>butel</i>	<i>bi</i>	<i>ci</i>	<i>souf</i>
	stand-2S	bottle	CL:bi-DEF	on	ground

‘Stand the bottle on the ground.’

field notes 2017

Jog ‘stand’ can also be used for internally caused motion events such as *jogna* ‘s/he stands’. The verb *togg* ‘sit’, however, is not used to denote externally caused motion events. It is only used to denote a human or animal’s posture. Although the description of placement in Wolof is premature at best, it does provide some insight as to the linguistic resources available to speakers.

The following examples demonstrate two postural verbs, *lik* ‘stand’ (example (9)) and *aan* ‘lay’ (example (10)) in causative constructions with the suffix *-in* in Bainounk Gubëcher, which is spoken in the village of Djibonker.

- | | | | | | |
|-----|---------------|------------------|---------------|-----------|---------------|
| (9) | <i>anaŋgu</i> | <i>a-lik-rin</i> | <i>gu-mër</i> | <i>an</i> | <i>a-noox</i> |
| | and | 3S-stand-CAUS | AGR:gu-PN | and | 3S-sit |

‘And he stands it up and sits down.’

ExDJI291110AC

(10)	<i>i- xuc-i</i>	<i>bum</i>	<i>anɔŋgu</i>	<i>i- aan-iin</i>
	1S-go.down-PERF	so.that	and	1S-lay-CAUS
	<i>si-la-kum</i>	<i>abi</i>	<i>riéŋ</i>	
	CL:si-hand-POSS	on	ground	

‘I go down to put my hand on the ground.’

ExDJIPecheLM

Similar to Wolof, only these two postural verbs can be used in a causative construction. The postural verb ‘sit’ cannot be used to denote the externally caused motion of an entity. Many of the Joola languages also appear to use at least two postural verbs to describe placement, with the exception being ‘sit’ in Joola Banjal. The following examples demonstrate two postural verbs that are used in the causative placement construction in Joola Banjal. These data were informally elicited by a speaker. Example (11) demonstrates the use of the postural verb ‘stand’, while example (12) shows the use of the verb ‘lay’. Both descriptions were in response to stimuli videos depicting placement events.

(11)	<i>na-il-en-e</i>	<i>ga-ppil</i>	<i>ni</i>
	3S-stand-CAUS-PERF	CL:g-stick	LOC
	<i>bu-nunuk</i>	<i>b-a-b-u</i>	
	CL:bu-tree	AGR:bu-DEF-AGR:bu-MED	

‘She stands the stick by the tree.’

AC_CK_Clip13_Eegimaa

(12)	<i>na-fil-en-e</i>	<i>ga-rafa</i>	<i>ni</i>
	3S-lay-CAUS-PERF	CL:ga-bottle	LOC
	<i>e-tabul</i>	<i>y-a-y-u</i>	
	CL:e-table	AGR:y-DEF-AGR:y-MED	

‘She lays the bottle on the table.’

AC_CK_Clip28_Eegimaa

Similarly, in Mandinka, it appears that a set of postural verbs are used to express placement. The following examples illustrate the use of these postural verbs in response to placement events in which figures are placed in canonical and noncanonical positions: a cup on its base, upright in a canonical position, a cup not on its base but on its side, horizontally, and finally, a teapot on its base upright in a canonical position.

(13) *à* *kasò* *londi* *ban̄ko-to*

3S cup stand sand-LOC

‘She stands the cup on the ground.’

field notes 2017

(14) *à* *kasò* *làndi* *ban̄ko-to*

3S cup lay sand-LOC

‘She lays the cup on the ground.’

field notes 2017

(15) *à* *barada* *londi* *gaso-to*

3S teapot stand gas-LOC

‘She stands the teapot on the gas cooker.’

field notes 2017

Notably, it seems that speakers of Mandinka do not use any general verbs to describe placement. This is not to say that such verb does not exist, rather, during discussion sessions with Mandinka speakers in Ziguinchor, it has yet to be found.

In sum, Wolof, Mandinka, as well as Baïnounk and Joola languages use postural verbs such as ‘lay’ and ‘stand’ in order to describe placement. However, it is not clear the extent to which they are used (i.e., the range of contexts), nor the use of other placement verbs that encode semantically general Motion. Nevertheless, speakers have access to these postural verbs in causative constructions to denote placement in a range of languages spoken in the Casamance.

As I presented in section 2.4, this research aims to explore how multilingual speakers of typologically diverse languages express placement events multimodally, in terms of lexicalisation patterns in speech and semantic distribution (manner fog/manner modality) in co-speech gesture. Multilingual speakers are observed in Joola Kujireray and in French, as preliminary findings revealed the use of some postural verbs as well as semantically general verbs in Kujireray and more semantically general verbs in French. A more detailed analysis on Kujireray and French carried out for this research is presented in chapters 4 and 5, respectively. While I approach the data with the understanding that languages interact and are not discrete entities, I acknowledge the fact that notions such as bidirectional influences and convergence are not applicable to describe the data. Therefore, I investigate the type of multimodal pattern multilingual speakers have a stronger tendency to display: a semantically general pattern, or a semantically specific pattern, presented in chapter 6. These patterns are not intended to be taken as absolute, but rather as two endpoints on a cline of multimodal semantic expression (see Figure 7). The question is then, to which endpoint (general or specific) do multilingual speakers have a stronger tendency to pattern as, and to what extent is the information co-expressive (similar in gesture to speech or different)?

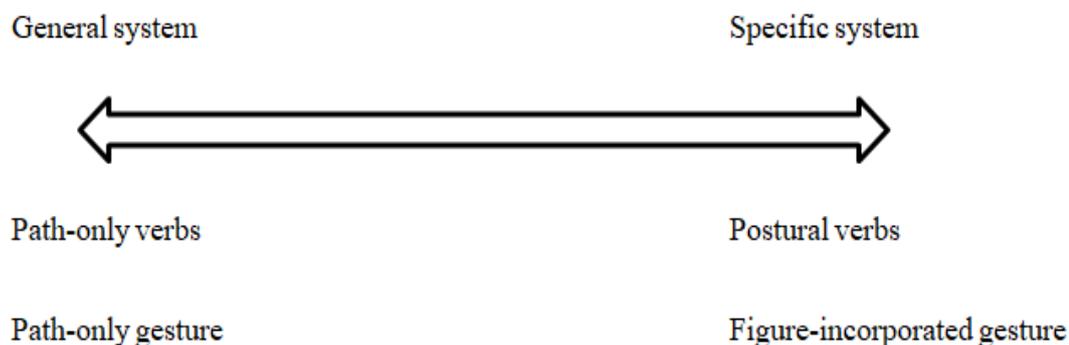


Figure 7 Possible outcomes of multilinguals' multimodal expressions

If the resulting nature of a multilingual's mental lexicon is one of convergence and is characterised as a more general system, we would expect to see a higher tendency of semantically general verb use in both Kujireray and in French, with little between-language differences. Co-speech gestures across languages would also display semantically general information, mainly highlighting the movement of the event. On the contrary, if speakers prefer to use postural verbs in Kujireray and possibly show the use of postural verbs when speaking French (which we can compare to its non-contact variety to a certain extent), the findings may suggest a different characteristic of multilinguals' mental lexicon. Furthermore, if their co-speech gestures show figure-incorporated hand shapes, we describe the conceptual component of the multilingual speakers' mental lexicon as one of specificity. This finding would reveal an alternative pattern to those found thus far among bilinguals in western settings, leaving the discussion open to the effects of knowing a wider range of diverse languages on the multilingual mental lexicon.

3 Methods

Linguists working within the field of language documentation and description have argued for more transparency of the fieldworker's methods and data collection process (Himmelmann 1998; Lüpke 2009; Gawne et al. 2017). In this chapter, I put forth the methods I used to collect, code, and analyse the multimodal data. The chapter also aims to address issues of transparency by providing sufficient information about the speakers, the materials used, the procedures followed, and how these data were managed and stored.

In section 3.1, I describe my role as a researcher and stress the ethically-minded approach to data collection and fieldwork, as well as the research's collaborative nature among colleagues, transcribers, and participants. Being a foreign researcher comes with its obvious challenges: the lack of understanding the local language, the time it takes to adapt to basic cultural routines, and being aware of the subtleties of social interactions. I briefly share my first-hand experiences and set-backs of carrying out fieldwork in section 3.2, and how I resolved most of these problems by adapting to the context. In the following section 3.3, I give an overview of the speakers who participated and provided the multimodal data. I outline the speakers' biographies and linguistic profiles collected from a sociolinguistic questionnaire, which I also describe in this section. Section 3.4 introduces the speech events recorded for this research. The materials used, such as stimuli sets, are described as are the procedures used to carry out these tasks. The following section, 3.5, provides my coding and analyses procedure for both speech and gesture and are illustrated with examples from the data collected. In the final section, 3.6, I discuss the steps taken to responsibly store all metadata and files to provide transparency to the full data collection process. This section also discusses my response to

more ‘technical’ challenges in the field, including issues dealing with infrastructure of the village (i.e., power outages during storms).

3.1 Ethics

Before presenting the tasks used for data collection and other methods, I first present what I consider being at the forefront of my methodology: carrying out ethically-minded research. As an outside researcher in the village of Brin, where the community is very close-knit, it is important to spend time with others and greet neighbours and friends in order to earn people’s trust. It is common for people to gossip as a form of bonding, but if this information is recorded, it is immediately flagged and marked as private so the team’s transcribers and other stakeholders do not have access to this information. I received verbal consent from participants before collecting any data, both observed and staged communicative events, and participants were given the option of terminating a session at any point in time. Recordings were reviewed with the participants and were subsequently flagged for any sensitive or private files that the participants do not wish to be seen or heard by others. Collaborating with fellow researchers, transcribers, and participants was also done in an ethical manner: before using anyone’s data, for example, a discussion was held to verify the status of the data. A collaborative framework among all parties helped in providing feedback and exchanging ideas, both in the field and at the host university.

All year round, residents of the Lower Casamance are occupied with various forms of work such as rice harvesting and planting in the fields, cooking and child-rearing, construction and community-based projects such as organising events or clean-ups. When people are not working, they are participating in social activities. This includes visiting friends and family, attending parties, or simply passing someone’s home and sharing a

meal or a drink together. Incentives as well as a symbol of gratitude is required for participation in a linguistic task as research participants are sacrificing their valuable time from work and socialising to assist in what can often times be perceived as “obscure” work. When asking speakers to participate, compensation was offered for their time and availability. The form of compensation ranged from requested gifts (nail polish, drinks, footballs, and articles of clothing), to remuneration in the local currency (XOF). Participants of the stimuli-based tasks were compensated XOF 1,000 per task, following the same amount that Watson (2015) offered to her speakers and participants, and was compatible with the average salary in Senegal. For other tasks, such as questionnaires, elicitation sessions, and interviews, participants were paid by the hour or reimbursed with gifts as previously described. Finally, all transcribers were employed on a part-time contract and paid the monthly salary of XOF 60,000 for their work on segmenting, translating, and transcribing all video and audio files.

As linguists working on languages that have small numbers of speakers, the examples and ideas we extract from our data does more than support certain linguistic phenomena we put forward. Our selections and choices of speech utterances come from real people and in some cases, may serve as the only light shed for outsiders on a people whose language and culture are little-known to outsiders. Therefore, as linguists, we should be sensitive when selecting examples (England 1992). In order to prevent a misrepresentation of a person and to remain ethically sound throughout this research, I worked with the speakers of each selection of published examples found in this thesis for consensus. If a speaker did not agree with an utterance or image for any reason, for example, for a way they looked or for an utterance they regret saying, it was not included in the final publication.

It is my role as the researcher and liaison between the community and “academia” to ensure that I represent these speakers’ culture and language respectfully and responsibly.

3.2 Adapting to the linguistic context

My own skills in speaking French aided in carrying out this research as I depended heavily on speaking this language with residents of Brin in the early stages of this project. Although French is spoken by many people in Brin as well as in nearby villages, it became clear early on that learning Kujireray and Wolof would ease the transition into fieldwork and help to strengthen relationships with community members, as Kujireray is the language spoken mainly in the village of Brin, and Wolof serves as Senegal’s national and regional language of wider communication. I found that learning and speaking the target language is vital for quality research. Brinois locals were happy when I spoke Kujireray with them and reciprocated the interest that I showed in Kujireray with interest in my research. Several speakers of Kujireray offered to teach me semi-formal lessons during my stay which helped me to grasp basic greetings, frequently used vocabulary and cultural concepts. This led to mutual respect, trust, and consideration for both parties and ultimately benefited my fieldwork experience as well as research – I was able to ask more meaningful questions during elicitation sessions and follow-up questions with language consultants after transcriptions were analysed.

3.3 The linguistic repertoires of speakers

Speakers’ multilingual profiles were described and analysed according to self-reported language use questionnaires. I outline the contents of this questionnaire in section 3.3.1, and in 3.3.2 I discuss how I went about selecting participants and presenting their linguistic profiles.

3.3.1 *Sociolinguistic questionnaire*

A sociolinguistic questionnaire was designed and given to speakers to complete in order to understand, in the speakers' own words, the details of their linguistic repertoires. The choice to use questionnaires for qualitative analysis was primarily due to its ease of administration after speakers participated in the stimuli-based tasks. Another advantage of using questionnaires was that they allowed for a substantial number of responses in a short amount of time. These questionnaires were collected during the following fieldtrip in 2016. As the questionnaire contained six sections and took longer than 10 minutes to complete carefully, it was often carried out over the course of several days and participants were able to complete it at home at their leisure. As Schilling (2013, p.98) explains, participants sometimes feel more at ease when answering a questionnaire alone as the presence of a researcher may be intimidating for some. Several disadvantages to this method were that a handful of participants lost the questionnaire and had to redo it, while others simply forgot about it. 5 participants had to leave Brin earlier than expected for their studies and so these questionnaires were collected via email in the spring of 2017.

This questionnaire was adapted modified from Gullberg and Indefrey's (2003)¹¹ assessment of speakers who participated in similar research (Alferink & Gullberg 2014). It was divided into seven key sections which aimed to outline a speaker's linguistic repertoire and to highlight his or her self-reported use of the languages. The questionnaire was translated into French, since participants are not literate in Kujireray, yet directions were also given in Kujireray by the research assistant. Generally, most questionnaires

¹¹ See appendix 9.1 for the adapted version of this questionnaire.

were reviewed with the speaker to detail any ambiguities, such as specifying which variety of Joola one reported speaking (Fogny or Kujireray, for example).

The first section of the questionnaire asked for the participant's demographic information, including age, sex, past and current villages of residence and time spent in each place, the number of years of attending school, and work.

The second section dealt with participants' self-reported competencies of their individual linguistic repertoires. On a Likert scale of 1–5, participants were asked to rate their speaking and listening skills in each language he or she listed as part of their linguistic repertoire from *very poor* to *very strong*. A comment box enabled speakers to elaborate if they so wished.

Section 3 focused on the age of the speaker's acquisition of each language, and if the language was learned in a formal setting, such as a classroom, or informally, such as at home or with friends in the village.

The 4th section addressed speakers' language attitudes and responses were on a Likert scale of 1–5 according to the participant's agreement or disagreement with ideological statements such as, "I enjoy speaking this language", and "I feel confident when speaking this language". A comment box was provided for elaboration.

For tracing language use among the social network, the 5th section asked participants to report which languages they recalled or perceived speaking when talking to, for example, parents or grandparents, children, etc. The frequency with which a participant spoke such language to these persons was noted on a Likert scale of 1–5, from *never* to *all the time*. A comment box was again provided for details or explanation.

The final section included other domains of language use or exposure, such as reading, watching television, listening to the radio, and internet use. Participants were asked to fill in roughly how many hours a day each activity was undertaken, and in which language(s). The results were analysed quantitatively by adding the sum of all self-reported scores.

3.3.2 *Participants*

Participants were selected through word of mouth in Brin and were aware of my general research interests. The only criteria for participating were to have a basic knowledge of the two target languages, Kujireray and French, and to be able to carry out the two tasks in the two languages over a short period of time (within three months). The first field season took place from September to December 2015. Many people returned to Brin and Djibonker for the month of September for football tournaments, festivals and other cultural gatherings in the Casamance. Speakers were readily available to participate and benefited from earning a bit of compensation during the holiday time. Yet as October approached, schools reopened and many migrated to either the capital, Dakar, Ziguinchor, or other villages for school and work. This required careful planning and balancing of participants' schedules to ensure as many participants had completed the tasks necessary.

Here I describe the speakers' linguistic repertoires according to self-reported data from the sociolinguistic questionnaire. Nearly all 18 participants reported being born in either Brin or Ziguinchor, and growing up in Brin, except for C11 who was born in Tambacounda, a city in eastern Senegal, TB1 who was born in Banjul, and FB1 who was born in Dakar but grew up in Djibonker. At the time of the study, 14 participants were students, while others worked as farmers, one worked as a driver in Ziguinchor, one as a mechanic also based in Ziguinchor, and one worked in Dakar in the French IT sector. This participant was the only one with a university degree, with a handful having

completed the BAC, or high school degree. The average age of the participants was 26 years old, with a range of 18 to 30 years old. 3 participants were female and the rest male. This biographical information is illustrated in the table below.

Table 5 Participant speakers' biographical information

ID	Sex	Birthplace	Y.O.B	Age	Education ¹²	Occupation	Home Location
TB1	F	Brin	1997	18	4 ^{eme}	Student	Banjul
JB2	M	Brin	1992	23	BFEM	Student	Brin
MB6	M	Brin	1992	23	CFEE	Student	Brin
SB1	M	Brin	1992	23	CFEE	Student	Brin
CB4	M	Baghagha	1992	23	Terminale	Student	Brin
LS2	M	Jouring	1996	19	Terminale	Student	Brin
FB1	M	Djibonker	1991	24	Terminale	Student	Dakar
FB	M	Ziguinchor	1992	23	3 ^e	Mechanic	Ziguinchor
RB5	M	Brin	1991	24	Terminale	Student	Brin
ID	M	Brin	1985	30	BAC+2	Student	Brin
DD1	M	Brin	1992	23	4 ^{eme}	Peasant	Brin
OS3	M	Ziguinchor	1990	25	Terminale	Peasant	Ziguinchor/Brin
PS1	M	Brin	1994	21	Terminale	Student	Ziguinchor
C11	M	Brin	1988	27	1 ^{er}	Peasant	Tamba
IT	F	Ziguinchor	1996	19	Secondaire	Student	Brin
S10	M	Ziguinchor	1988	27	Licence	IT	Ziguinchor
BB2	M	Ziguinchor	1995	20	BFEM	Driver	Brin
F10	F	Brin	1995	20	Terminale	Student	Brin

¹² American education equivalents are: CFEE/elementary school, /BFEM/middle school, 3^{eme}/9th grade, 4^{eme}/8th grade, 1^{er}/ 11th grade, Terminale/12th grade, licence/Bachelor's degree. BAC/standardised test needed to enter university.

Figure 8 presents the languages spoken by the participants as reported in the questionnaire data. The languages are organised by lexicalisation patterns (semantically specific referring to Path and Manner conflation in the verb in the form of postural verbs, Path-only referring to the encoding of simple Motion/relocation). As such, it provides a brief look at some of the possible ways speakers organise the semantic domain of placement in the Casamance as well as the linguistic diversity of the area.

ID	Path-only	Path-only and Path+Manner	Path+Manner	TBD
TB1	French	Bainouk Gubeeber; Banjal; Kassa; Kujireray; Wolof		
JB2	French	English; Banjal; Koufukaye; Fogny; Kujireray		
MB6	French	English; Banjal; Koufukaye; Fogny; Kujireray		
SB1	French	English; Banjal; Koufukaye; Fogny; Kujireray		
CB4	French	English; Kujireray; Wolof		Creole; Spanish
LS2	French	English; Kujireray; Wolof		
FB1	French	Bainouk Gubeeber; Kassa; Kujireray; Wolof		
FB	French	Kujireray; Wolof		Creole; Manjack;
RB5	French	English; Fogny; Kujireray; Wolof		Spanish
ID	French	Kujireray; Wolof		
DD1	French	English; Bainouk Gubeeber; Kujireray; Wolof		Spanish
OS3	French	Fogny; Kujireray; Wolof	Mandinka	Creole
PS1	French	English; Banjal; Kassa; Fogny; Kujireray		
C11	French	Kujireray; Wolof		Creole; Manjack; Mankagne
IT	French	Banjal; Kassa; Fogny; Kabrousse; Kujireray ; Kuataye; Wolof		Creole
S10	French Spanish	English; Kujireray; Wolof		Sereer
BB2	French	English; Kujireray; Wolof		
F10	French Spanish	English; Kujireray; Wolof		

Figure 8 Participants' linguistic repertoires according to placement event typologies

A total of 17 different named languages were reported by the 18 participants. The average number of languages used among these participants is 5, with a range of 3 to 9. All participants reported speaking Kujireray and French, and all but 4 reported speaking Wolof. The languages shared the least among participants were Joola Kabrousse, Mandinka, and Sereer. All other languages were reported as known or used by at least 4 speakers each. Most speakers - except for JB2, SB1, and MB6, who are brothers and live

together in a rather remote area of Brin - have a different set of languages in his or her repertoire, thus reflecting the well-known linguistic diversity of the region. The majority of these participants speak languages that use both semantically general verbs and specific verbs encoding information of the figure's configuration, based on preliminary work.

Nearly all participants reported learning to speak and understand French was in a formal context such as school. Other languages learned formally included Spanish and English, with all other languages having been learned informally in villages, at home, or with friends. All participants reported beginning to acquire French before the age of 13, with 4 speakers having spoken it at home at the age of 3. The average age of acquiring French was 7 years old, the age that most children begin school. Kujireray was acquired by 9 participants at 3 years old, a higher number of participants than of French, and all learned this language at home or in Brin. The young age at which the majority of participants learned Kujireray in contrast to French is reflected in the overall self-reported speech in the two languages, with the majority of participants reporting stronger linguistic skills in Kujireray than French.

The languages reported by participants as the most enjoyable were Kujireray, Wolof, and French. The least enjoyable were English and Mandinka. With French, more speakers reported enjoying speaking the language than they felt comfortable speaking it – this could be due in part to effects of schooling in the language and effects of language proficiency and standardisation. Joola Kujireray, on the other hand, nearly matched the same ratings as enjoyment and confidence, overall reporting higher than those of French, meaning overall speakers felt more comfortable and enjoyed speaking Kujireray than French. Similar to the finding of the participants' ages when they first acquired Kujireray

and French, it becomes clear when breaking down these factors that language attitudes, self-reported speech, and the age at which these languages were acquired reveal a similar, general pattern in preferring Kujireray over French.

The languages used in participants' self-reported interpersonal relationships ranged from 3 languages per relation to 6, with friends, locals, siblings, co-workers, and housemates eliciting the higher levels of diversity. Languages used with their mothers ranged from one to two languages, namely Kujireray and Banjäl, or both. It becomes clear when looking at these data that relationships linked to groups of people, such as friends, siblings, and locals, yield a higher language report as it is not clear the exact individuals to whom this questionnaire is referring to, whereas a mother is a specific individual in which participants can easily identify the languages spoken with this one person. A more detailed study of the participants' social networks and daily communications and language use would reveal a more truthful depiction of the linguistic repertoires in use among their social networks.

For languages reported from different types of media, French, Wolof, and occasionally Joola are heard on television channels and radios. French was the language the most read, and French and Wolof were the languages the most listened to on the radio. Overall, participants did not report reading, listening to the radio, or watching television for more than 2 hours a day, and the majority of participants did not report partaking in any of these activities.

The speakers who participated in this study demonstrate a typical linguistic situation for the Casamance region. Each speaker displays a unique linguistic repertoire due to various factors such as migration and education. All speakers are multilingual and have knowledge of Kujireray and French.

3.4 Multimodal data collection

To best analyse how speakers use various verbs of placement, a diverse range of contexts in which placement events occur was needed. For example, it is important that the data stem from a variety of speech events and does not depend on a single speaker or a single type of speech event. Additionally, investigating the semantics of a language should not rely on data riddled with pitfalls, such as translations and speaker intuitions – these should only be understood as “clues” to the construction’s true meaning rather than a result (Matthewson 2004, p.380; Lüpke 2009).

The need of a varied data set is not only present for linguists working on speech, but gesture studies also call for complementary sets of data that are recorded on video (Kita 1995; 2003; Seyfeddinipur 2012; Ashmore 2008). These sets should include “naturally occurring speech” or “observational speech” such as informal conversation, as well as elicited data, such as semi-experimental data and stimuli-based tasks about a specific topic (Lüpke 2009; Gullberg 2009b; Himmelmann 1998). Himmelmann (1998) proposes that linguistic data can be divided into four types according to the degree of ‘spontaneity’ the event permits. The event types are natural communicative events, observed communicative events, staged communicative events, and elicitation, and are situated on a cline according to how planned or unplanned the events were (Himmelmann 1998, p.27). Natural events assume no interference or control outside by the linguist or other researchers. These events are by nature excluded from the data collection process as the researcher will always have a direct or indirect influence on the event being observed. Observed communicative events are those in which the researcher’s intentions are known to all participants, including the fact that they are being recorded in any format. Staged communicative events involve more interference and control by the linguist and serve the

main purpose of collecting data – they are communicative events that would otherwise not serve any real, practical purpose without the presence and motives of the researcher.

Throughout my fieldwork I collected a range of audio-visual data recorded based on Himmelman's terminologies and definitions (1998, p.27) which include both:

1. "staged communicative events" by using photos and video stimuli to elicit placement and removal event data, and
2. "observed communicative events", such as directed interviews and conversations that invite speech that is less planned.

These two methods of data collection are complementary and provide a more holistic approach to understanding the semantics of placement and removal events by including semi-experimental speech analysis and less planned, naturalistic speech in a variety of cultural-specific contexts. Basing analyses on staged communicative events alone, such as stimuli-based data, limits the contexts in which speakers use placement and removal verbs. By including the use of observed communicative events, the use of certain lexical items can be studied qualitatively according to a wider range of contexts. Naturalistic data provides these different environments in which speakers may use different lexical items than those in staged communicative events. An example to illustrate this can be the use of a stimulus set that only focuses on placement events where the Ground has features of containment, such as a box. By including naturalistic data from different contexts, it can emerge that speakers use the same verb but for different contexts not limited to those in which the Ground displays containment. This finding would ultimately change the analysis of the verb and deepen the understanding of the semantics of the verb. As a member of the Crossroads project, I also have access to Crossroads team members' data collected and organised as a fully annotated, translated, and transcribed corpus of both

audio and video files, covering both staged communicative speech events and observed speech events, enriching my analysis. Throughout the thesis, I cite which data is of my own collecting and which is from fellow researchers.

3.4.1 *Staged communicative events*

One of the major benefits of using stimuli-based data is the ability to systematically observe the contrastive semantic features that play a role in the choice of verb (Hellwig 2003, p.109). Relying uniquely on observed communicative events hinders the research in that this type of data does not provide an even distribution of verbs (in other words, certain verbs occur more frequently than others which is not ideal for comparisons), the semantic features of certain entities pulled from the data are limited, and the referential context may be unknown to the listener if, for example, the speaker is telling a story (Hellwig 2003, p.108). Two core stimuli-sets were modified to elicit both gesture and descriptions of placement and removal events. They are outlined and illustrated here.

One core stimuli-based set used was the Put Project (Bowerman et al. 2004)¹³ which was designed to gather crosslinguistic data on the semantic domain of placement and removal events. The stimuli consist of 60 3–4 second long video clips depicting various types of parameters concerning types of Figures, Grounds, etc. Here I detail the parameters presented in the stimuli that were taken into analytical account. It is important to note that some parameters overlap to other scenes, or in other words, are not mutually exclusive.

1. *Goal-oriented vs. Source-oriented motion*: 32 video stimuli depicted an agent relocating the figure to a location, and the new location is clearly illustrated in the video. These clips were considered Goal-oriented or placement events. 27 videos presented an

¹³ See appendix 9.2 for the description of each stimulus video for this task.

agent relocating a figure away from a location, emphasising that the new location (the placement aspect of the motion) was not depicted or included in the video.

2. *Figure types*: the relocated object included a variety of physical properties among both Goal-oriented and Source-oriented scenes. These included contrasts between rigid and flexible figures, whether the figure was a body part of the agent or a separate object, and granular versus liquid versus solid figure types such as rice, water, and books, respectively. Also included were clothing items such as a hat, belt, and coat. Finally, shape (long versus round) and size (big versus small) figure types were present in the stimuli and taken into account for semantic contrasts.

3. *Ground types*: the Source and Goal types include whether the Ground is a body part of the agent, such as his or her hand, or whether the Ground is a separate location such as a shelf. Parameters presented in the stimuli also include whether the Ground was horizontal, such as a shelf or table, or vertical such as a wall, and if the Ground was at a level higher than the Agent's position or lower (for example, high on a shelf or on the floor). A final distinction considered was whether the Ground was one of containment, such as a bucket or a box, or if it was one of support such as a table top or floor.

4. *Spatial relations*: various spatial relations were presented in the stimuli set, such as the containment of a figure and if that containment is tight fit or loose fit. The supportive relation between the Figure and Ground was present as well, seen in stimuli such as the placement of a cup on a table. Finally, the suspension of a figure was included as a parameter for analysis, as seen in the video stimulus where a rope is hung over a tree branch. Again, these various spatial relations spanned both Goal- and Source-oriented scenes.

5. *Instruments*: the stimuli took into account various instrument types used to place or remove a figure, which included the agent's hand or another body part of the Agent, such as their mouth, or a non-body part such as tongs.

6. *Manner*: three different parameters were also analysed with regards to the manner of motion. The first was whether the Agent has full control over the figure until it reaches the goal (put a book on a shelf), or whether the Agent loses control over the figure before it reaches the goal (i.e., throwing or tossing a figure rather than placing it manually). The second parameter is whether the motion was carried out deliberately or whether the motion was accidental (i.e., knocking over a bucket or pushing a suitcase out the door). Finally, whether or not the Agent moved with figure or whether the agent only extends a hand was also depicted in the stimuli and analysed for distinctions (i.e., carrying a suitcase out of a room).

There were no static locative events as all stimuli videos from the Put Project included the depiction of a caused motion. The images below depict examples of the stimuli.

Stimuli photo			
Stimuli ID & description	9 drop book accidentally on floor	20 pour liquid into container	12 drop apple into bag

Figure 9 Selected stimuli images from Put Project

The Caused positions task (Hellwig & Lüpke 2001)¹⁴ uses 46 short video clips depicting placement events but no removal events. This task was designed to illuminate the use of postural verbs in both static locative descriptions and causative locative descriptions. For example, static locative events prompt the speaker to describe a scene in which the figure is already configured at the Ground in a noncanonical position, resulting in an English translation as *there is a bottle laying down on the table*, whereas the causative locative descriptions include caused motion, eliciting an utterance such as, *she put the ball in the box*. While stative expressions were not the primary focus for the lexical analysis, the descriptions of these events were recorded for possible follow-up studies.

This set of stimuli includes a different variety of Figure types and their placement in noncanonical positions, thus aiming to elicit placement verbs that encode this information

¹⁴ See appendix 9.3 for a description of each stimulus video for this task.

about the figure. Parameters regarding the Figure's noncanonical position were not included in the Put Project stimuli and were therefore used to complement this set. There were, however, many parameters illustrated in the Caused Positions stimuli that overlapped with those depicted in the Put Project. These parameters were Goal-oriented caused motions, rigid and flexible Figure types, long and round Figure types, large and small Figure types, whether the Ground featured containment or support and whether it was at a high or low level (i.e., a table top or the ground). Spatial relations between the Figure and Ground that overlapped with those depicted in the Put Project were containment, suspension, and support. All Instruments were the Agent's own hand, and the only Manner type included was one of intention and full agentive control until the Figure reached the Ground.

Parameters included in the Caused Positions set which were *not* found in the Put Project set were various figures (namely, cassavas, sticks, ladders, wine bottles and round clay pots). Most importantly, however, was the emphasis on figures placed in canonical positions and the same figures placed in two noncanonical positions: on their side and upside down. 3 selected placement events from the Caused Positions set are displayed below.

Stimuli photo			
Stimuli ID & description	28 lay bottle on table	14 put bottle on table	33 put pot on table

Figure 10 Selected stimuli images from Caused Positions

While the Put Project yielded a more robust variety of parameters used for analysis than the Caused Positions, the latter set was beneficial for its stimuli that depicted noncanonical positions of the figure and for its inclusion of other figure types.

Descriptions were collected in response to all Caused Positions stimuli, yet in the final lexical semantic analysis, only the stimuli that contrasted the same figure types placed in a canonical position and those in two different noncanonical types were included.

These two stimuli-based tasks were piloted and adapted accordingly during the summer of 2015 with English speakers to test the success of speech and gesture responses. The Caused Positions task (Hellwig & Lüpke 2001) and the Put Project (Bowerman et al. 2004) were not originally designed to elicit gestures, but focused on the speech production for various placement events. I therefore adapted the stimuli to Director-Matcher tasks in order for the Director to provide an utterance encoding the target placement events and co-occurring gestures for the Matcher to select the corresponding

image (Clark et al. 1973)¹⁵. The video clips were added to PowerPoint slides and sectioned off into 10–12 clips per session. Participants could take a break in between sessions so that they did not feel overwhelmed or fatigued by the task. During breaks, the research assistant helped to keep the participants in the target language mode. A blank slide was added after each video clip ended so that the Director would recount the scene in the video clip from memory to the Matcher. The blank slide also prevented the Director from eliciting pantomimic gestures of the target action depicted in the stimuli set. The Matcher was given photos of the figure’s resulting configuration to the Ground in a random order and was told to select the picture which corresponded to the Director’s description of the scene. The screenshots of each event were sectioned off into 4–5 sets of 10–12 photos so the Matcher had a feasible set to choose from at a time. Finally, three of the filler scenes were used in the beginning of each task so that the Director and Matcher could practice and ask the research assistant any questions for clarification.

The Director and Matcher were positioned to face each other at a 45 degree angle from the video camera, an ideal set up for observing and recording gestures. Participants are more likely to produce gestures “whose form and relationship to words [are] informative and even essential to their addressees” when in face-to-face situations (Bavelas et al. 2008, p.517). The Matcher was given the pictures of the video clips on a clipboard and instructed to keep it at an angle away from the Director’s eyesight as to prevent the Director from pointing to the picture and to ensure that the Director provides an accurate-enough description of the scene. The Director was also instructed not to point to the picture in the case that he or she could see it.

¹⁵ See Gullberg (2009a) and Alferink & Gullberg (2014) for examples.

As Grosjean (2008) explains, the type of language mode speakers find themselves in is influenced by the many linguistic variables they are exposed to, such as the language they are listening to, the intensity of language mixing in a conversation, and the language or languages they are reading at a moment in time. Due to the ease and frequency of these multilinguals activating other languages from their repertoires because of these many influential factors, especially those in a community where codeswitching is highly frequent, the participants in these tasks were embedded into a monolingual language mode of the target language, either French or Kujireray. The language mode a speaker is in plays a role in how that speaker describes an event in speech (Berthele & Stocker 2016). This was done in order to elicit expressions of placement that could be analysed as a 'Kujireray' versus 'French' description upon which a description of the language could be carried out. It is noted that speakers were not embedded in a language mode when collecting naturalistic data.

A speaker of the target languages (French and Kujireray) was asked to act as a research assistant for these tasks and embed the participants in the target language. This research assistant is a resident of Brin and knows the speakers participating in the study, which also helped when carrying out the tasks as the speakers felt comfortable asking him questions about what they were supposed to do. Before beginning the task, while I occupied myself with setting up the camera and other equipment, the research assistant spent approximately 10 minutes engaging the participants in conversation in the target language. He explained that the tasks they would be partaking in would only take place in this language, thereby priming the speakers to a monolingual mode of the target language. Once the equipment was set up and ready to begin, this research assistant read aloud from the bullet-pointed list of key instructions in the target language (French or Kujireray) to

explain the participants' roles in the task. The research assistant was trained to answer the participants' questions, to keep the participants embedded in the target language even during short breaks, and to help navigate the stimuli sets if technical problems arose. Together, we practiced the tasks in French and Kujireray with two participants who were not included in the results of this study, serving as a pilot mainly for the research assistant to master these skills and understand what his role was. In the case that the Director could not clearly see the figure in the stimuli, s/he was encouraged to ask the research assistant for the figure's name in the target language. The research assistant did not provide any placement or removal verbs to the Director and was informed of the tasks' purpose, to elicit placement events in the target languages. The research assistant was reimbursed for the time spent piloting the tasks.

Speakers were asked to participate in each task twice, once in Kujireray and once in French, with a period of *at least* three days in between sessions when beginning the tasks in the other target language. The majority of participants spent a month in between repeating tasks in the second target language. The language in which the speaker began the tasks was randomised for each participant – some began in French, others in Kujireray. A different participant was assigned the role of the Matcher when carrying out the task in the other target language, in other words, the Director always had a different Matcher participant in the Kujireray set and the French set. This prevented the Director from priming the descriptions in both speech and gesture – the Director assumed that all descriptions were new information for the Matcher. I explained to the best of my abilities the purpose of the research but was careful not to discuss gestures before participants had completed the tasks as this would influence how participants behave.

3.4.2 *Non-verbal task*

A semi-structured “non-verbal” task was carried out at the end of the second season of fieldwork. The task involved two participants speaking Kujireray to whom were dictated a list of seemingly “synonymous” placement and removal verbs, such as *e-lat*, ‘to hang’ and *e-rak*, ‘to hook’, which both encode suspension, and were asked to act out the semantic information of the verb by using various objects selected for the task. The purpose of this task was to explore the differences between lexical items that shared similar semantic information, especially targeting the verbs for which consultants had difficulty articulating the subtle differences during elicitation sessions. The data was collected on video.

3.4.3 *Discussion sessions*

Discussion sessions were carried out with speakers to further the description of lexical semantics and placement/removal constructions. Three speakers of Kujireray and French volunteered to assist in these discussion sessions and all sessions were recorded on video. Sessions lasted for about 40 minutes on average and were semi-structured in that a list of approximately 10 verbs that were targeted per session. The list was neither exclusive nor exhaustive and allowed new verbs into the conversation as offered by the speaker. Early discussion sessions, mainly collected during the first fieldtrip in 2015, sought to create a baseline of verbs with illustrative examples of how the verbs could be used in different contexts. No specific syntactic or morphological constructions were tested for at that point; rather a grasp of the verb’s basic semantics was the primary goal. The second season of data collection involved a more planned out discussion with speakers: observed communicative events complemented data extracted from the two stimuli-based data sets and gone through with three different speakers of Kujireray.

3.4.4 *Observed communicative events*

Language and culture are interwoven, a notion that is inherent to a Cognitive Linguistics framework. Verbs, for example, can be specific to expressing events that only occur in certain cultural contexts – for example, the verb *e-rosix* ‘to remove shellfish with one’s hand’ refers to the removal of crabs from holes in the river banks and mangroves and is more likely to be elicited in such a context or a topic of discussion. The collection of data from observed communicative events allows for an understanding of actual language use and practices in a variety of contexts that are specific to the speakers of Kujireray.

When asking permission to video record a practice, such as construction, cooking, fishing, or basket weaving, the speakers were not given any instructions or directions about which language to speak. As this is a highly multilingual context, I did not want the speakers to be set in any language-specific mode: I emphasised that I was mainly interested in the activity performed. I of course had an influence on the speakers as when I set up the camera to record and present myself and my objectives as I would speak both French and Kujireray: a classic example of observer’s paradox (Labov 1972). Speakers were very likely influenced by my presence and may have spoken French and Kujireray knowing that these are the languages I learned and focused on while in Brin.

Nevertheless, I removed myself from the setting immediately after setting up the camera in attempts to lessen my effect on the speakers’ choice of language. Speakers included a wide variety of ages and sexes, and sociolinguistic data was also collected afterwards.

The naturalistic data collected was video recorded. This data was used for the description of placement verbs in different contexts that could have been overlooked due to the stimuli in the Put Project and Caused Positions tasks. Although for the purposes of gesture analysis the data resulted in several limitations (discussed in section 6.3), the data

serve to complement the analyses based on gestures produced in staged communicative events.

Participant observation also served as another form of observed data collection. When local events occurred in and around the village, no matter the reason or context, I attended and took part in the activities. Events included weddings, funerals, baptisms, and first communions. I also accepted invitations to learn activities or simply sat and ate and discussed local news with neighbours. Participant observation provided insight on how people selected certain placement verbs depending on the context, and unlike filming naturalistic data in which I did not interrupt to ask questions, being a semi-active participant in these events allowed me to follow up on the use of these placement and removal verbs with questions with the speaker. The events often yielded the most fruitful data in terms of providing a variety of placement events, but also in regards to creating an informal yet very informative conversation and discussion about the use of certain verbs. On many occasions, discussions would lead to insight on the variation of verbs depending on the sociolinguistic background of the speaker. The events were not recorded on audio or video, but as field notes taken with pen and paper.

3.5 Coding and analysis

The following sections describe in detail the steps taken to code and analyse the multimodal data collected by using the previously outlined methods. I explain the critical elements in speech extracted from the data sets for analysis and how these were coded. I then describe my methods for systematically segmenting and coding for co-speech gesture as it informs my analysis of how speakers express semantic information in this modality.

3.5.1 *Transcribing and coding of speech*

All data was transcribed in ELAN (Version 4.8.1, 2014)¹⁶ by trained transcribers who speak the target languages (see 3.6 on how the speech data was managed and transcribed in more detail). During my second season of fieldwork in the fall of 2016, I trained one of the transcribers to add the Kujireray speech co-occurring with the gesture segments already created in ELAN. Upon the weekly collection of the files, I reviewed these transcriptions and flagged any that needed revision, as Nagy and Sharma (2013, p.253) recommend due to unavoidable “transcriber effects”. One of these effects occurred during the transcription of these files where the transcriber had a tendency to “correct” the speech while transcribing. An example of this transcriber effect that I found in the French files was of one participant who said *sous*, or ‘under’, as the preposition describing the Spatial Relation between the Figure and Ground, but the transcriber continuously transcribed it as *sur*, the preposition for ‘on’ in French. The Spatial Relation of this item was one of support. I therefore revised all transcriptions, sometimes collaborating with the transcriber and sometimes without, and added the French speech to the gesture segments to ensure that what was actually being said by the participant was appropriately reflected in the transcription. This was the only type of modification to the transcriptions that I made. All speech data and examples are presented in this thesis as they were transcribed by the transcribers in ELAN. I refrain from superimposing standard French orthography and devising a standard orthography for Kujireray and therefore present the data as they had been transcribed in ELAN. I include a gloss and a translation after each transcription of speech.

¹⁶ See <https://tla.mpi.nl/tools/tla-tools/elan/> for more information about ELAN software.

Speech in both languages, Kujireray and French, was transcribed and coded for the first utterance of the target motion which was comprehensible to the Matcher. Any repeated or self-corrected responses by the speaker were not taken into account; only the utterance with the complete set of semantic elements provided were coded, thus providing one placement description per participant per placement stimulus (Gullberg & Narasimhan 2010; Alferink & Gullberg 2014). The following are examples extracted from the data to illustrate speech in Kujireray and in French. The target verb and locative expression are marked in bold:

(16)	<i>na-ŋar-lo</i>	<i>ka-rafa</i>	<i>na- fil-en</i>	<i>ni</i>
	3S-take-MID	CL:ka.CYLINDRICAL.HARD-bottle	3S-lay-CAUS	LOC
	<i>e-tabul</i>	<i>y-a-y-u</i>		
	CL:e.LOAN-table	AGR:y.LOAN-DEF-AGR:y.LOAN-MED		

‘She takes the bottle and **lays** it **on** the table.’

DD1 BRI051015CK4 CP 28

(17) *elle a depose un verre sur la table*

3S AUX **put** INDEF.DET glass **on** DEF.DET table

‘She **put** a glass **on** the table.’

TB1 BRI231115CK1 PP 1

Verbs which encoded fine-grained information about the configuration of the object (such as postural verbs, as seen in example (16)), versus those which encoded coarse-grained information, mainly about Path (example (17)), were coded for using a binary coding scheme. The following is an excerpt from the French speech data collected and coded: from left to right, there is the annotation for the thematic roles linked to syntactic constituents (i.e., Agent (a), Ground (g)). Next there is the binary code for the placement verb – in this case, the verb is *e-gub* ‘turn over’, which encodes information about the figure’s configuration and therefore is coded as 1. Finally, there is the transcribed utterance exported from ELAN. The following example shows an utterance in Kujireray coded as displaying specific information about the figure’s configuration:

(18)

Thematic role	A	P	F		SR	G
Code		1				
Description	<i>na-gub</i>	<i>ka-tasa</i>	<i>k-a-h-u</i>		<i>fatiya</i>	<i>e-table</i>
	3S- turn.over	CL:ka-pot	AGR:k-DEF-AGR:k-MED	on		CL:e-table

‘She turns over the pot on the table.’

MB6 BRI300915CK4 CP 38

Here we see the Agent, the placement verb *e-gub* ‘to turn over, arrange, cover’, the Figure, and its resulting spatial relation to the Ground. The next example illustrates this coding for a French placement description, where the verb used is *mettre* ‘put’.

(19)	Thematic role	A	P	F		SR	G
	Code		0				
	Description	<i>il</i>	<i>a mis</i>	<i>un tasse</i>		<i>sur la</i>	<i>table</i>
		3S	AUX put	INDEF.DET cup	on	DEF.DET	table

‘He **put** the cup on the table.’

MB6 BRI221015CK1b PP 1

Goal-oriented versus Source-oriented verb types were determined based on their extensions to event types: verb types that extended exclusively to scenes where the Goal ground was clearly indicated in the stimuli were treated as placement/Goal-oriented verb types, and those that extended to events where the Goal was *not* depicted but that the Source was illustrated were analysed as Source-oriented verb types. To support or negate the analysis of Goal- vs Source- orientation of the verb type, the adjunct phrase was also considered with regard to whether information about the Goal or Source ground was mapped. Note the following example:

- (20) *na-baŋ-e* *e-kas* *ni* *e-tabul*
 3S-put-PERF CL:e.LOAN-cup LOC CL:e.LOAN-table
 ‘S/he puts a cup on the table.’

BB2 BRI300915CK3 PP 1

The verb *e-baŋ* ‘put’ was analysed as a Goal-oriented verb as it was only found in events where a Goal-oriented motion was depicted. Furthermore, the adjunct phrase presents information about the Goal ground that was depicted in the stimulus (*on the table*). Determining the verb’s orientation of motion could not be based on the information linked to the preposition alone as many prepositions in both Kujireray and in Senegalese French do not express Goal versus Source information (see 4.1.1.2 for Kujireray adpositions and 5.1.1.2 for French).

3.5.2 *Segmentation and coding of co-speech gestures*

Gestures display formal structural properties that can be systematically analysed in regards to gestural parameters, such as the gesture stroke, articulator(s), configuration, place of articulation, temporal alignment with speech, and movement (Kendon 1972; 2004; Kita & Özyürek 2003; Gullberg 2006; 2009b). Gesture articulators include eye gaze, head nodding, movement of the hands and arms, the legs, feet, lips, and other body parts, and as Gullberg (2006, p.104) specifies, exclude behaviours such as functional actions (such as scratching oneself), self-regulating movements (twirling one's hair, fidgeting), posture, and proxemics since these “non-verbal behaviours’ do not contribute to the message the speaker is intending to convey”. The gestures articulated by these body parts all bear significant meanings and serve various functions, yet for the majority of gestural studies, research has mainly focused on the articulations of the arms, hands, and fingers. The present study focuses on manual gestures and excludes lip pointing, eye gaze, and other non-manual gestures. As previously noted, I refer to the gestures I observe as co-speech gestures or co-occurring gestures.

Gesture units consist of several parts called gesture phases (Kendon 1972; 2004; McNeill 1992b; Kita et al. 1998). These include the resting position, for example, when a speaker has his or her hands folded or resting on his or her lap, and then the preparation phase, where the speaker moves his or her hands from this resting position to get ready for the intended gesture stroke. The gesture stroke expresses the most meaningful and symbolic component of the gesture unit and is often identified by well-defined hand configuration and well-articulated movement (Kita et al. 1998; Kendon 1972; 2004). After the stroke, the hands return to their resting position during the retraction phase. Example (21) gives an example of the breakdown of a gesture unit, illustrating each of these phases.

(21)



Frame 1	Frame 2	Frame 3	Frame 4	Frame 5
resting phase	preparation	stroke phase	stroke phase	retraction
	phase			phase

RB5 BRI200915CK 3

The resting position, preparation phase, and gesture retraction phases were not taken into account – only the gesture strokes were coded and analysed as they express the core of the semantic information. All gesture movements were segmented and annotated using the software annotator ELAN. The gesture strokes performed by the participant’s left hand (LH) and right hand (RH) were segmented frame-by-frame on separate tiers. Multiple strokes may occur within the same gesture unit (between resting positions). To distinguish between strokes, I looked at discontinuation of the stroke, change in speed, and a change of direction in the stroke (Kita et al. 1998; Seyfeddinipur 2006).

Gesture strokes were segmented with the sound off to avoid bias of the language on the coding as well as to avoid a circular semantic argument. For example, if I (the coder) hear and see the transcription of a postural verb such as *e-ilen* ‘stand’, this information can bias my coding of the co-occurring gesture and code it as a figure-incorporated hand shape. In addition, the stimuli clip showed at the time of the gesture performed was

hidden in the ELAN tier to prevent biased coding. If I were to know which clip speakers were responding to, it could again bias my coding: if I knew that the figure in the clip was placed in a noncanonical position, I may be swayed to code the gesture as a figure-incorporated gesture.

Once all gesture strokes were identified in ELAN, I reviewed the gesture strokes to ensure the exclusion of other gesture phases such as retraction. These segments were then coded for the presence or absence of a clearly defined hand shape, following Gullberg and Narasimhan's (2010) coding scheme. This coding was based on hand shape as it provides insight to whether the speakers' semantic description of the placement and removal event includes specific information linked to the verb in their gestures. In Gullberg and Narasimhan's words, hand shapes "that reflected and incorporated the Figure object into the movement" were coded as displaying specific semantic information, whereas gesture strokes in which the hand(s) "expressed only Path of movement. [...] that is, a relaxed, floppy hand" were coded as a display of more general information about the placement or removal event (2010). I call the former type of gestures (that display a tense hand shape) figure-incorporated gestures, and I call the latter type Path-only gestures.

The presence of a tense, clearly formed hand shape made by a speaker suggests the speaker is displaying fine-grained information about the figure, be it size, shape, or its configuration to the Ground. Example (22) illustrates two different participants displaying specific information of figure incorporation in their gesture strokes.

(22)



S10 BRI071015CK2



F10 BRI071015CK1

The absence of a tense hand shape would indicate that the speaker is not expressing this specific semantic information but is more concerned with expressing caused motion if it is a dynamic stroke. Example (23) displays two participants expressing Path-only information, not incorporating the figure in the gesture stroke.

(23)



F10 BRI071015CK1



DD1 BRI051015CK5

Also taken into account for coding the presence or absence of a tense hand shape is whether or not there is a change of hand shape between the resting phase, preparation phase, and the stroke. For instance, if the hand shape of the gesture changes during the

stroke, I coded this as the presence of a hand shape. If the gesture does not display any formal change in its stroke from the phases prior (resting and preparation), I coded this as having no hand shape. Example (24) portrays the change of a hand shape between the initial resting and preparation phases and the stroke, as the participant's hand becomes more tense, rounded, and defined during the stroke, whereas the hand shape shown in example (25) demonstrates that the hand shape does not change from the resting or preparation phases (between frames 1 and 3).

(24)



Frame 1

resting phase



Frame 2

preparation phase



Frame 3

stroke

LS2 BRI051015CK2

(25)



Frame 1

resting phase



Frame 2

stroke



Frame 3

resting phase

LS2 BRI051015CK2

Using ELAN, I coded using a binary scheme of 1 for the presence of hand shapes in the participants' strokes, and 0 for the lack thereof. Only the gestures of the director were taken into account for coding.

After the completion of all gesture stroke segmentation and coding, the sound was turned on. At this stage I excluded gestures that occurred without speech from further analysis and only investigated those gesture strokes occurring with speech and which contained elements critical to placement and removal events. For example, when the director of the task asks the research assistant for the word for the figure and gestures, this is excluded from analysis. By doing so, other gestures such as beats were excluded from the analysis. When speakers repeated descriptions, only the first utterance with the most elements of the placement or removal event and the gestures co-occurring were coded for.

Coding these manual gestures as a lone researcher sets up a trap for coding biases and allows for human errors to pass through the data undetected. For these reasons, an interreliability test was set up with an outside research assistant to code these gestures. A random selection of 10% of gestures per participant ($n = 390$) was selected, copied into an

ELAN file with my coding cleared from the tiers, and coded by a research assistant. I trained the research assistant using the methods described in this chapter on the coding scheme. We coded one file together so that any inconsistencies in the methods or areas that needed clarification were addressed. The research assistant then carried on with the randomised set of files and coded for hand shape in my absence. Once completed, the research assistant was paid for the work and the reliability of the coding results was assessed using Cohen's Kappa, a method used to account for agreement between coders that occurs by chance. Agreement of the coding was 74%, or $k = 0.74$, which is rated as a "good" reliability evaluation (among *poor*, *fair*, *moderate*, *good*, and *very good*) (Viera & Garrett 2005).

As is explained later in section 6.2.2, a number of outliers were identified and excluded from the gesture analysis as their gesture production varied too far from the average. As such, a very small sample of speakers and the gestures they produced while describing placement events were taken into account for analysis. Inferential statistics were thus not applied (i.e., within-subject nonparametric tests such as the Wilcoxon signed rank test). The use of inferential statistics on a small set of participants would not provide results representative of the multilingual population. The limitation of a small sample size is discussed in further detail in chapter 6. A descriptive statistical approach was instead applied to understand the central tendencies and variance of the speakers' multimodal patterns.

3.6 Data management

As previously emphasised, the bulk of data that I collected was recorded on video. Prior to leaving for fieldwork, a systematic workflow was created for data management. After data has been collected, all original files were backed up onto two external hard drives

and the metadata for the recordings were entered into ARBIL¹⁷. These files were renamed according to the location of the recording, the date the file was collected, initials of recorder, and a number in case more than one recording is made in the same place and location. Metadata were recorded after a day of data collection in the field which included information about the speaker, information about the speakers' languages, time and place of the recording, and the subject and purpose of the recording, as well as the language in which the recording was carried out. After data collection, I reviewed the recordings with participants and asked if they wished the files to have restricted access in case there was any sensitive or private information that they did not want the public to listen to, as mentioned previously. All names of participants were anonymised and replaced with unique participant codes to assist in identifying speakers and avoiding overlap in collaborative research; however, if the participant wished to be identified by his/her full name in the final paper, this was honoured. All data appearing in examples, tables, and figures provided in this study are cited by the filename and extension and appear immediately after the corresponding data. The files were converted to .mp4s and backed up following the same process.

Five community members were trained to transcribe and translate audio and video files and basic IT skills were also taught¹⁸. These transcribers have since acquired basic computer skills (turning on and off the computer, opening software, saving files), standardised orthographies for transcribing the languages, and have mastered annotation and transcription in ELAN. These files were then backed up onto external hard drives for analysis (as previously described) and will eventually be uploaded to an online, digital

¹⁷ See <http://tla.mpi.nl/tools/tla-tools/arbil/> for more information on ARBIL.

¹⁸ Dr. Rachel Watson led these training sessions in ELAN as well as basic IT workshops. All transcribers were paid a monthly salary for their hours through grant funds from the Leverhulme Foundation for the Crossroads project.

archive¹⁹. Any files of sensitive content that had been flagged by participants during the reviewing of files in the field were noted and secured for privacy and ethical reasons.

The infrastructure of the villages Brin and Djibonker often poses challenges for carrying out fieldwork, especially in regards to accessing electricity for charging batteries, laptops, and other equipment. In the fall of 2015, the main antenna for telecommunication fell during a storm, and as a result, those residing in the nearby villages had very limited access to phone and internet services for several days. Due to these circumstances, it is vital that the researcher is adequately prepared for a shortage of electricity (bring precharged batteries) and cell phone service, and that meeting times for linguistic research are negotiated in person.

¹⁹ For more information about LAT, see <https://archive.mpi.nl/>.

4 Semantics of placement and removal verbs in Kujireray

This chapter describes how speakers of Joola Kujireray, one of the many languages spoken by people in Brin (Watson 2015), make semantic distinctions within the domain of placement and removal events. Preliminary data was observed in 2014 through data collected by Watson (2015) based on a series of staged communicative events in the form of a Director-Matcher based task as well as on observed communicative events. The initial analyses on the speakers' choice of verb types and the information the verbs encode pointed to a semantically specific system based on postural verbs, as well as one semantically general verb which was glossed as 'to make, do' (refer to section 2.5 for a discussion).

To deepen our understanding of the categorisation of the semantic domain in Kujireray, data from staged communicative events such as the Put Project and Caused Positions tasks, elicitation and discussion sessions, and observed communicative events were analysed to determine the semantics of various verb types used by speakers of Kujireray to express placement and removal information.

The chapter has two core objectives. The first goal is to understand and present the general morphosyntactic characteristics of Joola Kujireray argument structure and argument mapping by describing how the core participants of a placement event are linked to syntactic constituents. This first objective answers the overarching question of how the thematic roles (Agent, Figure, Source and Goal, for example) of a placement event are linked to syntactic arguments. Section 4.1 introduces some of the general linguistic characteristics and structural preliminaries of Joola Kujireray in relation to placement events.

The second objective is to understand how speakers in Kujireray use various verb types to describe and express certain semantic features of placement and removal events. Section 4.2 presents the speakers' descriptions and use of placement verbs (or, Goal-oriented verbs) in response to stimuli-based placement events. I identify where semantic contrasts and distinctions are made according to the verb types that were agreed upon the most across speakers (Levinson & Meira 2003, p.496) – I look at what at least 1/3 of speakers ($n = 6$) agree upon when selecting verb types to describe various placement and removal events. Section 4.2.3 follows the same structure but with a focus on removal verbs (or, verbs that are Source-oriented). I conclude the chapter by summarising the overall findings in section 4.3.

4.1 Structural properties of placement and removal events

One of the most prominent features of Kujireray is its semantically motivated noun classification system (Watson 2015). Nominal classification plays an important role in placement and removal descriptions, since semantic properties of their Figures are encoded in noun class prefixes. In Kujireray, membership in a noun class is marked using a set of prefixes which combine with nouns and agreeing elements. The shape of the noun class prefixes is most commonly V or CV, but also appear as \emptyset , CVC, and C more marginally. Without the noun class prefix, the lexical stem is semantically underspecified (Cobbinah 2013; Watson 2015) and cannot stand alone. Many lexical stems can be prefixed with several different noun class prefixes, and some lexical stems can create both verbs and nouns depending on the prefix. For example, the lexical item *tep* expressing the concept of BUILD can be combined with the noun class prefix *e-* which results in the verb *e-tep* 'to build'. The lexical item can also be combined with the noun class prefix *fu-*, providing the related, yet distinct nominal meaning, *fu-tep* 'wall'. Thus, it is best to

understand the stems as carrying concepts that can be further specified by the semantics carried by a noun class paradigm it can enter. This provides an explanation as to why some lexical stems can enter a number of noun class paradigms.

The noun class system in Kujireray carries semantic meaning most notably in regards to number (singular, plural, and mass) as well as physical properties (size and shape, for example)²⁰. Number values are obtained through the number of noun classes in a paradigm, with up to three numbers created through their paradigmatic oppositions.

Consider the following example of the paradigm *fu-/ku-/ba-* which denotes the semantic domain of small, round entities: the noun class *fu-* when prefixed to *sah* ‘beans’ results in the meaning *fu-sah* ‘a bean’ as a singular noun, yet when *ku-* is prefixed to *bah* ‘bean’ as *ku-bah*, it yields the meaning of ‘many little beans’, denoting plurality. When the noun class *ba-* is prefixed, resulting in *ba-sah*, the semantics arise as ‘beans/a group of beans’ in the collective form. If a speaker wanted to emphasise an exaggerated diminutive of the bean figure, *sah* can be prefixed with *ji-* which carries semantics of smallness, thus resulting in *ji-nah* ‘small bean’.

Noun class markers with the same phonological shape can have related meanings, and depending on the number of contrasts in a paradigm and their position in it, they can also have different number values. To better understand the complexities of noun class paradigms as is relevant to the descriptions of placement and removal events, here I present select noun classes adapted from Watson’s (2015) presentation. The table

²⁰ Semantically motivated noun class systems that include size and shape semantics are also present in other Baïnouk and Joola languages such as Baïnouk Gubêcher (Cobbinah 2013) and Joola Banjál (Sagna 2008).

illustrates monadic, dyadic, and triadic paradigms²¹ denoting mass, singular/plural, and singular/plural/collective number of the noun respectively.

Table 6 Paradigms of noun classes denoting number

	Stem	Concept	Paradigm, Form and Gloss		
			Singular (or Mass)	Plural	Collective
Monadic	<i>hem</i>	WATER	<i>mu-</i>	n/a	n/a
			<i>mu-hem</i> ‘water’		
Dyadic	<i>jamen</i>	GOAT	<i>e-</i>	<i>si-</i>	n/a
			<i>e-jamen</i> ‘goat’	<i>si-jamen</i> ‘goats’	
Triadic	<i>sah</i>	BEANS	<i>fu-</i>	<i>ku-</i>	<i>ba-</i>
			<i>fu-sah</i> ‘bean’	<i>ku-sah</i> ‘many beans’	<i>ba-sah</i> ‘beans’

Furthermore, the noun class paradigms in Kujireray can be organised according to a range of semantic domains, such as liquids, time, humans/animacy, size (small, big), shape (round, flat, extended). Here, I summarise the noun classification system in detail as to the semantic categories observed by each paradigm in Kujireray (Watson 2015, p. 250) to demonstrate some of the complexities of the noun classes. I highlight the noun classes that occur among the placement and removal data and elucidate their semantic domains by illustrating with examples from my own data as well as corpus data. Note that most of

²¹ Paradigms are used to describe the different groupings of noun classes. Two main reasons for the application of paradigms are that they account for the fact that there is no one to one relation of number and noun class and secondly that noun class prefixes of the same phonological shape can carry different yet related semantics and number.

the semantic domains that occur among placement and removal descriptions refer to shape, size, animacy, and liquids among others which is mainly due to the referents depicted in the stimuli and the observational data. The following table presents the noun class paradigms and their semantic domains in Kujireray as adapted from a summary presented by Watson (2015, p. 250). For each paradigm, an example is given along with its gloss. The semantic domain of the paradigm is listed as analysed by Watson (2015) and, finally, I indicate whether or not the particular paradigm appeared across any placement and/or removal event as linked to any thematic role (i.e., Agent, Figure, Ground, etc). For the noun class paradigms that do appear in the placement and removal data, I subsequently discuss these in more detail to allow for a more thorough understanding of the full semantics of caused motion descriptions elicited in Kujireray.

Table 7 Adapted version of Watson's (2015, p. 250) summary of noun class paradigms

Paradigm			Example	Gloss	Semantic domain	Present in data
slot						
1	2	3				
<i>a-</i>	<i>u-</i>		<i>an-are</i>	‘woman’	human	Yes
<i>a-</i>	<i>ku-</i>		<i>a-pal</i>	‘friend’	human, relation	Yes
<i>a-</i>	<i>ku-</i>	<i>e-</i>	<i>a-labe</i>	‘priest’	human, group	No
<i>a-</i>	<i>si-</i>		<i>a-mulo</i>	‘hare’	anthropomorphized animal	No
∅	<i>si-</i>		<i>pai</i>	‘father’	parents, loanwords	No
<i>e-</i>	<i>si-</i>		<i>e-rabut</i>	‘ant’	diverse	Yes
<i>e-</i>	<i>si-</i>	<i>ba-</i>	<i>e-nuh</i>	‘beads’	small, round	Yes
<i>ka-</i>	<i>u-</i>		<i>kë-munget</i>	‘door’	diverse, oblong/cylindrical/extended, hard	Yes
<i>ka-</i>	<i>u-</i>	<i>e-</i>	<i>e-jomb</i>	‘black rice’	colonizing plants	No
<i>ka-</i>	<i>u-</i>	<i>ma-</i>	<i>ma-fos</i>	‘grass’	wild grass	Yes
<i>ka-</i>	<i>u-</i>	<i>ba-</i>	<i>ba-fas</i>	‘prawns’	cylindrical/hard, small	No
<i>ka-</i>	<i>u-</i>	<i>bu-</i>	<i>bu-yolen</i>	‘rice seedlings’		No
<i>ka-</i>	<i>ku-</i>		<i>ka-at</i>	‘leg’	cylindrical, round	Yes
<i>fu-</i>	<i>ku-</i>		<i>fu-manjo</i>	‘mango’	round	Yes
<i>fu-</i>	<i>ku-</i>	<i>ba-</i>	<i>ba-sah</i>	‘beans’	small, round	Yes
<i>bu-</i>	<i>u-</i>		<i>bu-sana</i>	‘kapok tree’	trees, assemblages	Yes
<i>bu-</i>	(<i>u-</i>)		<i>bu-fonay</i>	‘medicine’	tree products	No
<i>ba-</i>	<i>u-</i>		<i>ba-cin</i>	‘fetish’	tree products, mass	No
<i>ba-</i>	<i>si-</i>		<i>bë-sungutu</i>	‘girl’		No
<i>ji-</i>	<i>mu-</i>		<i>ji-sëbul</i>	‘rabbit’	small, animal	Yes
<i>ji-</i>	<i>mu-</i>	<i>ba-</i>	<i>basit</i>	‘millet’	small, round	Yes

<i>ji-</i>	<i>ku-</i>		<i>ji-cil</i>	‘eye’		No
<i>ji-</i>	<i>u-</i>		<i>ji-it</i>	‘oil palm’		No
<i>ji-</i>	<i>si-</i>		<i>ji-muhoor</i>	‘lion’		No
<i>ba-</i>			<i>ba-poc</i>	‘chicken pox’	‘afflictions’	No
<i>mu-</i>			<i>mu-hem</i>	‘water’	liquids	Yes
<i>ma-</i>			<i>ma-sur</i>	‘urine’	liquids	No
<i>n/ñi-</i>			<i>ñi-kul</i>	‘bereavement’	periods of time	No
<i>ti-</i>			<i>ti-nah</i>	‘time of day’	time	No

Of the 29 noun class paradigms listed above, 13 paradigms were present among the speakers’ descriptions of placement and removal events in Kujireray. To better understand the full meaning of the noun classes and their semantic domains as they relate to the caused motion descriptions, let us explore the types of semantics the noun class paradigms bear in the order they appear in the table above.

The noun class paradigm *a-/u-* denotes humans. For example, *u-are* refers to ‘women’ and *a-lulum* refers to a ‘white person/foreigner’. This paradigm is used highly productively to create nouns when *-a* is suffixed, for example, *a-rem-a* ‘drinker’, where the lexical stem denotes ‘drink’.

As mentioned previously, the phonological shape of some noun classes can appear in other paradigms and these can offer related, but different, meanings. The paradigm *a-/ku-*, while similar to the *a-/u-* paradigm to denote humans, is more specific in that it refers to the relationships among humans, such as kinship and friendships. Note that the noun class

prefix *a-* has the same shape as the previous paradigm, but yields a slightly different meaning. This is an example of a cross paradigm noun class according to Watson (2015) and reveals some of the complexities of the nominal classification system in Kujireray. An example found frequently throughout the caused motion data is *a-pal/ku-pal* ‘friend/s’ in the singular and plural form, respectively, and *a-pemb/ku-pemb* ‘offspring/s’. An example of a loanword from French is *ku-copains* ‘friends’ – speakers rejected the plural loanword to the *a-/u-* paradigm, further supporting the analysis that the *a-/ku-* paradigm denotes relationships among humans rather than humans themselves.

The paradigm *e-/si-* carries a wide range of nouns, including loanwords. Examples of such words in this classification include *e-kas* ‘cup’, *e-kop* ‘cup’, *e-photo* ‘photo’, but also *e-siho* ‘cat’. While Watson (2015) posits that this noun class carries very basic semantics of the nouns that enter it, she finds some hints at categorisation among ‘special’ humans such as *e-firah* and *si-firah* ‘bachelor/s’, trees, as with *e-rapay* and *si-rapay* ‘fan palm trees’, and fruits such as *e-indum* and *si-indum* ‘kapok fruits’. As the noun classes are productive, these nouns are able to enter other classifications depending on their size and shape and as such, are not restricted to this ‘default’ noun class if the speaker wishes to emphasise other features of the noun.

The next paradigm noted in the table that appears in the placement and removal data is *e-/si-/ba-*. While this noun class attests for a wide range of nouns, the unifying semantics of this class as analysed by Watson (2015) is that they all refer to insects, botanical objects, and man-made artefacts which are all of a small size and are commonly found in a grouping. Items that fall within this noun class include *ba-ñil* ‘seeds’, and *ba-sobole* ‘onions’. Although most of these small, round items are found in abundance and are most often in the *ba-* collective, the nouns can be prefixed with *si-* when the count plural is

required by the context. For example, if a speaker wanted to emphasise the number of onions left over from a gathering, the *si-* noun class would be prefixed. Other examples that fall into this classification are *e-sem/si-sem/ba-sem* ‘flea(s)’, and *e-nuh/si-nuh/ba-nuh* ‘bead/s’ which were found among observational data.

A variety of referents are categorised within the *ka-/u-* noun class paradigm. Watson (2015) identifies the physical properties of five main subgroups that determine the noun’s inclusion to this paradigm: certain body parts, animals that coincide with the physical features of the aforementioned body parts, containers of specific features, items that are flat, wide, or thin, and places that are wide, flat, and open. I explain these subgroups in more detail here.

Body parts that have features dealing with scales, feathers, and hair – textured, in a way – fall under the *ka-/u-* noun class. Examples of these types of body parts include *ka-gend/u-gend* ‘hair(s)’ which was found among the placement and removal data, and *ka-ul/u-ul* ‘bone(s)’, *ka-fokk/u-fokk* ‘eyebrow(s)’, *ka-hof/u-hof* ‘claw(s)’, and *ka-caac/u-caac* ‘rib(s)’, which were not found among the data. These types of body parts are also all either flat, thin, or wide. Animals which display these types of physical features and which are also rather flat and long are classified into this paradigm, for example, *ka-fofor* ‘cockroach’ and *ka-masix* ‘fiddler crab’. However, body parts and animals of this nature are not the sole entities to be classified here: other flat, wide, and thin objects are also included. *Ka-new/u-new* ‘cord/rope’ appears in the placement and removal data and is classified according to its physical properties of being thin. Others which are not present in the data include *ka-komb/u-komb* ‘bark’ for being flat and *ka-fat/u-fat* ‘fence’ for being wide. Nouns that specify locations with physical features of being wide, flat and open include *ka-tama/u-tama* ‘rice field(s), waterside(s)’, *ka-lah/u-lah* ‘field(s)’ and *ka-fiit/u-fiit*

‘bare earth(s)’, although these were not found in the present data. Finally, Watson (2015) determines that containers fall within this classification due to the fact that their main purpose is to present space for other items’ containment, the notion of space may be the parameter for their inclusion into this paradigm. Examples include *ka-tasa/u-tasa* ‘cup(s)’, *ka-bium/u-bium* ‘calabash’, and *ka-tegel/u-tegel* ‘type of basket’.

The noun class paradigm *ka-/u-/ma-* comprises a more specific and limited set of nouns: uncultivated or wild plants that show extended properties. *Ka-fos/u-fos/ma-fos* ‘grass’ is found as an example of this classification as it is never cultivated on purpose in the Joola agrarian work, and it grows to be very tall. Uncultivated plants that do not grow to such length are not classified within this paradigm.

Other body parts that demonstrate certain sizes and shapes as well as other objects are classified in the paradigm *ka-/ku-*. Examples found among the placement and removal data include *ka-ñen ku-ñen* ‘hand/s’, *ka-at/ku-ot* ‘leg(s), foot/feet’, *ka-finekot/ku-finekot* ‘shoe(s)’. Sagna (2008, p. 281) notes that this paradigm “[...] exhibit[s] a conflict of criteria between flatness and roundness” as the *ka-* is associated with the paradigm *ka-/u-* which denotes thinness, width and openness, whereas the *ku-* noun class prefix is associated with roundness in the *fu-/ku-* class. Watson (2015, p. 267) describes this as a prime example of a crossed paradigm, where semantics can overlap among certain noun class prefixes. For the purpose of understanding the semantics that this noun class paradigm carries, however, it can be summarised as denoting hard, round and/or extended items, including body parts.

As briefly aforementioned, the noun class paradigm of *fu-/ku-* rather exclusively carry the semantics of roundness, be it spherical, circular, or cylindrical. Fruits, body parts, and other objects and loanwords fall neatly into this paradigm. Examples that appear in the

placement and removal data include *fu-how* ‘head’ denoting globular figures, *fu-liñah* ‘bracelet’, extending to spherical objects, and *fu-gol* ‘stick’ as it extends to cylindrical referents. This noun class, like others in Kujireray, is highly productive. Loanwords include *fu-baloŋ* ‘ball’ from French and *fu-mandarin* ‘mandarin’ from Portuguese supporting the analysis that the noun class semantics denote roundness.

The noun class paradigm *fu-/ku-/ba-* also denote round entities – similar to the *fu-/ku-* paradigm – however, these figures can oftentimes be found collectively in nature. Examples include *fu-sah/ku-sah/ba-sah* ‘bean(s)’ which occurred often in the placement and removal data, and other examples (not exclusive to the data) are *fu-jhata/ku-jahata/ba-jahata* ‘bitter aubergine(s)’, and *fu-meteŋ/ku-meteŋ/ba-meteŋ* ‘tomatoes’.

Items that find themselves in the *bu-/u-* paradigm are trees or are a group of trees. Indeed, due to the nature of some stimuli clips where there were trees depicted, this noun class appeared often among the data. This paradigm also extends to artefacts made from wood material. An example from the data is *bu-nunuhen/u-nunuhen* ‘tree(s)’, while others include *bu-talay/u-talay* ‘bed(s)’, *bu-ner/u-ner* ‘ceiling(s)’, and *bu-lef/u-lef* ‘nest(s)’. These items are all made of a wooden material and thus it is the parameter that categorises this noun class paradigm.

The *ji-/mu-* noun class is largely associated with carrying diminutive semantics, especially with small animals such as *ji-lililili/mu-lililili* ‘type of bird’, *ji-gidoloh/mu-gidoloh* ‘small/many pigeon/s’, *ji-fui/mu-fui* ‘small/many snake/s’, *ji-joba/mu-joba* ‘small/many puppies’. This paradigm can enter other paradigms to express diminutive semantics – for example, the lexical stem *how* as in *fu-how* ‘head’ can also enter this paradigm to express diminutive semantics, such as *ji-how* ‘small head’. Watson (2015, p. 279) notes that this paradigm in particular is very productive across paradigms in this

sense, and she emphasises that with regard to noun classifications, it is best to understand classification and extensions as it being “...the concept and not the noun that is classified in the process of noun formation,” and that one can understand an entity’s extension to various noun class paradigms by its sometimes various physical properties.

The noun class paradigm *ji-/mu-/ba-* carries the semantics of smallness as well as collective plurals. An example that appeared in the placement and removal data is *ba-nuh* ‘beads’. Other examples include *fu-sit/ku-sit/ba-sit* ‘grain/s of millet’ and *fu-tapatap/ku-tapatap/ba-tapatap* ‘droplet/s’.

Finally, the noun class paradigm of *mu-* is mainly associated with liquids, as observed in *mu-hem* ‘water’, and *mu-il* ‘milk’. It is a monadic paradigm, only carrying number semantics of a mass. In other words, these entities are conceptualised as unbounded.

The combination of the noun class prefix and the lexical stem results in a noun which controls agreement with all other dependent items, such as modifiers, pronouns, and verbs. See example (26) for the agreement of the noun class *bu-* on the verb, resulting in *bu-lo* ‘fall’.

- | | | |
|------|-------------------|------------------------|
| (26) | <i>bu-nunuhen</i> | <i>bu-lo-e</i> |
| | CL:bu.TREES-tree | AGR:bu.TREES-fall-PERF |
| | ‘The tree falls.’ | |

field notes 2015

Most notably for placement and removal descriptions in transitive constructions (in the active voice), agreement is marked on determiners (both definite and indefinite), object

pronouns, and the verb. Agreement with the definite determiner takes the structure AGR-*a*-AGR-*u*, whereas a direct object pronoun takes the structure of AGR-*o*. Agreement onto the noun's dependent lexical items tends to be phonologically similar to the phonology of the noun class prefix, although there are exceptions (see Watson (2015, p. 246) for variation in the shape of agreement patterns). The agreement patterns observed among the placement and removal descriptions are noted accordingly.

Noun classes were ubiquitous in the speakers' descriptions of placement and removal events and are highlighted throughout the discussion of placement and removal descriptions. The agreement patterns of noun classes to dependent items of the descriptions are also noted, especially in regards to the different constructions that were used in the speakers' descriptions (i.e., transitive versus intransitive constructions). The argument structure of these constructions is discussed from sections 4.1.1 to 4.1.4, highlighting the various mappings of thematic roles to grammatical relations and the surface forms of pertinent grammatical relations. Active and passive voice pairs are also noted and analysed.

4.1.1 *Transitive constructions*

Goal-oriented and Source-oriented verbs can occur in three types of transitive constructions in the active voice. On a syntactic level, the verbs occur in bivalent and trivalent constructions. The first construction type discussed here involves verbs that occur with two arguments (the grammatical relation to the verb being subject and object). The second transitive construction type involves verbs that occur with two arguments and one or more adjuncts: on a syntactic level the grammatical relations to the verb are subject, object, and (an) adjunct(s). For brevity, I refer to the first transitive constructions as minimal (no adjunct prepositional phrase) and full (with the adjunct prepositional

Verbs in the minimal transitive constructions link to arguments with two types of grammatical relations: subject and object. In the active voice, the subject precedes the verb regardless of valency (Watson 2015). It can be represented pronominally or nominally, covertly or overtly. Table 8 displays the surface forms of subject markers that denote human Agents: unlike in French, there is no sex distinction in the markers. Examples (27) and (28) demonstrate the third person singular's use and position where the subject is covert.

Table 8 Personal subject markers in Kujireray

Form	Gloss	Form	Gloss
<i>ni -</i>	1S 'I'	<i>nu-...-a</i> <i>ji-</i>	1P.Incl 'We' 1P.Excl 'We'
<i>nu -</i>	2S 'You'	<i>ji-</i>	2P 'You'
<i>na -</i>	3S 'S/he'	<i>ku-</i>	3P 'They'

When human participants are represented as an overt subject in the minimal transitive construction, the verb is marked with the corresponding subject marker as described in Table 8 (see example (29) for an illustration).

(29)	<i>an</i>	<i>a-ine</i>	<i>na-tuc-e</i>	<i>ka-livre</i>
	person	CL:a.HUMAN-man	3S-throw-PERF	CL:ka.CYLINDRICAL.HARD-book
	'A man throws the book.'			

field notes 2017

The second argument that a verb takes in the minimal transitive construction relates to the verb as an object. As Watson (2015, p.123) describes, the object appears after the verb in “unmarked bi-valent word order.” All examples provided thus far for minimal transitive constructions in the active voice illustrate the object’s post-verbal position.

There are two types of definite determiners: the first definite determiner is constructed as AGR-*a*-AGR-*u*. Agreement of the definite determiner is controlled by the noun class of the preceding noun (the noun class of the object *e-photo* ‘photo’ in example (31) controls the agreement in its corresponding definite determiner, *y-a-y-u*). The second type of definite determiner takes the form of AGR-*e* and is described by Watson (2015, p.163) as an agreement marker + proximal demonstrative -*e*.

The positioning of the determiners to the noun varies. The two definite determiners follow the noun, whereas the indefinite determiner can be positioned before or after the noun. The determiner takes the structure AGR-*ce* and can indicate an indefinite entity (and is thus analysed as an indefinite determiner). Example (30) illustrates the use of an indefinite determiner following the subject.

- (30) *a-ine* *a-ce* *na-kan-o-e* *ji-chapeau*
 CL:a.HUMAN-boy AGR:a.HUMAN-INDEF 3S-wear-MID-PERF CL:ji.SMALL-hat
 ‘The boy wears a hat.’

S10 BRI071015CK3 PP 26

Examples (31) and (32) illustrate the definite determiner of the object and subject nouns, respectively.

- (31) *na-pur-en-e* *e-photo* *y-a-y-u*
 3S-go.out-CAUS-PERF CL:e.LOAN-photo AGR:y.LOAN-DEF-AGR:y.LOAN-MED
 ‘S/he removes the photo.’

FB BRI241015CK5 PP 128

- (32) *an* *a-ine* *a-h-u*
 person CL:a.HUMAN-man AGR:Ø.HUMAN-DEF-AGR:h.HUMAN-MED

na-kan-o-e *ka-chapeau*
 3S-wear-MID-PERF CL:ka.ROUND-hat
 ‘The man wears a hat.’

TB1 BRI051015CK8 PP 25

The morpheme *-en* and morpheme *-o* can be suffixed to verb stems to change the argument structure, as seen in example (31) and (32) respectively (Watson 2015, p.199).

The morphemes can be suffixed to both bound verb roots (such as *fil* ‘lay’, *rob* ‘sit’, and

il ‘stand’) and infinitives (*e-pur* ‘go.out’, *e-kan* ‘make, do, enter’). The morpheme *-en* can be suffixed to otherwise intransitive or stative verbs. As such, these verbs can enter transitive constructions and occur with two participants. Consider the glosses when the middle voice morpheme *-o* (which denotes stative and intransitive verbs) is suffixed compared to the suffixation of the causative morpheme *-en*.

Table 9 Valency change with causative suffix *-en* and middle voice suffix *-o*

Verb stem	Middle voice suffix <i>-o</i>	Causative suffix <i>-en</i>
<i>e-sup</i> ‘to be hot’	n/a	<i>na-sup-en</i> ‘S/he heats TR’
<i>e-kan</i> ‘do, make, enter’	<i>na-kan-o</i> ‘S/he puts [clothing] on’	n/a
<i>e-pur</i> ‘exit/go.out’	<i>na-pul-o</i> ‘S/he goes out.’	<i>na-pur-en</i> ‘S/he removes TR’
<i>fil</i> ‘lie’	<i>na-fil-o</i> ‘S/he is laying.’	<i>na-fil-en</i> ‘S/he lays TR’
<i>rob</i> ‘sit’	<i>na-rob-o</i> ‘S/he is sitting.’	<i>na-rob-en</i> ‘S/he sits TR’
<i>il</i> ‘stand’	<i>na-il-o</i> ‘S/he is standing.’	<i>na-il-en</i> ‘S/he stands TR’

The verb root with the *-en* suffixed thus denotes externally caused events, such as placement and removal. This is exemplified in (33) in a minimal transitive construction.

- (33) *na-fil-en-e* *ka-tasa*
 3S-lie-CAUS-PERF CL:ka.CYLINDRICAL.HARD-pot
 ‘S/he lays the pot.’

OS3 BRI241015CK2 PP 36

4.1.1.2 *Full transitive construction*

Verbs in the full transitive construction in the active voice occur with two (obligatory) arguments and one or more adjunct prepositional phrases. The majority of descriptions represent this construction type. Adjunct prepositional phrases are marked with a preposition and noun²² and in most cases follow the object, but can also be preposed to the initial sentence position. Here I provide a description of frequently used prepositions in placement and removal events.

The preposition *ni* carries semantically general information and is not sensitive to Goal-oriented (examples (34) and (35)) versus Source-oriented motion (examples (36) and (37)) as it was found among all caused motion events regardless of the motion’s orientation. Furthermore, the information linked to the following adjunct phrase expressed either Goal or Source ground types, supporting the analysis that *ni* does not encode information on the motion’s orientation. Its semantics are also general in the sense that it extends to scenes of various spatial relations between the Figure and Ground, such as containment (examples (35) and (37)) or support ((34)and (36)). *Ni* can never stand-alone – it requires a following NP.

²² Prepositions can denote both temporal and spatial relations; however for the purpose of analysing the semantics of externally caused placement events, I focus on their spatial relations.

- (37) *na-pur-en-e* *fu-how-ol*
 3S-go.out-CAUS-PERF CL:fu.ROUND-head-3POSS
- ni* *fu-siyo* *f-a-f-u*
 LOC CL:fu.ROUND-bucket AGR:f.ROUND-DEF-AGR:f.ROUND-MED
- ‘S/he removes his/her head from the bucket.’

CB4 BRI241015CK1 PP 124

It can also be used preceding a noun denoting an Instrument and is positioned after the participant expressing the Goal or Source (see example (38)).

- (38) *na-al-en-e* *e-siho* *detam* *ni* *ka-ñen*
 3S-descend-CAUS-PERF CL:e.ANIMAL-cat down LOC CL:ka.ROUND-hand
- ‘S/he brings the cat down with (his/her) hand.’

field notes 2017

There is another construction that speakers use to describe a three-participant event. The subjects of the two verbs are co-referential. Rather than mapping the Instrument onto the adjunct prepositional phrase with the semantically general preposition marker *ni* ‘to/with’, speakers can use the verb *e-ñar* ‘take’ followed by the NP denoting the Instrument, followed by the second verb denoting its placement or removal (see example (39)). The strategy is also applied to events where the Figure is the Agent’s body part (see examples (40) and (41)).

(39) *na-ɲar-e* *fu-mañ* *a-joh*
 3S-take-PERF CL:fu.ROUND-iron 3S-grabs

fu-banana *f-a-f-u*
 CL:fu.ROUND-banana AGR:f.ROUND-DEF-AGR:f.ROUND-MED

‘S/he takes the metal (tongs) and takes the banana.’

DD1 BRI051015CK5 PP 103

(40) *na-ɲar-e* *fu-how-ol* *a-kan*
 3S-take-PERF CL:fu.ROUND-head-3POSS 3S-put

ñërëru *e-siyo* *y-a-y-u*
 inside CL:e.LOAN-bucket AGR:y.LOAN-DEF-AGR:y.LOAN-MED

fatiya *ni* *e-tabul*
 on LOC CL:e.LOAN-table

‘S/he takes his/her head and puts it inside the bucket on the table.’

BB2 BRI300915CK3 PP 124

(41) *na-ɲar-e* *ka-ñen-ol* *a-kan*
 3S-take-PERF CL:ka.OBLONG.ROUND-hand-3POSS 3S-put

ni *ka-sun* *bu-nunuhen*
 LOC CL:ka.CYLINDRICAL.ROUND-hole CL:bu.TREES-tree

‘S/he takes his/her hand and puts it in the hole of the tree.’

C11 BRI241015CK7 PP 23

A set of prepositions can take a NP as well as stand alone. They are described as follows. *Fatia* (or *fatiya*) ‘up/high/on top (of)’ denotes a position of being on a supportive surface or on a higher level, above or over one’s head. It is never used in contexts where either the Spatial Relation or the Ground have features of interior, rather the preposition is employed in scenes depicting a feature of support, such a Figure on a table or on the ground. Similarly to *ni*, the preposition does not express information about the Goal-versus Source-orientations of the motion, but is specific to the Spatial Relation of the Figure to the Ground. The following example demonstrates the preposition’s extension to a scene depicting a Source-oriented motion.

(42)	<i>na-ɲar-e</i>	<i>ba-sah</i>	<i>fatiya</i>
	3S-take-PERF	CL:ba.SMALL.ROUND-beans	on
	<i>e-tabul</i>	<i>y-a-y-u</i>	
	CL:e.LOAN-table	AGR:y.LOAN-DEF-AGR:y.LOAN-MED	

‘S/he takes the beans from (on) the table.’

F10 BRI071015CK1 PP 105

Example (43) illustrates the use of the preposition as a spatial noun (standing alone).

- (43) *na-baŋ-e* *fu-carton* *fatiya*
 3S-put-PERF CL:fu.ROUND-box up
 ‘S/he put the box up [there].’

FB BRI241015CK5 PP 6

Of the two prepositions *fatia* and *ni*, *ni* holds a more semantically general meaning as it can be extended to contexts of support and containment, whereas *fatia* is restricted to features of support and/or height.

Detam ‘down/ground/under/underneath’ denotes Spatial Relations being at ground level or, at a lower level to another entity. Following the same pattern as other prepositions in Kujireray, *detam* does not distinguish between Source vs Goal orientations of motion and extends to both event types. It can stand alone (see example (44)) or be followed by a NP. Example (44) is taken from a speaker describing the scene of a woman ‘putting a book on the floor’.

- (44) *an* *a-are* *na-baŋ-e* *ka-livre* *detam*
 person CL:a.HUMAN-woman 3S-put-PERF CL:ka.CYLINDRICAL.HARD-book down
 ‘The woman, she puts the book on the ground.’

C11 BRI241015CK7 PP 7

Kəlin ‘beside’ derives from the body part of one’s side – the use of adpositions derived from body parts are common for African languages (Heine 1989). The next example

illustrates this use as the speaker is describing a scene in which the Agent pushes a suitcase next to a tree.

(45) *na-fak-en-e* *e-sak-ol* *këlin* *bu-nunuhen*
 3S-push-CAUS-PERF CL:e.LOAN-bag-3S.POSS next.to CL:bu.TREES-tree

‘S/he pushes his/her bag over next to the tree.’

IT BRI091015CK5 PP 52

Fecil ‘in front of’ (Watson 2015) may be derived from the word for ‘eye’, *ji-cil* in Joola varieties spoken in Banjul, hinting at the anthropomorphic space of a person and this relative frame of reference. Although *fecil* was not used in descriptions of the stimuli sets, it was observed frequently throughout naturalistic data.

Busol ‘back’, is similar to the derivation of ‘eye’ and ‘in front of’ as *busol* is the same word for one’s back. An example of this preposition is seen in the removal scene where a flower is taken out of a person’s hair which is located on the back of the person (46).

(46) *a-pur-en-ol* *ji-fleur*
 3S-go.out-CAUS-3S.POSS CL:ji.SMALL-flower
busol *ni* *u-gend-ol*
 behind LOC CL:u.OBLONG-hair-3S.POSS

‘S/he takes out her little flower behind from her hair.’

PS1 BRI240915CK1 PP 18

These latter three prepositions were also found among both placement and removal event types, revealing their insensitivity to directionality of motion. Following Creissels' (2006) typology, the adpositional system of Kujireray aligns with his third pattern in which the direction (Goal or Source) of the caused motion event is linked to the main verb whereas the Spatial Relation – in this case, of the Figure and Ground – are linked to adpositions. Creissels (2006) notes that this distribution of information across the verb and the adposition is common among Sub-Saharan African languages.

4.1.1.3 *Passive voice*

The morpheme *-i* is suffixed to the verb to denote the passive voice. Most transitive verbs in the passive voice must occur with two arguments (examples (47) and (48)).

- | | | |
|------|------------------|----------------------------|
| (47) | <i>*ji-livre</i> | <i>ji-fil-en-i</i> |
| | CL:ji.SMALL-book | AGR:ji.SMALL-lie-CAUS-PASS |

Intended: 'The book was laid down.'

field notes 2016

- | | | |
|------|--------------------------|------------------------------|
| (48) | <i>*si-cajou</i> | <i>si-ɲar-i</i> |
| | CL:si.SMALL.ROUND-cashew | AGR:si.SMALL.ROUND-take-PASS |

Intended: 'The cashews were taken.'

field notes 2016

- (51) *ka-new* *ka-rak-i*
 CL:ka.EXTENDED-rope CL:ka.EXTENDED-hook-PASS
ni *ka-and*
 LOC CL:ka.EXTENDED.HARD-branch
 ‘The rope was hooked on the branch.’

C11 BRI241015CK7 PP 27

- (52) *fu-baloŋ* *fu-baŋ-i* *detam* *e-tabul*
 CL:fu.ROUND-ball AGR:fu.ROUND-put-PASS down CL:e.LOAN-table
 ‘The ball was put under the table.’

field notes 2017

- (53) *si-cajou* *si-pur-en-i*
 CL:si.SMALL.ROUND-cashew AGR:si.SMALL.ROUND-go.out.CAUS-PASS
ni *e-bol*
 LOC CL:e.LOAN-bowl
 ‘The cashews were removed from the bowl.’

field notes 2016

(54) *ka-rafa* *ka-ŋar-i*
 CL:ka.CYLINDRICAL.ROUND-bottle AGR:ka.CYLINDRICAL.ROUND-take-PASS

fatiya *e-tabul*
 on CL:e.LOAN-table

‘The bottle was taken from the table.’

field notes 2016

The passive voice provides evidence for the distinction between Agent and Effector. As noted by Watson (2015), the Agent cannot occur in the passive voice construction, but the Effector can. See her example below where the Effector “takes on the thematic role of Location” (Watson 2015, p.132):

(55) *w-añ* *u-way-en-i* *ni* *sa-mbul*
 CL:w.OBLONG-clothes AGR:w.OBLONG-dry-PASS LOC CL:sa-fire

‘The clothes were dried in the fire.’

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4.1.1.4 *Di-transitive constructions*

In di-transitive constructions, a verb takes three arguments, their grammatical relations to the verb being subject, direct object, and indirect object. Among the placement and removal descriptions, the verb *e-sen* ‘give’ occurs in this construction frequently. Here I discuss differences in the construction when the Figure and Goal are both animate and when the Figure is inanimate.

When the Figure is an inanimate entity (such as a cup or a fruit) in the active voice and the Goal is animate, the order of arguments can vary without altering the meaning. In example (56), the animate Goal²⁴ (*a-pal-ol* ‘his/her friend’) directly follows the verb. The inanimate Figure, *e-kas* ‘cup’, then follows and is the direct object. In example (57), the inanimate Figure *e-kas* ‘cup’ directly comes after the verb and is followed by the Goal (*a-pal-ol* ‘his/her friend’).

- (56) *na-sen-e* *a-pal-ol* *e-kas*
 3S-give-PERF CL:a.HUMAN.RELATION-friend-3POSS CL:e.LOAN-cup
 ‘S/he gives his/her friend a cup.’

DD1 BRI051015CK5 PP 22

- (57) *na-sen-e* *e-kas* *a-pal-ol*
 3S-give-PERF CL:e.LOAN-cup CL:a.HUMAN.RELATION-friend-3POSS
 ‘S/he gives the cup to his/her friend.’

field notes 2017

When the Goal and Figure entities are both animate (in the active voice), the Goal is linked to the indirect object which directly follows the verb. The Figure is linked to a direct object which appears after both the verb and Goal, in final position (example (58)).

²⁴ I follow Burenhult (2012) Rapold (2012) Brown (2012) and Andics’ (2012) analysis of the animate participant as a Goal rather than Recipient.

(58) *na-sen-e* *an* *a-fan* *a-pemb*
 3S-give-PERF person AGR:a.HUMAN-elder CL:a.HUMAN.RELATION-child

‘S/he gives the elder the child.’

field notes 2017

Note that when speakers use the opposite order in a dative construction (Figure followed by Goal), the preposition *ni* ‘to’ is required and is positioned directly preceding the Goal (see example (59)).

(59) *na-sen-e* *a-pemb* *ni* *an* *a-fan*
 3S-give-PERF CL:a.HUMAN.RELATION-child LOC person CL:a.HUMAN-elder

‘S/he gives the child to the elder.’

field notes 2017

It could be that the preposition *ni* helps speakers and addressees to distinguish between the thematic roles of the Figure and the Goal when both are animate entities.

The passive voice also provides evidence to distinguish between a direct object and an indirect object. Note that in the passive voice, the Goal cannot be mapped to the subject (see example (60)). The Figure is mapped onto the subject preceding the verb with the passive marker *-i*, followed by the Goal (as the indirect object) (example (61)).

When there are two animate objects and the Figure is represented as a pronominal object, the preposition *ni* precedes the Goal, and the independent pronoun AGR-*sila* must occur directly after the Figure and refers to the Figure (examples (64) and (65)). The purpose of the independent pronoun in this context may serve to further specify that the direct object is the animate Figure, rather than the Goal.

- (64) **na-sen-ol* *ni* *an* *a-fan*
 3S-give-O LOC person CL:a.HUMAN-elder
 Intended: ‘S/he gives him/her to the elder.’

field notes 2017

- (65) *na-sen-ol* *a-sila* *ni* *an* *a-fan*
 3S-give-O AGR:a-O LOC person CL:a.HUMAN-elder
 ‘S/he gives him/her to the elder.’

field notes 2017

When the Goal is represented pronominally, the NP denoting the Figure follows directly after the Goal (example (66)).

- (66) *na-sen-ol* *a-pemb*
 3S-give-O CL:a.HUMAN.RELATION-child
 ‘S/he gives him/her the child.’

field notes 2017

Note that when speakers use two verbs and the first verb is followed by an overt object, the object may be omitted from the second verb (example (67)).

- (67) *na-ɲar-lo* *ka-rafa* *a-fil-en*
 3S-take-MID CL:ka.CYLINDRICAL.HARD-bottle 3S-lay-CAUS
 ni *e-tabul* *y-a-y-u*
 LOC CL:e.LOAN-table AGR:y.LOAN-DEF-AGR:y.LOAN-MED
 ‘She takes the bottle and lays (it) on the table.’

DD1 BRI051015CK4 CP 28

In other words, once the Figure is introduced, it can be ellipsed, i.e., it does not have to occur with any following verbs either as a pronoun or as a full NP. As such, it appears that once the object is introduced, speakers can omit the object in proceeding, related clauses.

4.1.2 *Reciprocal construction*

There is also a reciprocal construction used in Kujireray to denote externally caused events. The key characteristic of the reciprocal construction (on a semantic level) is that the Agent and the Goal are both mapped onto the subject position, but the Agent and Goal

are two or more separate entities (i.e., two different people), thus distinguishing it from reflexive constructions where the Agent and Goal are one and the same entity (see section 4.1.3). The suffixation of the morpheme *-or* to the verb *e-sen* ‘give’ changes the valency from a trivalent to a bivalent construction. See example (68).

(68)	<i>w-are</i>	<i>ku-ruba</i>
	CL:w.HUMAN-women	CL:ku.HUMAN-two
	<i>ku-sen-or-e</i>	<i>e-kas</i>
	AGR:ku.HUMAN-give-RECIP-PERF	CL:e.LOAN-cup
	‘Two women give each other a cup.’	

S10 BRI071015CK3 PP 22

The Agent is one woman, the Figure is the cup which is undergoing the event of exchange, and the second woman is the Goal. Both Agent and Goal are linked to the subject.

4.1.3 Reflexive constructions

In reflexive constructions, the verb denoting externally caused motion occurs with one or two participants. The thematic roles of the first participant are both the Agent and Goal, and the Figure can appear as the second participant. Similar to the reciprocal construction, the Agent and Goal both occur in subject position and the Figure can be linked to the direct object positioned after the verb. The middle voice morpheme *-o* is suffixed to verb roots to denote reflexive constructions, where the Agent is both the affector of the event as well as the affectee (Watson 2015, p.202). Evidence of the use of the middle suffix *-o* in such reflexive constructions is observed in the following examples: (69) demonstrates a

di-transitive construction with the verb *e-kan* ‘make, do, enter’ and (70) demonstrates the suffixation of the middle voice *-o* which changes the valency. Example (71) illustrates that the middle voice suffix cannot be used in di-transitive constructions.

(69)	<i>na-kan-e</i>	<i>e-chapeau</i>	<i>Kadialy</i>
	3S-put-PERF	CL:e.LOAN-hat	Kadialy
	‘S/he put the hat on Kadialy.’		

field notes 2017

(70)	<i>na-kan-o-e</i>	<i>e-chapeau</i>
	3S-put-MID-PERF	CL:e.LOAN-hat
	‘S/he puts on a hat.’	

IT BRI091015CK5 PP 25

(71)	<i>*na-kan-o-e</i>	<i>Kadialy</i>	<i>e-chapeau</i>
	3S-put-MID-PERF	Kadialy	CL:e.LOAN-hat
	Intended: ‘S/he put the hat on Kadialy.’		

field notes 2017

Of the verb types denoting placement and removal events, the reflexive construction is limited to verbs denoting dressing (*e-kan-o* ‘to wear/put on’, *e-lim-o* ‘to dress’).

Another strategy for denoting reflexive events is the suffixation of the morpheme *-or* to the verb stem (*e-hos* ‘to scratch’, *e-hos-or* ‘to scratch oneself’). However, the use of the

In intransitive constructions of this type, the Figure is linked to the subject and is the only argument that occurs with the verb. Although denoting externally caused motion, the Agent is not overtly expressed in the syntax.

4.2 Lexical semantics of placement and removal events

This section investigates the lexical semantics of verb types denoting externally caused motion events in Joola Kujireray. Speakers use different verb types depending on certain semantic features of a placement or removal event. For example, let us consider what we know about the physical properties of the Figure entity when using the verbs ‘pour’ and ‘stick’ in English. We know that in order to use the former verb, the entity is most likely of liquid properties or small, granular-like properties such as sand or rice, whereas the latter referent is more likely to be solid. Observing the contexts in which certain verb types are used over others provides insight to how speakers carve up the semantic space of externally caused events.

The lexical items and descriptions were collected through the two stimuli sets, semi-structured elicitation sessions, and participant observation during my fieldwork. The Put Project stimuli set looks at a wide range of various semantic features in both placement events and removal events, however, the Put Project does not include figure objects when they are placed in noncanonical positions (see 3.4.1). Therefore, stimuli from the Caused Positions set are also analysed as this stimulus set depicts figures in noncanonical positions. The following sections present the lexical items used by the 18 speakers of Kujireray in response to these stimuli clips. I first provide an overview of the number of verb types speakers predominantly used in response to the stimuli-based data. Next, widely-noticed distinctions among the externally caused motion events are discussed, notably the overarching categorisation of placement and removal events. Finally, the

lexical semantics of commonly used verb types are discussed individually and are illustrated with examples from both field notes and stimuli-based data sets with regards to the placement and removal distinction.

From the 69 stimuli-based data described by 18 speakers in Kujireray, there were a total of 1242 descriptions produced. While 66 different verb types were produced in Kujireray, 33 verb types were not included in the analysis as they either did not denote the target caused motion event and/or they occurred fewer than 5 times overall in the data. In order to observe the more prominent semantic distinctions made by speakers of Kujireray, speaker agreement of at least 1/3 (or $n = 6$ tokens of a verb type) per stimulus had to have been met. Otherwise, significant individual variation would not yield a baseline to conclusive to determining the verbs' semantics. Based on this, a subset of 11 verb types were excluded. Therefore, a total of 22 different verb types among 1207 descriptions were considered for the lexical semantic analysis in Kujireray. Table 11 displays an overview of the Kujireray verb types analysed, their respective tokens of use among speakers, and the number of stimuli they extended to (with an agreement of at least 6 speakers or more).

Table 11 Overview of verb types, tokens, and extensions (Kujireray)

Verb Type	Tokens	# of Scenes
<i>e-puren</i> ‘remove’	238	19
<i>e-kan</i> ‘make, do, enter’	126	13
<i>e-baŋ</i> ‘put’	167	13
<i>e-ŋar</i> ‘take’	51	7
<i>e-yu</i> ‘spill/pour’	30	4
<i>e-gub</i> ‘turn over, cover’	30	3
<i>e-nogen</i> ‘enter’	21	3
<i>e-filen</i> ‘lay’	28	2
<i>e-sen</i> ‘give’	26	2
<i>e-teb</i> ‘carry away’	18	2
<i>e-tuc</i> ‘throw’	28	2
<i>e-wulen</i> ‘pour’	19	2
<i>e-bet</i> ‘knock over’	8	1
<i>e-ji</i> ‘grab a fistful of’	6	1
<i>e-faken</i> ‘push/shove’	11	1
<i>e-loen</i> ‘drop accidentally’	12	1
<i>e-loŋen</i> ‘kick over/out’	8	1
<i>e-rak</i> ‘hang’	7	1
<i>e-taf</i> ‘stick’	6	1
<i>e-tik</i> ‘stuff’	8	1
<i>e-tot</i> ‘pick up’	11	1
<i>e-yed</i> ‘lift’	6	1

The most frequently used verb types were *e-puren* ($n = 238$), *e-baŋ* ($n = 167$) and *e-kan* ($n = 126$). *E-puren* extended to the widest number of scenes ($n = 19$), followed by *e-kan* ($n =$

13) and *e-baŋ* ($n = 13$). 11 verb types were semantically specific, with speakers using these verbs to describe only one particular scene. The semantics of these more restricted verb types are discussed in this chapter.

Upon analysis of the semantic extensions of verb types, it became evident that there is a division of labour between Goal-oriented verb types and Source-oriented verb types in Kujireray. Table 12 and Table 13 display the verb types used among speakers and their extensions to placement and removal stimuli, respectively.

Table 12 Kujireray verb types and tokens and their extensions to events (placement)

Events	Verbs													
	e-barj	e-kan	e-nogen	e-yu	e-wulen	e-gub	e-filen	e-tuc	e-loen	e-sen	e-tik	e-rak	e-taf	e-ŋar*
5 PP put fistful of rice on	14													
1 PP put cup on table	14													
2 PP put plastic cup on table with mouth	16													
3 PP put banana on table with long tongs	14													
4 PP put armload of books on table	15													
6 PP put box up on shelf	8													
7 PP put book on floor	17													
13 PP flip block off notepad into bowl	6													
51 PP take apple from pile of books and move to shoe	13													
14 CP put bottle on table	13													
33 CP put pot on table	11													
50 PP take bag of corn from table and move to chair	16													7
11 PP put apple in bowl	10	6												
12 PP drop apple into bag		12												
14 PP put candle into candle stand		7												
15 PP put celery bunch into recorder case		8	8											
16 PP put stone into pocket		8												
18 PP put flower into hair		7												
19 PP put stone into pot of water		7												
23 PP put hand into hole in		8	6											
24 PP put head into bucket		7	7											
25 PP put hat on head		14												
26 PP put boot on foot		17												
33 PP put on coat		17												
35 PP put pen in hole		8												
21 PP spill water onto table when pick up glass				10										
112 PP dump blocks out of tin				8										
20 PP pour liquid into container				6	9									
120 PP pour water out of tin				6	10									
20 CP flip bottle on table						10								
36 CP flip pot on table						13								
31 PP put saucer on top of cup						7								
45 CP lay pot on table							12							
28 CP lay bottle on table							16							
8 PP drop book deliberately onto floor									11					
10 PP toss book on floor									17					
9 PP drop book accidentally on floor										12				
122 PP take coke can from someone											10			6
22 PP give cup to someone										16				
17 PP stuff rag into car											8			
27 PP hang rope over tree												7		
28 PP put poster on wall													6	
Tokens	167	126	21	30	19	30	28	28	12	26	8	7	6	51*

Table 13 Kujireray verb types and tokens and their extensions to events (removal)

Events	Verbs								
	e-puren	e-rar*	e-teb	e-ji	e-bet	e-loŋen	e-faken	e-yed	e-tot
50 PP take bag of corn from table and move to chair		7							
122 PP take coke can from someone		6							
111 PP take orange from box	14								
114 PP take candle out of candle stand	17								
115 PP take cucumber out recorder case	16								
116 PP take stone out of pocket	18								
117 PP take rag out of car exhaust	13								
118 PP take flower out of hair	7								
119 PP take stone out of pot of water	12								
123 PP take hand out of hole	9								
124 PP take head out of bucket	11								
125 PP take off hat	17								
126 PP take off sock	17								
127 PP unhang rope from tree branch	12								
128 PP take poster off wall	13								
129 PP put suitcase out of room, while staying in room	7								
130 PP take suitcase out of room, going out of room	9	8	8						
106 PP take box down from shelf	6	6							
131 PP take saucer off cup	8								
133 PP take off coat	16								
135 PP take pen out of hole	16								
101 PP take cup off table		10							
104 PP take armload of books off table		6	10						
105 PP take handful of beans from flat surface		8		6					
113 PP knock over bucket so blocks spill out					8	8			
52 PP push suitcase from car to tree							11		
102 PP take plastic cup off table with mouth								6	
107 PP take magazine from floor									11
Tokens	238	51	18	6	8	8	11	6	11

The following 13 verb types extended to scenes in which a Figure was relocated to a new destination (Goal-oriented or placement events): *e-baj* ‘put’, *e-kan* ‘make, do, enter’, *e-gub* ‘turn over, cover’, *e-filen* ‘lay’, *e-tuc* ‘throw’, *e-nogen* ‘enter’, *e-loen* ‘drop accidentally’, *e-tik* ‘stuff’, *e-rak* ‘hang’, *e-taf* ‘stick’, *e-sen* ‘give’, *e-wulen* ‘pour’, and *e-yu* ‘spill, pour’, whereas the following 9 verbs *e-puren* ‘remove’, *e-ɲar* ‘take’, *e-ji* ‘take handful of’, *e-bet* ‘knock over’, *e-teb* ‘carry away’, *e-faken* ‘push, shove’, *e-loŋen* ‘kick over’, *e-tot* ‘pick up’, and *e-yed* ‘lift’ extended to Source-oriented scenes in which the Figure was relocated from a location and the new location was not observed.

3 verb types were used in stimuli which were intended to elicit both placement and removal verbs. However, rather than the verbs denoting both placement and removal events, it appeared that the stimuli were interpreted as Goal-oriented stimuli. This was discovered during follow-up discussions with speakers as well as an analysis of the verb types and the information linked to the constructions they were used in. For example, the verb *e-sen* ‘to give’ was used to describe the Goal-oriented scene 22 *give cup to someone* as well as the Source-oriented scene 122 *take cup from someone*. After follow-up discussions with 3 speakers, the verb was analysed as a placement verb as the Source-oriented stimulus was interpreted as a Goal-oriented scene. Others interpreted the scene as a Source-oriented scene, as was intended, thus yielding the verb type *e-ɲar* ‘to take’²⁵. The verbs *e-yu* ‘spill, pour’ and *e-wulen* ‘pour’ were also extended to scenes depicting removal events 112 *dump blocks out of tin* and 120 *pour water out of tin*; however, a

²⁵ The verb *e-ɲar* ‘take’ is noted in both the placement and removal event tables where it is used in scenes 50 *take bag of corn and move to chair* and 122 *take coke can from someone*. The former scene portrays both Goal- and Source-oriented caused motions, and the latter scene was interpreted by some speakers as a Goal-oriented event. The use of the verb *e-ɲar* ‘take’ and these two scenes were included in both tables for transparency. It was used $n = 51$ times throughout the included data.

closer analysis of how the semantic information was distributed across the full construction suggested that the scenes were interpreted as placement events.

- (74) *na-yu-e* *ma-kara* *detam*
 3S-pour-PERF CL:ma.PLURAL-peanuts down

‘S/he poured the peanuts on the ground.’

TB1 BRI051015CK8 PP 112

- (75) *na-yu-e* *mu-hem* *ni* *ma-fos*
 3S-pour-PERF CL:ma.LIQUID-water LOC CL:ma.WILD.GRASS-grass

‘S/he poured the water on the grass.’

FB1 BRI091015CK1 PP 120

- (76) *na-wulen-e* *m-o* *ni* *ma-fos*
 3S-pour-PERF AGR:m.LIQUID-PN LOC CL:ma.WILD.GRASS-grass

‘S/he poured it [the water] on the grass.’

F10 BRI071015CK1 PP 120

In each of these examples, the adjunct prepositional phrase encodes information about the Goal, rather than the Source: *detam* ‘down’ and *ni mafos* ‘on the grass’. The verbs never occurred in a full transitive construction where the Goal was linked to the adjunct prepositional phrase. As such, the verbs *e-yu* ‘spill, pour’ and *e-wulen* ‘pour’ are considered placement verbs.

Finally, scenes 50 *take bag of corn from table and move to chair* and 51 *take apple from pile of books and move to shoe* elicited a Source-oriented motion and a Goal-oriented motion to examine how the language packages this information. 7 speakers of Kujireray used two separate verbs to describe the placement and the removal event respectively in response to scene 50. See the example below.

(77) *na-ŋar-e* *ji-paquette* *bonbon* *a-baŋ* *ni* *e-chaise*
 3S-take-PERF CL:ji.SMALL-bag candy 3S-put LOC CL:e.LOAN-chair

‘S/he takes a little bag of candy and puts it on the chair.’

FB1 BRI091015CK1 PP 50

There is not a verb that conflates Goal- and Source-oriented motion. Speakers employ a placement and a removal verb to denote the two motions of the event. Otherwise, speakers chose to describe only one of the events depicted, hence the use of 1 verb type for scene 51.

The remainder of this chapter presents the lexical semantics of placement verbs in Kujireray, followed by removal verbs. The presentation of the verb types is organised by the semantic distinctions they make: for example, verbs that denote the placement of liquid Figures are discussed within the same section. Organising the verb types in this way does not indicate that the grouping is the exclusive semantic distinction that the individual verb types make, but rather it is one common denominator of the verbs.

Whether or not a verb is semantically general or specific is determined by its extensions

to various scenes. Those with a wider extension (i.e., a verb that is used to describe many different types of Manner of motion) are considered more semantically general, while those with a more limited extension (i.e., a verb used only to describe the placement of clothing) are considered semantically specific. The semantics of each verb is described and illustrated with examples from the data.

4.2.1 *Lexical semantics of placement verbs*

A total of 13 Goal-oriented verb types were used in Kujireray. Two of these verb types were used more frequently and in a wider range of placement events than others and will be discussed first. Other placement verbs were used in a narrower range of placement events thus indicating specific semantic information. The following sections outline the semantics of individual placement verb types based on the stimuli data set as well as data collected via participant observation.

4.2.1.1 *Semantically general placement*

4.2.1.1.1 *E-baŋ*

The verb *e-baŋ* ‘put’ is a semantically general and frequently used verb as it extends to a wide set of placement events ($n = 13$). Note that the verb *e-baŋ* ‘put’ was initially glossed by Watson (2015) as ‘hold, keep’, as the object was often in the hand of a speaker. Thus, the use of this semantically general verb was not noticed during preliminary analyses, reflecting some of the realities of fieldwork, crosslinguistic semantic research, and working on lesser-described languages. Its semantics can instead be summarised as denoting the intentional placement of a separate, solid Figure object (never a body part or clothing item) to a Goal via either manual manipulation or via an Instrument. Examples (78) and (79) illustrate the use of this verb:

- (78) *na-baŋ-e* *e-kas* *ni* *e-tabul*
 3S-put-PERF CL:e.LOAN-cup LOC CL:e.LOAN-table
 ‘S/he put the cup on the table.’

BB2 BRI300915CK3a PP 1

- (79) *na-baŋ-e* *e-haŋa* *ni* *ji-assiette*
 3S-put-PERF CL:e.SMALL.ROUND-dried.rice LOC CL:ji.SMALL-plate
 ‘S/he put dried rice on the plate.’

FB1 BRI091015CK1 PP 5

This verb type was used in nearly all exclusive placement events depicting support except for scene 11 *put apple in bowl* in which *e-kan* ‘do, make, enter’ was also used by a majority of speakers (see example (80)).

(80)	<i>na-baŋ-e</i>	<i>ende</i>	<i>ji-pomme</i>
	3S-put-PERF	thingy	CL:ji.SMALL.ROUND-apple
	<i>ni</i>	<i>ende</i>	<i>ni e-bol</i>
	LOC	thingy	LOC CL:e.LOAN-bowl

‘S/he puts thingy a little apple in thingy in a bowl.’

CB4 BRI241015CK1 PP 11

The extension of *e-baŋ* ‘put’ to this stimulus as well as to item 13 *flip block off notepad into bowl* demonstrates that the verb does not distinguish between Spatial Relations of containment or support and can be used for either. Furthermore, the verb does not specify whether or not the Agent has full manual or instrumental control over the Figure until it reaches the Goal – it extends to both event types.

4.2.1.2 *Figure-Ground relations*

4.2.1.2.1 **E-kan**

The verb *e-kan* ‘make, do, enter’ denotes the intentional and controlled placement of a solid Figure resulting in a Spatial Relation of containment with the Goal. The resulting relation of containment can be either loose fit or tight fit as it extends to scenes depicting placement in a bowl, a bucket, and a small pocket. The Figure may be an object separate from the Agent or a body part of the Agent. In the latter case, no manual control is used. Example (81) provides an example of a speaker’s description of a placement event where the Figure is a body part of the Agent.

- (81) *an a-ine a-kan fu-hol ni*
 person CL:a.HUMAN-man 3S-put CL:fu.ROUND-head-POSS LOC
e-siyo fatiya ni e-tabul
 CL:e.LOAN-bucket on LOC CL:e.LOAN-table
 ‘A man put his head in a bucket on the table.’

F10 BRI071015CK1 PP 24

In the scene, a person dips his head into a bucket. As his head is the entity undergoing the change of location and is *not* a separate object, the verb *e-kan* ‘do, make, enter’ was used. The verb extends to the placement of Figures that enter the interior of a Goal entity, as also seen in example (82) which shows the use of the verb types *e-kan* ‘do, make, enter’ to describe the placement of celery inside a bag.

- (82) *na-kan-e ma-fos ni ji-pochet*
 3S-put-PERF CL:ma.WILD.GRASS-grass LOC CL:ji.SMALL-pocket
 ‘S/he put grass into his/her pocket.’

BRI091015CK1 PP 15

It also extends to scenes of dressing in which the Figure is a clothing item and the Goal is the Agent. In this case, the middle suffix *-o* to denote reflexivity was suffixed to all verbs in the descriptions, as all events depicted the same human participant as both the Agent

and the Goal. See the following example for an illustration of the extension of *e-kan* ‘make, do, enter’.

- (83) *na-kan-o-e* *ka-filikot-ol*
 3S-wear-MID-PERF CL:ka.OBLONG.ROUND-shoe-3S.POSS

 ‘S/he wears a shoe.’

C11 BRI241015CK7 PP 26

Refer back to section 4.1.3 for a discussion on the middle voice suffix *-o* and examples of the verb *e-kan* ‘do, make, enter’ in a transitive, non-reflexive construction.

Speakers of Kujireray make a semantic distinction depending on whether the clothing item covers the whole body, or if the Figure makes up one of many separate items then forming the outfit. *E-limo* ‘to dress, to wear’ is selected when one wears a *pagne*, or a larger piece of fabric which is wrapped around the chest or at the waist. Many African textiles are worn where the same print fabric is used for the head, a dress or shirt and trousers. Based on data from discussion sessions and observed communicative event data, the semantics of *e-limo* ‘dress’ suggest that the person wearing the clothing is, from head to toe, displaying the same fabric or design pattern. Thus, speakers do not use *e-limo* ‘dress’ to describe putting on shoes, hats, belts, or other, smaller accessories. Although this verb type was not elicited via the stimuli-based data and is not included in the verb type count above, it is mentioned due to its prominence in observational and discussion-based data.

E-kan ‘make, do, enter’ is not used for scenes in which the Figure is relocated to a supportive surface such as a table or the ground, nor is it used for accidental placement, such as knocking something over unintentionally. Rather, the verb denotes an Agent’s controlled motion over a Figure until it reaches the interior space of the Goal as well as depicting the dressing of the Agent when suffixed with the middle voice *-o*.

4.2.1.2.2 E-nogen

The verb *e-nogen* ‘enter’ categorises a subset of placement events organised by the more semantically general verb *e-kan* ‘make, do, enter’. The majority of speakers used *e-nogen* to describe scenes 15 *put celery bunch into recorder case*, 23 *put hand into hole in tree*, and 24 *put head into bucket*, in which a solid, rigid figure – either a body part of the Agent or a separate object – is inserted into a Goal. To determine whether or not the verb could be extended to other scenes, discussion sessions were carried out during which speakers responded that it could be extended to scenes in which the resulting Spatial Relation was one of tight fit. Speakers rejected the extension of this verb type to scenes in which the containment of the Figure was loose fit, such as in a large bag or a small figure in a bucket. This semantic feature is not uncommon crosslinguistically: languages such as Korean make a core distinction according to whether the placement of a Figure results in a ‘tight fit’ or a ‘loose fit’ spatial relation (Bowerman & Choi 2001).

Example (84) shows the use of the verb *e-nogen* ‘enter’ to describe the placement of a stone entering one’s pocket.

- (84) *na-nog-en-e* *waf* *ni* *e-poche-ol*
 3S-enter-CAUS-PERF something LOC CL:e.LOAN-pocket-3S.POSS
 ‘S/he enters something in his/her pocket.’

PS1 BRI240915CK1 PP 16

The prompted extension of *e-nogen* ‘enter’ to this scene reveals the verb’s specific semantics of the tight-fit containment; however, the more semantically general verb *e-kan* ‘make, do, enter’ was preferred for these scenes depicting both types of containment of the Figure object.

4.2.1.2.3 E-tik

8 speakers used the verb *e-tik* ‘stuff’ to describe item 17 *stuff rag into car exhaust*.

Similar to *e-kan* ‘make, do, enter’ and *e-nogen* ‘enter’, the verb denotes the deliberate and controlled placement of a Figure to the interior of a Goal, yet it bears a semantic contrast with regards to the quality of the Figure. Follow-up discussion sessions and a search of the verb type in observational data – although its use was limited to 5 tokens overall – supported the analysis that *e-tik* ‘stuff’ cannot be extended to placement events where the figure is rigid. Note the following example gathered from the stimuli-based data:

- (85) *na-tik-e* *ende* *ni* *e-chappement*
 3S-stuff-PERF something LOC CL:e.LOAN-exhaust.pipe
 ‘S/he stuffs something in the exhaust pipe.’

CB4 BRI241015CK1 PP 17

Furthermore, speakers rejected its use in placement events where the Figure was relocated to a supportive surface or a configuration of suspension. Thus, the semantics of *e-tik* ‘stuff’ are very restricted and bear contrast with other verbs denoting containment.

4.2.1.2.4 E-rak

Another semantically specific verb type used frequently in the data is *e-rak* ‘to hang’. The use of *e-rak* ‘to hang’ is exemplified in (86). The verb denotes the deliberate, controlled placement of a separate figure object to a Goal where the Figure is suspended over the Goal.

(86)	<i>na-rak-e</i>	<i>ka-new</i>	<i>ni</i>
	3S-hook-PERF	CL:ka.EXTENDED.ROUND-rope	LOC
	<i>ka-ánd</i>	<i>k-a</i>	<i>bu-nunuhen</i>
	CL:ka.OBLONG-branch	AGR:k.OBLONG-PN	CL:bu.TREES-tree

‘S/he hangs a rope over the tree branch.’

IT BRI091015CK5 PP 27

The verb type was rejected when prompted to be extended to other scenes, demonstrating that the relation of the Figure to the Goal must be one of suspension.

4.2.1.2.5 E-taf

The verb *e-taf* ‘to stick’ is analysed as a semantically specific verb type as it extends to only one item: 28 *put poster on wall*. Analysed along with its appearance in observational data, the verb denotes the manual, deliberate placement of a solid Figure to a Ground via adhesion.

(87)	<i>na- taf-e</i>	<i>e-photo</i>	<i>ni</i>	<i>fu-tep</i>
	3S-stick-PERF	CL:e.LOAN-photo	LOC	CL:fu.ROUND-wall
	‘S/he sticks the photo to the wall.’			

LS2 BRI051015CK PP 28

The verb type was never used to describe contact via an Instrument such as a nail, hook, or pin.

4.2.1.3 *Figure properties*

4.2.1.3.1 *E-yu*

Many languages distinguish between types of placement verbs depending on whether or not the Figure is a liquid or a solid (Andics 2012; Brown 2012; Burenhult 2012).

Kujireray also pays attention to the placement of liquids such as water, juice, some medicines, and alcohols as well as small, granular solid objects such as rice, sand, small blocks, and beans in Kujireray. The verb type *e-yu* ‘spill, pour’ denotes the intentional as well as accidental placement of such liquid and small, granular figures to a Goal, either of supportive or containment qualities. The following example illustrates the use of the verb *e-yu* ‘spill, pour’ to describe the intentional relocation of *mu-hem* ‘water’, which takes the noun class for liquids. Here, the verb occurs in a full transitive construction with the adjunct prepositional phrase *ni [ende] ji-casserol* ‘in the thingy, container’, revealing the Spatial Relation of containment.

- (88) *na-yu-e* *mu-hem* *ni* *ende* *ji-casserol*
 3S-pour-PERF CL:mu.LIQUID-water LOC thingy CL:ji.SMALL-container
 ‘S/he pours the water in the thing, the small container.’

FB1 BRI091015CK1 PP 20

Consider the following example (89). A sibling tells her sister that their younger brother, Jacques, knocked over a bucket of well water she had just collected.

- (89) *Jacques* *na-yu-e* *mu-hem* *detam*
 Jacques 3S-spill-PERF CL:mu.LIQUID-water down
 ‘Jacques spilt water on the ground.’

participant observation 2016

The caused motion illustrated in this example is accidental, revealing the verb’s general semantics in regards to the intention of placement. Additionally, the water is spilt onto a nondescript ground demonstrating the verb’s general semantics in regards to the Goal.

4.2.1.3.2 E-wulen

The verb *e-wulen* ‘pour’ extended to a select set of scenes: 20 *pour liquid into container* and 120 *pour water out of tin*. This verb can be described as denoting the intentional placement of a liquid figure to a Goal. Unlike *e-yu* ‘spill, pour’, it only denotes liquid figures and does not describe any solid, liquid-like figures nor does it describe unintentional placement. It is thus more semantically specific than *e-yu* ‘spill, pour’.

(90)	<i>na-wulen-e</i>	<i>mu-hem</i>	<i>detam</i>
	3S-pour-PERF	CL:mu.LIQUID-water	down

‘S/he poured the water out (on the ground).’

CB4 BRI241015CK1 PP 120

Discussion sessions and observational data revealed that the verb *e-wulen* ‘pour’ is often used within the context of watering a garden, supporting the analysis of it denoting intentional placement.

4.2.1.3.3 E-gub

The verb *e-gub* ‘turn over, cover’ denotes the placement of a Figure that has an opening, such as a bottle, pot, box, or cup in which the resulting configuration of the Figure is that the opening is covered.

When this noncanonical position involves the Figure being upside down in its final location, such as in items 20 *flip bottle on table* and 36 *flip pot on table* from the Caused Positions stimuli set, the majority of speakers used the verb *e-gub* ‘turn over, cover’. The use of this verb type is observed in example (91).

(91)	<i>na-gub-e</i>	<i>ka-tasa</i>	<i>ni</i>	<i>e-tabul</i>
	3S-turn.over-PERF	CL:ka.CYLINDRICAL.HARD-pot	LOC	CL:e.LOAN-table

‘S/he turns over a pot on the table.’

IT BRI091015CK4 CP 36

Here, the Figure’s opening is closed by means of the position of the Figure itself and its relation to the table. When the opening of the Figure is closed by a separate instrument, the Instrument is linked to an adjunct phrase, as seen in the following example.

(92)	<i>na-gub-e</i>	<i>e-kop</i>	<i>y-a-y-u</i>
	3S-turn.over-PERF	CL:e.LOAN-cup	AGR:y.LOAN-DEF-AGR:y.LOAN-MED
	<i>ni</i>	<i>ji-assiette</i>	
	LOC	CL:ji.SMALL.-plate	

‘S/he turned over the cup on the little plate.’

BB2 BRI300915CK3a PP 31

Thus, the verb can be considered a caused positional as the Figure item must change its position in the resulting location.

4.2.1.3.4 E-filen

A second placement verb that denotes the configuration of the figure is *e-filen* ‘to lay’.

This postural verb *e-filen* (with the suffixation of the causative morpheme *-en*) extended to scenes 28 *lay bottle on table* and 45 *lay pot on table* which show the figure placed in a noncanonical configuration, on its side, rather on the figure’s base. The following example illustrates the use of the postural verb.

(93) *na-fil-en-e* *ka-rafa* *ni* *e-tabul*
 3S-lay-CAUS-PERF CL:ka.CYLINDRICAL.ROUND-bottle LOC CL:e.LOAN-table
 ‘S/he lays the bottle on the table.’

FB1 BRI091015CK CP 28

Speakers did not use *e-filen* ‘lay’ for other contexts. This lexical item was used nearly exclusively for when the Figure is placed in a noncanonical position, notably on its side, among both stimuli-based data as well as observed. The results of a corpus search of the verb *e-filen* ‘lay’ further supports this analysis as the verb was used by speakers to denote the horizontal position of a person, animal, or, in the case of the *Mesospace* data, a novel item that bears physical resemblance of a person and is positioned on its side.

4.2.1.4 *Loss of control over Figure*

4.2.1.4.1 *E-tuc*

When a Figure is relocated to a Ground, the Agent can either continue to have control over the Figure or can relinquish this control before the Figure reaches the Ground. This contrast is depicted in verbs such as *putting* versus *throwing*, in English. The verb *e-tuc* ‘throw’ denotes the placement of separate Figure objects in which the Agent deliberately loses manual control over the Figure before it reaches the Goal. *E-tuc* was used to describe a small set of stimuli items: 8 *drop book deliberately on floor* and 10 *toss book on floor*, in which manual control over the Figure is lost before it arrives at the Goal. Example (94) illustrates the speakers’ use of the verb *e-tuc* ‘throw’:

(94)	<i>na-tuc-e</i>	<i>e-livre</i>	<i>detam</i>
	3S-throw-PERF	CL:e.LOAN-book	down
	‘S/he throws the book on the ground.’		

FB BRI241015CK5 PP 10

This verb type does not denote accidental placement, nor does it describe liquid or granular Figure types. It can also be used with a range of Goal types such as *ni e-siyo* ‘in the bucket’ and *ni e-fal* ‘in the river’ (field notes 2016 and 2017).

4.2.1.4.2 E-loen

When the Agent loses control over the Figure object before it reaches the Goal accidentally, the verb *e-loen* ‘drop accidentally’ is used. Example (95) shows the use of the verb *e-lo* ‘fall’ to which the causative morpheme *-en* is suffixed, thus entering into a minimal transitive construction.

(95)	<i>na-lo-en-e</i>	<i>ji-livre</i>
	3S-fall-CAUS-PERF	CL:ji.SMALL-book
	‘S/he drops the book.’	

CB4 BRI241015CK1 PP 9

Among the data, *e-loen* ‘drop accidentally’ was extended to only one item, *9 drop book accidentally on floor*. Results from observational data also demonstrated the verb’s use in similar contexts, where the placement of the Figure item was accidental and manual control was lost. The Figure is always a separate object from the Agent and can be

animate or inanimate. The verb was never used to denote liquid Figures, thus revealing a semantic contrast between verbs *e-yu* ‘spill, pour’ which denotes the accidental and intentional placement of liquid Figures.

4.2.1.5 Animacy

4.2.1.5.1 E-sen

The verb *e-sen*, ‘give’, is used when an object (which is not one’s body part) intentionally arrives to an animate Goal (a person). Speakers used this verb exclusively in response to stimuli 22 *give cup to someone* and 122 *take coke can from someone*. As mentioned previously, although item 122 was intended to elicit removal events, 10 speakers interpreted this event as placement of the Figure.

The following example (96) demonstrates the use of this verb by a speaker in a ditransitive construction:

(96)	<i>u-sen-om</i>	<i>y-o</i>
	2S-give-1S.O	AGR:y.LOAN-PN
	‘Give me it.’	

field notes 2016

The suffixation of the morpheme *-or* to describe the scene ‘give a cup to someone’ was also used to denote a reciprocal event, as it was perceived that the two actors were sharing a drink together (example (97)).

(97)	<i>w-are</i>	<i>ku-ruba</i>
	CL:ku.HUMAN-women	CL:ku.HUMAN-two
	<i>ku-sen-or</i>	<i>e-kas</i>
	CL:ku.HUMAN-give-RECIP	CL:e.LOAN-cup
	‘Two women exchange a cup.’	

S10 BRI071015CK3 PP 22

Based on observational data, speakers use *e-sen* ‘give’ to describe a variety of Figures including liquids, granular objects, and animate entities. It was never extended to placement events in which the item was relocated via an instrument other than one's hand, and control remained over the Figure until it reached the animate Goal.

4.2.2 Summary of Kujireray placement verbs

Speakers of Kujireray categorise placement events in a number of unique ways as seen in the semantics of lexical items used to denote this caused motion event. Based on a variety of data, it appears that speakers frequently make use of the verb types *e-baŋ* ‘put’ and *e-kan* ‘make, do, enter’ which extend to a wide set of placement events. *E-baŋ* ‘put’ overlaps its semantics with *e-kan* ‘make, do, enter’ regarding the resulting containment of the Figure; however, *e-kan* ‘make, do, enter’ does not denote the placement of a Figure to a supportive surface. Both verb types describe the intentional placement of Figure objects, yet *e-kan* ‘make, do, enter’ carries more semantically specific information in the sense that it denotes the controlled manner of placement, whereas *e-baŋ* ‘put’ can denote the lack of manual control over a Figure upon reaching the Ground as well.

The notion of containment is encoded in the lexical semantics of *e-nogen* ‘enter’ and *e-tik* ‘stuff’, with the former denoting the tight-fit containment of rigid Figures and the latter describing Figure objects with more flexible qualities, such as cloth or tissue.

Placement verbs in Kujireray distinguish between Figures that are of liquid qualities and/or small granular qualities by the use of the verbs *e-yu* ‘spill, pour’ and *e-wulen* ‘pour’. The latter verb further categorises a subset of placement events in which the placement of the liquid is intentional, whereas *e-yu* ‘spill, pour’ carries more general semantic information, seen in its wider use among placement event types.

With regards to positional verbs in Kujireray, only two verb types were frequently used and agreed upon among speakers: *e-guben* ‘turn over, close’ and *e-filen* ‘lay’. As will be discussed in the conclusion of this chapter, other positional verbs found in the corpus were not used in the placement data. It appears that their use is substantially confined to the *Mesospace* data set, suggesting that it may only be items that resemble human entities when placed in noncanonical positions that speakers use these verb types.

Loss of control by the Agent over the Figure before the Figure reaches the Goal is another distinguishing event that placement verb types in Kujireray categorise. The verbs *e-tuc* ‘throw’ and *e-loen* ‘drop accidentally’ both categorise placement events where the Agent’s control is lost over the Figure before it arrives at the Goal. There is a finer distinction made between these two verbs; that is, with the manner in which the Figure is relocated. *E-tuc* ‘throw’ refers to events in which the placement is intentional, whereas the verb *e-loen* ‘drop accidentally’ indicates accidental placement of the Figure.

Other semantic distinctions include the giving of items to another animate entity, as carried in the verb *e-sen* ‘give’. The verbs *e-rak* ‘hang’ and *e-taf* ‘stick’ also further categorise events where there are various Spatial Relations.

4.2.3 Lexical semantics of removal verbs

This section describes the removal verbs used by speakers in Kujireray speech, complemented by supporting data from discussion sessions and observed communicative event data.

Across the 18 speakers, the Put Project task yielded 9 different removal verb types (or, Source-oriented verb types) from the 69 stimuli. The most frequently occurring removal verb type was *e-puren* ‘remove’ (see section 4.1.1.1 for a discussion of the causative suffix *-en*). This removal verb occurred 238 times by the 18 speakers and was employed in the widest range of contexts, extending to 19 different removal event types. The second most frequently used verb type was *e-ηar* ‘take’ used 51 times across 7 different removal events. *E-ηar* ‘take’ thus had a narrower range of extensions than the more semantically general verb *e-puren* ‘remove’. Other removal verbs covered a much smaller range of removal events, thus carrying semantically specific information. These verbs will be discussed in the following sections and grouped by highlighting shared semantic distinctions.

4.2.3.1 Semantically general removal

4.2.3.1.1 E-puren

E-puren ‘remove’ has the widest range of semantic extensions and carries general information about the removal event. The verb type can be described as denoting intentional removal of a Figure (a separate object, a body part of the Agent, or a clothing

item) from any type of Source (a flat, supportive surface such as a table top or a containment source such as a box, bucket, or pocket). This section presents examples which demonstrate the verb's wide range of extensions and thus, semantically general features. The following examples illustrate the verb's use in removal events where the Figure is a body part of the Agent as well as inanimate, separate objects including clothing.

- (98) *na-pur-en-e* *fu-how-ol* *ni* *e-siyo*
 3S-go.out-CAUS-PERF CL:fu.ROUND-head-POSS LOC CL:e.LOAN-bucket
 'S/he removes his/her head from the bucket.'

OS3 BRI241015CK3 PP 124

The following examples from the data demonstrate the use of the verb *e-puren* 'remove' to describe the removal of clothing in both a minimal transitive construction and a full transitive construction. In example (99) the verb occurs in a minimal transitive construction, as there is no adjunct prepositional phrase that indicates the Source.

- (99) *na-pur-en* *ka-juw-ol*
 3S-go.out-CAUS CL:ka.OBLONG-clothing-3S.POSS
 'S/he removes his/her clothes.'

F10 BRI071015CK1 PP 133

Example (100) shows the verb *e-puren* ‘remove’ being used to describe this removal event in a full transitive construction:

(100)	<i>na-pur-en-e</i>		<i>ka-chapeau</i>	
	3S-go.out-CAUS-PERF		CL:ka.ROUND-hat	
	<i>k-a-h-u</i>		<i>ni</i>	<i>fu-how-ol</i>
	AGR:k.ROUND-DEF-AGR:k.ROUND-MED		LOC	CL:fu.ROUND-head-POSS
	‘S/he removes the hat from his/her head.’			

TB1 BRI051015CK8 PP 125

Examples (101), (102) and (103) demonstrate the verb’s extension to a wide range of removal events regardless of the Source type (i.e., containment or support).

(101)	<i>na-nog-en-e</i>	<i>ka-ñen-ol</i>	<i>ni</i>
	3S-enter-CAUS-PERF	CL:ka.OBLONG.ROUND-hand-3S.POSS	LOC
	<i>e-poche</i>	<i>na-pur-en-e</i>	<i>e-dërëm</i>
	CL:e.LOAN-pocket	3S-go.out-CAUS-PERF	CL:e.LOAN-money
	‘S/he enters his/her hand into the pocket and pulls out money.’		

MB6 BRI300915CK5 PP 116

(102)	<i>na-pur-en-e</i>		<i>fu-sorans</i>		<i>ni</i>
	3S-go.out-CAUS-PERF		CL:fu.ROUND-orange		LOC
	<i>ka-carton</i>		<i>k-a-h-u</i>		
	CL:ka.OBLONG-box		AGR:k.OBLONG-DEF-AGR:k.OBLONG-MED		
	'S/he removes the orange from the box.'				

ID BRI091015CK3 PP 111

(103)	<i>na-pur-en</i>	<i>e-kas</i>	<i>ni</i>	<i>e-tabul</i>
	3S-go.out-CAUS	CL:e.LOAN-cup	LOC	CL:e.LOAN-table
	'S/he removes the cup from the table.'			

FB1 BRI091015CK PP 101

Finally, *e-puren* 'remove' does not specify either the Agent moves with the Figure or whether the removal motion is done only with the hand – it extends to both event types (129 *put suitcase out of room, while staying in room* and 130 *take suitcase out of room, going out of room*). It thus carries very general semantics about removal events with its only limitation being to removal scenes where the caused motion is accidental. A different set of verb types carry semantic features of unintentional removal and will be discussed further in this chapter.

4.2.3.2 *Figure-Ground relations*

4.2.3.2.1 *E-ŋar*

The second most frequently used and widely used verb type denoting removal events is *e-ŋar* 'take'. This verb overlaps with two scenes in which *e-puren* 'remove' was also

agreed upon as the verb of choice: 106 *take box down from shelf* and 130 *take suitcase out of room, while going out of room*. It does not, however, extend to any other scenes in which *e-puren* is used, but it is used in response to scenes 50 *take bag of corn from table and move to chair*, 101 *take cup off table*, 104 *take armload of books off table*, and 105 *take handful of beans from flat surface*. While *e-puren* ‘remove’ has a wide range of extensions to various removal events, *e-ɲar* ‘take’ is more specific: it denotes the intentional removal of a separate, non-clothing Figure from a horizontal, supportive surface or from an animate entity (serving as the lexical opposite to *e-sen* ‘give’). Its semantics are more restricted in that it does not extend to events in which the Figure is removed from a Source of containment. Example (104) demonstrates the use of the verb *e-ɲar* ‘take’ to describe the removal of an entity from a supportive surface.

(104)	<i>na-ɲar-e</i>	<i>e-kas</i>	<i>y-a-y-u</i>
	3S-take-PERF	CL:e.LOAN-cup	AGR:y.LOAN-DEF-AGR:y.LOAN-MED
	<i>ni</i>	<i>e-tabul</i>	
	LOC	CL:e.LOAN-table	

‘S/he takes the cup from the table.’

RB5 BRI290915CK3 PP 102

Here, the verb occurs in a full transitive construction – the Source is linked to the adjunct prepositional phrase *ni e-tabul* ‘from/on the table’.

E-ɲar ‘take’ has a more limited range of extensions to removal events in comparison to *e-puren* ‘remove’ in that it does not denote the removal of an Agent’s body part nor the removal of an article of clothing from a person.

4.2.3.3 *Agent moves with Figure*

4.2.3.3.1 E-teb

The verb *e-teb* ‘carry away’ denotes the intentional removal of a separate figure object from a Source where the Agent moves with the Figure. The verb extends to two removal scenes: 130 *take suitcase out of room, going out of room* and 104 *take armload of books off table*. It does not extend to any scenes in which the Agent only moves his or her hand with the Figure, neither in the stimuli-based data set nor in observational data collected. It can be used with animate Figure entities, such as carrying a child away from a location, but is never used in a Goal-oriented event. When the verb occurs in a construction with a prepositional phrase, the Source is linked (never a Goal).

(105)	<i>an</i>	<i>a-are</i>	<i>a-h-u</i>
	person	CL:a.HUMAN-woman	AGR:Ø.HUMAN-DEF-AGR:h-MED
	<i>na-jal-o</i>	<i>a-teb</i>	<i>u-livre</i>
	3S-go-MID	3S-carry.away	CL:u.EXTENDED.HARD-books
	<i>w-a-w-u</i>		<i>ni</i>
	AGR:u.EXTENDED.HARD-DEF-AGR:u.EXTENDED.HARD-MED		LOC
	<i>e-tabul</i>	<i>y-a-y-u</i>	
	CL:e.LOAN-table	AGR:y.LOAN-DEF-AGR:y.LOAN-MED	

‘A woman goes and carries away books from the table.’

TB1 BRI051015CK8 PP 104

4.2.3.3.2 E-yed

Removal events are further categorised in Kujireray by the height of the Source in relation to the Agent. When the Figure is located at a lower Source relative to the Agent, such as the ground or a table top if the Agent is standing by it, the verb *e-yed* ‘lift’ is used. *E-yed* ‘lift’ was employed by 6 speakers and extended to scene 102 *take plastic cup off table with mouth*. Discussion sessions revealed that the verb could also be extended to scene 21 *spill water onto table when pick up glass* to denote the intentional motion of *pick up glass* as well as to 101 *take cup off table* when prompted, but that the more semantically general verb *e-ɲar* ‘take’ was preferred in the latter extension.

(106)	<i>na-yed-e</i>	<i>e-kas</i>	<i>ni</i>
	3S-lift-PERF	CL:e.LOAN-cup	LOC
	<i>e-tabul</i>	<i>y-a-y-u</i>	
	CL:e.LOAN-table	AGR:y.LOAN-DEF-AGR:y.LOAN-MED	

‘S/he lifts the cup from off the table.’

ID BRI091015CK3 PP 101

E-yed ‘lift’ did not extend to any other scenes where the Source was at the same vertical level or higher than the Agent’s reach. Observational data further points to the semantics of *e-yed* ‘lift’ as being the removal of a Figure from a lower Ground.

(107)	<i>Nay</i>	<i>na-yed-e</i>	<i>Awa</i>	<i>ni</i>	<i>ji-chaise</i>
	Nay	3S-yed-PERF	Awa	LOC	CL:ji.SMALL-chair

‘Nay picked up Awa from the little chair.’

field notes 2017

Here, the grandmother Nay picks up her granddaughter Awa who had been standing on a child’s plastic chair on the ground and takes her into the house. The verb can be thus described as denoting the removal of a solid Figure from a supportive surface that is at a low Source location.

4.2.3.4 *Manual removal*

4.2.3.4.1 *E-tot*

The verb *e-tot* ‘pick up’ was only selected by speakers in response to stimulus 107 *take magazine from floor* which depicts the Source as a lower level and was never extended to other stimuli, even upon prompting.

(108) *na-tot-e* *ka-livre*
 3S-pick.up-PERF CL:ka.EXTENDED.HARD-book

 k-a-h-u
 AGR:k.EXTENDED.HARD-DEF-AGR:k.EXTENDED.HARD-MED

 ‘S/he picks up the book.’

DD1 BRI051015CK5 PP 107

An analysis for the contrast between *e-yed* ‘lift’ and *e-tot* ‘pick up’ remains preliminary as the latter verb type did not occur often in observational data collected on video or audio. However, discussion sessions with speakers suggest that *e-tot* ‘pick up’ bears semantic information about the Agent, in that s/he is bent over and manually picking up the Figure. The use of *e-tot* ‘pick up’ describing the removal of granular entities was noted during participant observation. Here, *e-tot* ‘pick up’ was used for the removal of granular entities from the ground picking up spilt dry rice one bit at a time by hand in a repetitive manner. Indeed, the removal event 107 *take magazine from floor* displays the Agent bending over and picking up the figure, whereas scenes to which *e-yed* ‘lift’ was

extended, the Agent was not bent over but was in an upright position, or was not fully seen.

4.2.3.4.2 E-ji

E-ji ‘grab a fistful of’ bears semantically specific information about removal events. It denotes the intentional removal of a small, granular Figure objects via manual grasp of the Agent. It is never used when the Figure object is of a small, solid quality such as a stone or small fruit, but only with small granular entities such as sand, beans, rice (both cooked and dry), and beads. Speakers also rejected its use when a separate Instrument was used to remove the granular items, such as a spoon removing sugar from a bowl.

4.2.3.5 Manner of removal

4.2.3.5.1 E-loŋen

E-loŋen ‘kick over/out’ denotes both unintentional and intentional removal of a Figure only when the foot of the Agent serves as the Instrument. The verb type was rejected by speakers in removal contexts in which other body parts (i.e., one’s hand, head, or knee) are used or other types of instruments such as a stick.

The verb extends to accidental kicking of a figure as well, seen in example (109).

(109)	<i>na-ja-lo</i>	<i>a-loŋ-en</i>	<i>ba-sah</i>
	3S-go-MID	kick-CAUS	CL:ba.SMALL.ROUND-beans
	<i>b-a-b-u</i>		<i>ni e-siyo</i>
	AGR:b.SMALL.ROUND-DEF-AGR:b.SMALL.ROUND-MED		LOC CL:e.LOAN-bucket
	‘S/he goes and kicks the beans from the bucket.’		

C11 BRI241015CK7 PP 113

The verb *e-loŋen* ‘kick over’ was not used frequently overall, but carries specific semantic information about the removal of a Figure via the Agent’s foot. Similar to *e-bet* ‘knock over’, the Agent does not have full control over the Figure after its initial removal.

4.2.3.5.2 E-bet

Accidental removal events are denoted by two verb types: *e-bet* ‘knock over’ and *e-loŋen* ‘kick over’. The two verbs overlap in their semantics in that both describe accidental removal (extending to scene 113 *knock over bucket so blocks spill out*) and in that the Agent does not hold onto the figure as observed in other removal events. However, observational data shows that they can be extended to different removal scenes. *E-bet* ‘knock over’ only denotes the accidental or unintentional removal of a figure by any body part (i.e., foot, hand, body) or by a separate object such as a bicycle or a car.

(110)	<i>Amadou</i>	<i>a-bet</i>	<i>e-sak</i>	<i>ni</i>	<i>e-siyo</i>
	Amadou	3S-knock.over	CL:e.LOAN-bag	LOC	CL:e.LOAN-bucket

‘Amadou knocked the bag off the bucket.’

field notes 2017

Thus, its semantics are specific with regard to the intention of removal, yet more general with the instrument used to remove the Figure.

4.2.3.5.3 E-faken

The verb *e-faken* ‘push/shove’, however, was also described in discussion sessions as deliberate caused motion events from a Source. It extended to only one scene, 50 *push suitcase from car to tree*, yet the Goal (the tree) was never linked to the adjunct prepositional phrase. Only the Source *ni e-oto* ‘from the car’ was linked to this phrase.

(111)	<i>a-ine</i>	<i>a-h-u</i>	<i>na-fak-en-e</i>		
	CL:a.HUMAN-boy	AGR:Ø.HUMAN-DEF-AGR:h.HUMAN-MED	3S-push-CAUS-PERF		
	<i>e-sak</i>	<i>y-a-y-u</i>	<i>ni</i>	<i>e-oto</i>	<i>niban</i>
	CL:e.LOAN-bag	AGR:y.LOAN-DEF-AGR:y.LOAN-MED	LOC	CL:e.LOAN-car	then
	<i>na-baŋ-e</i>	<i>y-o</i>	<i>ni</i>	<i>bu-nunuhen</i>	
	3S-put-PERF	AGR:y.LOAN-PN	LOC	CL:bu.TREE-tree	

‘A boy pushed the bag from the car then put it by the tree.’

BB2 BRI300915CK3 PP 52

Less than 6 speakers encoded the Goal-oriented motion of this event in speech. Those who did, however, opted to encode the placement event and Goal by using the semantically general placement verb *e-baŋ* ‘put’, as seen in the example above.

The verb denotes the intentional and forceful removal of animate (example (112)) and inanimate Figures (example (113)).

- | | | | | |
|-------|--------------------------------------|---------------------------|-----------|---------------|
| (112) | <i>na-faken-e</i> | <i>a-pemb</i> | <i>ni</i> | <i>bu-tiñ</i> |
| | 3S-push-PERF | CL:a.HUMAN.RELATION-child | LOC | CL:bu:path |
| | ‘She pushed the child off the path.’ | | | |

field notes 2017

E-faken ‘push/shove’ was not used in full transitive constructions where the adjunct prepositional phrase encoded the Goal. The context of the preceding example showed that the child had originally been on the path and was pushed by the Agent aside to make way for herself. Similarly, the context surrounding the following example was that the taxi had broken down in the village of Brin and a group of young men helped the driver to intentionally push the car down the road, away from the small market where it had stopped.

(113)	<i>ku-faken-e</i>	<i>e-oto</i>	<i>ni</i>	<i>Brin</i>
	3P-push-PERF	CL:e.LOAN-car	LOC	Brin
	‘They pushed the car from Brin.’			

field notes 2017

As such, the semantics of *e-faken* ‘push/shove’ demonstrate intentional and forceful motion of a figure from a Source.

4.2.4 *Summary of Kujireray removal verbs*

Externally caused motion events are categorised into placement and removal events as denoted by various verb types. In this section, 9 prominent verb types bearing semantic information about Source-oriented events were described, showing fewer prominent removal verbs than placement verbs in Kujireray.

The most frequently and widely-used verb types among removal verbs were *e-puren* ‘remove’ and *e-ɲar* ‘take’. Both verb types indicate the intentional removal of the Figure, however, there are semantic differences between the two. *E-puren* ‘remove’ is more semantically general as it extends to a wider range of Figure types, such as clothing (undressing), and the Agent’s own body parts. *E-ɲar* ‘take’ carries slightly narrower semantics in that the Figure is always a separate object and the Source is one of supportive qualities. It does not extend to scenes where the Figure is contained in the Source, unlike *e-puren* ‘remove’, which extends to both removal types.

Removal verbs in Kujireray make other distinctions that are more specific. These include the loss of control over the Figure from the Source, such as *e-bet* ‘knock over’ and *e-*

lojen 'kick'. Furthermore, when the Figure is located at a low level and is removed, speakers categorise these events as seen in the verb types *e-yed* 'lift' and *e-tot* 'pick up'.

4.3 Conclusion

Contrary to what preliminary analyses yielded regarding the seemingly widespread use of positional verbs in Kujireray, findings presented in this chapter reveal that their use is limited to the Figure entity being in a noncanonical position. Data from Watson's (2015) *Mesospace* corpus had initially shown a high use of the postural verbs *e-filen* 'make lie', *e-ilen* 'make stand' and *e-roben* 'make sit'. However, these verbs were not used to a broad extent in the stimuli-based speech data. The postural verb *e-filen* 'make lie' was used for the majority of placement events in which the Figure is placed noncanonically, particularly in a horizontal position. Other positional verbs included *e-gub* 'turn over' to denote the noncanonical position turned on its axis 180 degrees to cover an opening of the figure object. It seems that the positional verbs are reserved for Figures that resemble a human entity, as a wide range of naturalistic data from the corpus did not yield these verb types in causative constructions.

The lack of postural verbs in Kujireray may be attributed to a number of factors. One reason for why postural verbs were not as frequent as one would have hoped for could be related to the types of data analysed. The stimulus sets, although generous in their incorporation of various Figure types, may not have included certain culturally salient artefacts that may trigger postural verb types in Kujireray. Contexts such as fishing, farming and construction, cooking, and other agricultural tasks that use very culturally-specific equipment could be beneficial in the investigation of postural verbs as Figures are frequently being relocated in different configurations. Although these contexts were collected, pragmatic and social situations may have limited participants' use of postural

verbs. For example, when the participants were in a context that required negotiation of the Figure's configuration, postural verbs were elicited. The *Mesospace* data that originally elicited a vast majority of postural verb types because speakers needed to know the precise position of the novel object in order to place the coloured sticker on the correct location of the object in a Director-Matcher task. Yet, in naturalistic data, postural verb types were not often elicited which could be due to the fact that the speakers did not need to explain with great detail how to go about performing the task at hand. A short recording of two women cooking did not yield postural verbs despite their manual use of many differently shaped cooking utensils – rather, the recording provided much information about one of the woman's family. Similarly, with a naturalistic recording of the construction of an addition of a bathroom to a local home, the speakers had such strong prior knowledge of the task they did not need to negotiate the positions of certain equipment, tools, or other figures. A recording of two men working together and negotiating how to build a "charcoal oven", on the other hand, provided many postural verb types because one of the men had not been in the village for a long time and had forgotten how to make charcoal from freshly cut logs. Thanks to this pragmatic context, the two men had to be very specific in their discussions of how to build the oven and thus used many postural verbs to demonstrate the envisioned position of each log. Useful data to test this hypothesis would include speakers who are learning a task for the first time and who requires specific directions on how and where to place equipment and other Figures.

In sum, the marginal use – or at least, collection of – postural verbs can be attributed to the lack of culturally-salient figure types in the stimuli-based data, but also the lack of a required negotiation of the Figure's configuration to complete the task. Based on the use

of postural verbs in contexts where the completion of a task depended on knowing the Figure's configuration, speakers readily yielded postural verbs, both among naturalistic and stimuli-based data. If the Figure's position was not necessary to complete the task, other semantically general verb types were used.

More apparent distinctions made in the domain of placement and removal events involve features of various Spatial Relations, physical properties of the Figure, and Manner. The most commonly used placement verbs were the more semantically general verb types *e-baj* 'put' and *e-kan* 'make, do, enter'. These two verbs occurred in the widest range of placement events and were used more frequently than other verb types. The Source-oriented verbs *e-puren* 'remove' and *e-ɲar* 'take' were the most frequently used verb types among removal scenes.

Although it may be tempting to attribute the semantically general preference of placement verbs to a result of convergence, aligning with the expression of placement by bilingual speakers of Dutch (Alferink & Gullberg 2014), claiming convergence cannot be made as there are no monolingual speakers of Kujireray to whom the multilingual speakers of Kujireray can be compared. Therefore, what has been found thus far is a descriptive snapshot of the way speakers categorise and express the domain of placement. Future research should consider taking a descriptive approach to the semantics of placement and removal verbs and the constructions they occur in without treating speakers as 'separate monolinguals' and 'priming them' in language-specific modes. Rather, the speakers should be treated as full multilingual speakers and asked to respond to stimuli without restrictions to the language spoken. This method may yield a more naturalistic and realistic selection of verb types instead of asking them to conform to an artificial model intended for monolingual and bilingual speakers.

As is discussed later in chapter 6, I complete the analysis of how speakers express externally caused events in Kujireray (as well as in Senegalese French) by observing the information expressed in their co-speech gestures. The approach taken is, again, descriptive in nature as the use of postural verbs in Kujireray may be too negligible to make any strong predictions on the expression of placement in gesture.

Topics for related future research should also consider the ways in which other languages spoken in the region make semantic distinctions in the domain of placement and removal events. Preliminary work revealed that other Joola languages, Baïnouk Gubëher, and Wolof also have positional verbs that can be used to denote externally caused motion events. It would be fruitful to see the extent of similarities and differences among the languages in regards to the use of positional verbs their main semantic distinctions.

5 Semantics of placement and removal verbs in Senegalese French

This chapter presents how multilingual speakers describe placement and removal events in Senegalese French. The two main objectives of this chapter are to provide a description of the general morphosyntactic constructions of placement and removal events in French and of the lexical semantics of placement and removal verbs.

French is the official language in Senegal, but unlike Wolof which serves as the regional language, French serves less of a role as a lingua franca and is mainly used in domains such as government and education. Nevertheless, there is a large set of speakers of French residing in Brin, who also speak Kujireray, other languages of the Joola cluster, Bainouk languages, and Wolof, to name a few. For these multilingual speakers, French was mainly acquired at local schools in the villages of Brin and Djibonker, or in Casamance's capital city, Ziguinchor. Preliminary work on placement events in Senegalese French revealed that speakers have a strong preference for using semantically general verbs such as *mettre* 'put' and *déposer* 'put'. These verb types appear in the data frequently and their semantics will be discussed in depth.

It is emphasised that the French speech analysed in this chapter is that as spoken by multilingual speakers residing in Brin. Although I refer to work based on metropolitan French to describe some structural characteristics of the language of Senegalese French, the lexical semantics data is based solely on the participants' speech descriptions collected for this research. Discrepancies on structural or lexical levels between metropolitan French and Senegalese French are discussed and illustrated with examples.

This chapter follows the same structure as the chapter describing the structural and semantic properties of Kujireray in order to foreground the main similarities and

differences between the two languages. Additionally, the same methods are applied (see 3.4 in the methods chapter for an overview).

The contents of the chapter are organised as follows. Section 5.1 provides a background to the structural properties of placement and removal events in French. Construction types that make up the descriptions are discussed, such as transitive and intransitive constructions. Section 5.1 also presents how the semantic components of placement and removal events are mapped onto the syntactic constituents in French depending on the construction type and voice pair (active versus passive). The surface forms of relevant grammatical relations are described where necessary for the analysis and discussion. Section 5.2 presents an overview of the verb types denoting externally caused motion events, and sections 5.3 and 5.4 look at lexical semantics of placement and removal verb types respectively, as French also makes this overarching distinction between Goal- and Source-oriented caused motion events. I then conclude the chapter by summarising and discussing the main findings in section 5.5.

5.1 Structural properties of placement and removal descriptions

Much research has been carried out on how speakers of metropolitan French encode and express placement events (Chenu & Jisa 2006; 2007; Kopecka 2006; Alferink & Gullberg 2014; Alferink 2015). However, studies on Senegalese French are scant; research in this area is mainly limited to sociolinguistic perspectives (Ngom 1999; Mbaya 2005). This section presents a description of the core structural components that make up a placement and removal description. The data is based on placement and removal descriptions from 18 multilingual speakers of French in the Casamance. Supporting data is provided based on follow-up discussion sessions of placement and removal constructions and verb semantics.

Both metropolitan French and Senegalese French, like Kujireray, follow the basic word order of SVO, and placement and removal descriptions tend to adhere to this order. The main predicate in a placement and removal event in French takes the form of the main verb. Placement verbs are characterised as being Goal-oriented whereas removal verbs are Source-oriented. In transitive constructions in the active voice, the verb tends to be positioned after the subject and before the object and adjunct prepositional phrase(s). The following sections describe the argument structures in which placement and removal verbs occur and the characteristics of the construction types. There are 6 main construction types in which placement and removal verbs occur: a minimal transitive construction, a full transitive construction, a di-transitive construction, a reciprocal construction, a reflexive construction, and an intransitive construction. Each type is discussed in detail as well as the verbs that have a greater tendency to occur in a particular construction.

5.1.1 *Transitive constructions*

Most placement and removal verbs occur in a series of transitive constructions. I refer to the different transitive constructions types as minimal (where there is an absence of the adjunct prepositional phrase), full (+ adjunct prepositional phrase), and di-transitive where there are two objects that follow the verb. I also discuss the use of the passive voice in French and describe its construction.

5.1.1.1 *Minimal transitive construction*

A minimal transitive construction is comprised of two arguments, their grammatical relations being subject and object. There is no adjunct prepositional phrase that codes the Goal (for placement verbs), Source (for removal verbs), nor Instrument or Manner. A set of verbs are used in the minimal transitive constructions: their consistent use is more

often observed where the Figure is an article of clothing ('dressing') and in contexts where there is deliberate loss of control over the Figure ('throwing'). Otherwise, the full transitive construction is used. Examples (114) and (115) demonstrate the minimal transitive constructions in a placement description and a removal description, respectively.

(114)	<i>il</i>	<i>porte</i>	<i>un</i>	<i>bonet</i> ²⁶
	3S	wear	INDEF.DET	hat
	'He puts on a hat.'			

FB1 BRI161015CK1 PP 25

Source-oriented verbs occur in minimal transitive constructions among a wider set of removal events, unlike the minimal transitive constructions for placement where they are generally restricted to the two contexts of 'dressing' and 'throwing'. Yet the minimal transitive constructions for removal events are not necessarily the dominant (or more frequently used) construction. Full transitive constructions encoding the Source are also used. Consistency in the minimal construction is found in the removal of clothing, where the prepositional phrase containing the Source is rarely used (see example (115)).

²⁶ Recall that I keep the transcribers' orthography of French. Only my field notes reflect standardised French spelling.

(115)	<i>elle</i>	<i>a</i>	<i>enlevé</i>	<i>le</i>	<i>chapeau</i>
	3S	AUX	remove	DEF.DET	hat
	'She removed the hat.'				

ID BRI141015CK3 PP 125

The Agent is mapped onto the subject in transitive constructions in the active voice.

Similar to Kujireray, the subject can be identified by its position in the word order. When the subject is represented overtly as a full NP, it is preceded with indefinite (*un/une* 'a, an', *de* + definite determiner 'some') or definite determiners (*le, la, les* 'the') whose agreement is controlled by the subject noun's gender and number.

When the subject is represented covertly, it surfaces as a subject pronoun as illustrated in Table 14. Subject pronouns in French carry information about the sex and number of the human participant.

Table 14 Subject pronouns in French

Form	Gloss	Form	Gloss
<i>je</i>	1S 'I'	<i>nous</i>	1P 'We'
<i>tu</i>	2S 'You'	<i>vous</i>	2P, informal 'You'
			2S, formal 'You'
<i>il/elle</i>	3S 'He/she'	<i>ils/elles</i>	3P 'They'

Consider the following examples in which the subject is represented nominally (116) and pronominally (117).

(116)	<i>une</i>	<i>femme</i>	<i>depose</i>	<i>une</i>
	INDEF.DET	woman	put	INDEF.DET
	<i>corde</i>	<i>sur</i>	<i>le</i>	<i>manguier</i>
	rope	on	DEF.DET	mango.tree

‘A woman puts a rope on the mango tree.’

BB2 BRI151015CK3 PP 27

(117)	<i>il</i>	<i>a</i>	<i>mis</i>	<i>une</i>	<i>pomme</i>	<i>dans</i>	<i>un</i>	<i>sac</i>
	3S	AUX	put	DET	apple	in	DET	bag

‘He put an apple in a bag.’

ID BRI141015CK3 PP 12

However, descriptions provided by the speakers often did not ‘correctly’ agree the subject pronoun to the Agent’s sex. For example, if the Agent in the video was a female, speakers tended to ignore this distinction and opt for the masculine form *il* ‘he’. Even when the subject was realised overtly in a NP with a feminine definite determiner, for example, *la femme*, ‘the woman’, the corresponding subject pronoun would often be *il* ‘he’ (see example (118) below). Observations in the field also attest to this generalisation. Speakers were overall more prone to choosing the 3rd person masculine form when selecting a subject pronoun.

(118)	<i>la</i>	<i>femme</i>	<i>tient</i>	<i>une</i>	<i>bougie</i>	<i>il</i>	<i>la</i>
	DEF.DET	woman	holds	INDEF.DET	candle	3S	PN
	<i>fait</i>	<i>entrée</i>	<i>sur</i>	<i>un</i>	<i>objet</i>		
	make	enter	on	INDEF.DET	object		

‘The woman holds a candle; he enters it into an object.’

JB2 BRI121015CK3 PP 14

The generalisation of the Agent’s sex may be evidence of a crosslinguistic influence from languages of the speakers’ repertoires. For example, Joola Kujireray and other languages of the Joola cluster, Wolof, and Mandinka do not mark this gender distinction in their subject pronouns.

5.1.1.2 Full transitive construction

A full transitive construction includes two arguments and an adjunct phrase. In the active voice, the subject occurs before the verb. When expressed nominally, the object follows the verbs after which is the adjunct prepositional phrase. The thematic roles of the Goal (*sur la table* ‘on the table’), Source (*de l’arbre* ‘from the tree’), Instrument (*avec une forchette* ‘with a fork’), and Manner (*de manière couchée* ‘laying down’) can be linked to these adjunct prepositional phrases. Examples (119) and (120) demonstrate the full transitive construction in a placement description and in a removal description, respectively.

(119) *il a déposé un carton sur une étagère*
 3S AUX put INDEF.DET box on INDEF.DET shelf
 ‘He put a box on a shelf.’

IT BRI151015CK1 PP 6

(120) *elle enlève la bougie de sa place*
 3S remove DEF.DET candle LOC 3S.POSS place
 ‘She removed the candle from its place.’

PS1 BRI121015CK1 PP 114

The verb *faire* ‘do, make’ can precede a set of Path-only motion verbs such as *descendre* ‘go down’, *sortir* ‘go out’, *tomber* ‘fall’ to denote an externally caused event (see example (121)). The causation is thus encoded periphrastically.

(121) *il a fait descendre l’assiette*
 3S AUX make go.down DEF.DET-plate
sur la table
 on DEF.DET table
 ‘He took the plate off the table.’

PS1 BRI121015CK1 PP 131

Speakers demonstrated a preference to using the periphrastic construction as opposed to a simpler construction as one would observe in metropolitan French (i.e., *il descend la*

valise ‘he took down the suitcase’). Of the three main postural verbs (*s’asseoir*, ‘sit’, *se mettre debout* ‘stand’ and *se coucher*, ‘to lay down/sleep’) used to denote stative events, such as *il se couche* ‘he lies down’, the verb *coucher* can enter this periphrastic construction.

- (122) *il a fait coucher la bouteille sur la table*
 3S AUX make lay DEF.DET bottle on DEF.DET table
 ‘He laid the bottle on the table.’

OS3 BRI211015CK4 CP 28

It is not clear what the motivation is for this construction, but it is noted as a promising topic for future research.

There is variation in the order of arguments, especially in regards to the object’s position (occurring before or after the verb). In full transitive constructions in the active voice, the Figure is mapped onto the object in French. Depending on whether the object is expressed nominally or pronominally, the word order changes. When the object is represented overtly as a lexical noun, the object follows the placement or removal verb (Chenu & Jisa 2006). Example (123) illustrates this word order, where the Figure is linked to an overt lexical noun *des livres*, ‘some books’.

- (123) *elle a mis des livres sur la table*
 3S AUX put INDEF.DET books on DEF.DET table
 ‘She put some books on the table.’

ID BRI141015CK3 PP 4

When referred to overtly, the object is represented as a NP consisting of a determiner, either definite or indefinite, and the noun. The determiner is marked for number and gender agreement with the controlling noun (note the agreement of the indefinite determiner to the controlling noun *tasse* ‘cup’ in example (124)).

- (124) *elle a déposé une tasse sur la table*
 3S AUX put INDEF.DET cup on DEF.DET table
 ‘She put a cup on the table.’

IT BRI151015CK1 PP 1

But when the object is represented pronominally, it is represented as an object pronoun and precedes the core placement or removal verb as seen in the following example:

- (125) *elle le met sur le trou d'arbre*
 3S PN put on DEF.DET hole LOC.tree
 ‘S/he puts it on the hole of a tree.’

field notes 2016

The Figure in this example is *le stylo* ‘the pen’, and is linked to the direct object pronoun *le*, which precedes the main placement verb *mettre* ‘put’. Agreement of the noun’s gender and number is shown on the direct object pronoun, as shown in Table 15.

Table 15 Direct object pronouns in standard French

Gender	Example	Singular	Plural
Masculine	<i>le carton</i> ‘the box’	<i>le; l’</i> ‘it’	<i>les</i> ‘them’
Feminine	<i>la pomme</i> ‘the apple’	<i>la; l’</i> ‘it’	<i>les</i> ‘them’

However, not all speakers pay attention to ‘correct’ agreement of the direct object pronoun to its corresponding noun’s gender. Similar to the generalisation of gender in the subject pronouns, speakers of Senegalese French tend to generalise gender agreement for object pronouns and opt for the masculine form.

Speakers can also use a set of indefinite demonstrative pronouns to represent the direct object and are not marked for agreement to the noun’s gender or number. The forms are *ceci* ‘this [entity]’ for proximal referents, *cela* ‘that [entity]’ for medial/distal referents, or *ça* ‘that [entity]’ which does not mark proximity to the speaker or addressee. See example (126).

(126) *il a mis ça dans la boutique*
 3S AUX put PN in DEF.DET shop
 ‘He put it in the shop.’

field notes 2017

In full transitive constructions, the spatial relation of the Figure to the Goal or Source is linked to the preposition (Chenu & Jisa 2006). Prepositional phrases are marked with a preposition such as *sous* ‘under’, *sur* ‘on’, and *devant* ‘in front of’ which are then followed by an NP (such as *sur le mur* ‘on the wall’ and *sous la table* ‘under the table’). Other prepositions, mainly *à* ‘at/to’ and *en* ‘in’, are followed by a spatial noun and can either stand alone, or take on another prepositional phrase in the form of the structure ‘*de* + determiner + noun’. See Table 16 for examples.

Table 16 Examples of prepositions and spatial nouns

Preposition + Spatial noun	PP: <i>de</i> + DET + N (Ground)
<i>à côté</i> ‘to the side’	<i>à côté de la table</i> ‘next to the table’
<i>à l’intérieur</i> ‘inside’	<i>à l’intérieur du carton</i> ‘inside the box’
<i>en haut</i> ‘up/high up/upstairs’	<i>en haut de l’arbre</i> ‘on top of the tree’
<i>en dessous</i> ‘underneath’	<i>en dessous de la chaise</i> ‘under(neath) the chair’
<i>par terre</i> ‘on the ground’	n/a
<i>en bas</i> ‘below/on the ground’	

Par terre ‘on the ground’ and *en bas* ‘below/on the ground’ are exceptions and do not take on another prepositional phrase following the *de* + DET + N construction, but stand alone as locative expressions.

Prepositions in French encode a wide range of Spatial Relations such as containment, support, and proximity, and the majority are extended to both placement and removal events: they do not indicate the motion’s orientation. The two most commonly used prepositions are *dans* ‘in’ for features of containment and *sur* ‘on’ for features of support as well as containment. The notion of containment can be distributed across both the main verb and the preposition (see example (127)), or solely in the preposition *dans* (example (128)).

(127) *une femme entre sa main dans sa poche*
 INDEF.DET woman enter 3S.POSS hand in 3S.POSS pocket
 ‘A woman enters her hand in her pocket.’

BB2 BRI151015CK3 PP 16

(128) *elle a mis quelque chose dans un trou de l'arbre*
 3S AUX put something in DET hole LOC DEF.DET.tree
 ‘She put something in the hole of a tree.’

DD1 BRI131015CK3 PP 35

Where the previous two examples illustrate the extension of *dans* to Goal-oriented events, it also extends to Source-oriented events as seen in the following examples:

(129) *elle a enlevé une courgette dans une poche*
 3S AUX remove INDEF.DET vegetable in INDEF.DET pocket
 ‘She removed a courgette (from inside) a pocket.’

IT BRI151015CK1 PP 115

(130) *il enleve une pomme dans un carton*
 3S remove INDEF.DET apple in INDEF.DET box
 ‘He removes an apple from a box.’

IT BRI151015CK1 PP 111

The preposition *sur* carries semantically general information with regard to both the Figure and Ground’s Spatial Relation as well as the orientation of the caused motion. I describe the prepositions that extend to a wider variety of events as having more general semantics than those with a narrower extension. When the Figure is relocated and it assumes a Spatial Relation of support, such as on a table top or on the floor, the preposition *sur* ‘on’ is most often used. Example (131) shows the extension of the preposition *sur* to describe the placement of a Figure on a supportive surface.

(131) *elle a placé un carton sur la bibliotheque*

3S AUX put INDEF.DET box on DEF.DET shelf

‘She put a box on the shelf.’

ID BRI141015CK3 PP 6

Example (132) also shows the extension of *sur* to a caused motion event where the Spatial Relation is one of support, however the motion depicted is Source-oriented.

(132) *elle a pris un verre sur la table*

3S AUX take INDEF.DET glass on DEF.DET table

‘She took a glass (from) on the table.’

OS3 BRI211015CK5 PP 101

Sur carries semantically general information also in terms of the Spatial Relations between the Figure and Ground in both placement and removal events. The following examples depict placement events where the Spatial Relation is one of containment:

(133) *il a mis un pomme sur un sac*

3S AUX put INDEF.DET apple on INDEF.DET bag

‘He put an apple on a bag.’

TB1 BRI231115CK1 PP 12

(134) *il met un oignon vert sur une poche*

3S put INDEF.DET onion green on INDEF.DET pocket

‘He puts a green onion on a pocket.’

FB1 BRI161015CK1 PP 15

Example (135) illustrates its extension to removal events where the Spatial Relation is one of containment:

(135) *elle a enlevé quelque chose sur sa poche*

3S AUX remove something on 3S.POSS pocket

‘She took something (out) of her pocket.’

DD1 BRI131015CK3 PP 116

The prepositions denoting the Source are not limited to *dans* but also *sur*, *à*, *en haut*, and *à l’intérieur* (see example (136)).

(136)	<i>elle</i>	<i>a</i>	<i>enlevé</i>	<i>une</i>	<i>pomme</i>
	3S	AUX	remove	INDEF.DET	apple
	<i>en</i>	<i>haut</i>	<i>des</i>	<i>livres</i>	
	LOC	above	INDEF.DET	books	

‘She removed an apple (from) on top of the books.’

F10 BRI131015CK1 PP 51

Note the following example of a removal description of the Put Project stimulus, *take an orange from a box*. The preposition *de* ‘of/from’ is used.

(137)	<i>elle</i>	<i>a</i>	<i>enlevé</i>	<i>une</i>	<i>pomme</i>	<i>du</i>	<i>carton</i>
	3S	AUX	remove	INDEF.DET	apple	LOC.DEF.DET	box

‘She removed an apple from the box.’

PS1 BRI121015CK1 PP 111

The preposition *de* is only used to denote Source events as it did not extend to any Goal-oriented events. Furthermore, speakers never used this preposition to describe removal events where the Spatial Relation was anything but containment, furthering its analysis of a semantically specific preposition.

The Goal and Source are linked to the NP or the spatial noun of the prepositional phrase. The NP can either consist of a definite or indefinite determiner and the overt noun (see example (138), or it can consist of a preposition and a spatial noun (example (139)):

(138) *elle a collé une feuille sur le mur*

3S AUX stuck INDEF.DET paper on DEF.DET wall

‘She glued a piece of paper on the wall.’

DD1 BRI131015CK3 PP 28

(139) *il dépose un livre par terre*

3S puts INDEF.DET book LOC ground

‘He puts a book on the ground.’

FB1 BRI161015CK1 PP 7

Only rarely did speakers choose to prepose the adjunct prepositional phrase to the initial position of the sentence, yet when this order appears, the locative pronoun *y* serves as a reference to the Goal or Source and is positioned directly before the verb (see example (140)).

(140) *dans un trousseau on y introduit quelque chose*

in INDEF.DET bag 3S PN introduce something

‘In a bag, someone puts something (inside) there.’

LS2 BRI141015CK1 PP 12

This order may be done for pragmatic emphasis on the Source or Goal, bringing it to focus for the addressee.

Instruments are linked onto adjunct prepositional phrases. Observations during fieldwork and naturalistic data exemplify their use.

(141)	<i>il</i>	<i>a</i>	<i>mis</i>	<i>du</i>	<i>sucré</i>	<i>dans</i>
	3S	AUX	put	INDEF.DET	sugar	in
	<i>le</i>	<i>té</i>	<i>avec</i>	<i>une</i>	<i>cuillère</i>	
	DEF.DET	tea	with	INDEF.DET	spoon	

‘He put sugar in the tea with a spoon.’

field notes 2016

Finally, information about the Figure’s orientation and the Manner in which it is relocated is typically encoded in adverbial phrases. Note example (142) which illustrates a speaker’s expression of a placement event:

(142)	<i>elle</i>	<i>a</i>	<i>déposé</i>	<i>une</i>	<i>tasse</i>	<i>sur</i>	<i>la</i>	<i>table</i>
	3S	AUX	put	DET	cup	on	DET	table

‘She put a cup on the table.’

RB5 BRI121015CK5 PP 1

Here, the Caused Motion and relocation of the Figure is encoded in the main verb, *déposer* ‘put’, which does not indicate the Figure’s configuration. In example (143), the speaker encodes information about the Figure’s configuration *outside* of the main verb in an adverbial phrase:

(143)	<i>elle</i>	<i>a</i>	<i>deposée</i>	<i>une</i>	<i>bouteille</i>	
	3S	AUX	put	INDEF.DET	bottle	
	<i>sur</i>	<i>la</i>	<i>table</i>	<i>de</i>	<i>maniere</i>	<i>coucher</i>
	on	DEF.DET	table	LOC	manner	lie

‘She put a bottle on the table laying down.’

PS1 BRI121015CK CP 28

The previous example illustrates the use of the postural verb *coucher* ‘lie’ as an adverb to describe the horizontal configuration of the Figure object, a bottle. The verb *déposer* does not encode information of the Figure’s noncanonical position and, patterning the same as example (142), only encodes caused motion and relocation.

With regards to the order of adjunct phrases, naturalistic data and discussion sessions revealed that when both the prepositional phrase encoding the Instrument and the adjunct phrase encoding information about Manner, the adjunct representing the Instrument precedes the adjunct phrase representing Manner. Full transitive constructions including all possible thematic roles linked to several adjunct prepositional phrases are less common, as most speakers prefer the full transitive construction encoding either the Instrument or Manner.

5.1.1.3 *Passive voice*

The passive voice occurs when the verb *être* directly precedes the main verb which takes the form of the past participle (so, *être* + past participle). Verbs in the passive voice must occur with at least 1 argument and can occur with several adjunct phrases, unlike

Kujireray which requires 2 arguments. Example (144) demonstrates the verb occurring with one argument whose grammatical relation is the subject. Example (145) and (146) demonstrate the verb's occurrence with one argument and an adjunct prepositional phrase, to which the Goal is linked and the Agent is linked, respectively. Example (147) illustrates that more than one adjunct prepositional phrase is allowed.

(144) *la* *canarie* *a* *été* *déposée*
 DEF.DET pot AUX be put
 ‘The pot was put [down].’

field notes 2017

(145) *la* *canarie* *a* *été* *déposée* *sur* *la* *table*
 DEF.DET pot AUX be put on DEF.DET table
 ‘The pot was put on the table.’

field notes 2017

(146) *la* *canarie* *a* *été* *mise* *par* *Patrice*
 DEF.DET pot AUX be put LOC Patrice
 ‘The pot was put by Patrice.’

field notes 2017

(147)	<i>la</i>	<i>canarie</i>	<i>a</i>	<i>été</i>	<i>déposée</i>
	DEF.DET	pot	AUX	be	put
	<i>sur</i>	<i>la</i>	<i>table</i>	<i>par</i>	<i>Patrice</i>
	on	DEF.DET	table	LOC	Patrice

‘The pot was put on the table by Patrice.’

field notes 2017

The Figure is mapped onto the subject position in the passive voice, as opposed to being linked to the object in the active voice. The Goal or Source is linked to an adjunct prepositional phrase rather than an obligatory argument as in Kujireray. The Agent can also be linked to an adjunct preposition phrase, or it can be omitted completely. When both the Goal/Source and the Agent are realised as prepositional phrases, speakers tend to position the Goal/Source before the Agent.

5.1.1.4 Di-transitive construction

In di-transitive constructions, verbs occur with 3 arguments. The grammatical relations of these 3 arguments are subject, direct object, and indirect object. The subject and objects can be represented nominally or pronominally²⁷. The following example (148) demonstrates a di-transitive construction in which all grammatical relations are expressed nominally.

²⁷ Refer to 5.1.1.1 for the surface forms of subject pronouns, and to 5.1.1.2 for the surface forms of direct object pronouns.

(148) *la fille donne la mangue à Anicet*
 DEF.DET girl give DEF.DET mango to Anicet
 ‘The girl gives the mango to Anicet.’

field notes 2017

The Agent is mapped onto the subject. The Figure is linked to the direct object followed by the animate Goal which is linked to the indirect object. Unlike di-transitive constructions in Kujireray where the direct and indirect objects can alternate positions following the verb, speakers prefer the order of direct object followed by indirect object in French (when expressed nominally). The indirect object is marked by the preposition *à* ‘to’ which precedes the indirect object. When the indirect object is represented pronominally, the indirect object pronouns presented in Table 17 are used.

Table 17 Indirect object pronouns in French

Form	Gloss	Form	Gloss
<i>me</i>	1S ‘me’	<i>nous</i>	1P ‘us’
<i>te</i>	2S ‘you’	<i>vous</i>	2P, informal ‘you’
			2S, formal ‘you’
<i>lui</i>	3S ‘him/her’	<i>leur</i>	3P ‘them’

The indirect object pronoun is positioned before the verb. See example (149) for an illustration where the 3rd person indirect object is expressed as a pronoun.

(149)	<i>il</i>	<i>lui</i>	<i>donne</i>	<i>la</i>	<i>mangue</i>
	3S	PN	give	DEF.DET	mango
	‘He gives him the mango.’				

field notes 2017

The order of thematic roles thus differs: the Agent is followed by the Goal and the Figure is linked to the direct object positioned after the verb. Another difference between the languages’ di-transitive constructions is that at least one object must be expressed nominally or omitted altogether in Kujireray, whereas in French, both objects can be expressed pronominally. When both objects are represented by pronouns in French, the indirect object pronoun precedes the direct object pronoun and is positioned directly before the verb (see example (150)). In Kujireray, however, the object pronouns are positioned post-verbally.

(150)	<i>il</i>	<i>la</i>	<i>lui</i>	<i>donne</i>
	3S	PN	PN	give
	‘He gives him it.’			

field notes 2017

The indirect object can also be expressed pronominally as the object of the preposition (example (151)).

(151) *il donne la mangue à lui*
 3S give DEF.DET mango to PN
 ‘He gives the mango to him.’

field notes 2017

Table 18 Prepositional pronouns in French

Form	Gloss	Form	Gloss
<i>moi</i>	1S	<i>nous</i>	1P
<i>toi</i>	2S	<i>vous</i>	2P, informal ‘You’
			2S, formal ‘You’
<i>lui, elle</i>	3S	<i>eux, elles</i>	3P

The passive voice pair of di-transitive constructions demonstrates a different ordering of thematic roles as the order of grammatical relations change. Example (152) illustrates a di-transitive construction in the passive voice where the participants are represented nominally.

(152) *la mangue a été donnée à Anicet par Benoit*
 DEF.DET mango AUX be give to Anicet by Benoit
 ‘The mango was given to Anicet by Benoit.’

field notes 2017

The Figure is linked to the subject and is positioned before the verb. The indirect object is followed by a prepositional phrase post-verbally. The Goal is linked to the indirect object and the Agent takes the final position as it is linked to the prepositional phrase. The subject can be expressed pronominally as described in section 5.1.1.1.

- (153) *elle a été donnée à Anicet par Benoit*
 3S AUX be give to Anicet by Benoit
 ‘It (the mango) was given to Anicet by Benoit.’

field notes 2017

Note that the Agent can be represented in the passive voice in French, in contrast to Kujireray where it is considered ungrammatical. The Goal, however, cannot be linked to the subject in French, as in Kujireray (example (154)).

- (154) **Anicet a été donné le bounouk*
 Anicet AUX be give DEF.DET palm.wine
 Intended: ‘Anicet was given the palm wine.’

field notes 2017

5.1.2 *Reciprocal construction*

Verbs can occur in reciprocal constructions where there are several participants involved. 2 arguments occur with the verb in reciprocal constructions, their grammatical relations being subject and object. An adjunct prepositional phrase is optional and, when

expressed, occurs after the object. The reciprocal or reflexive (see Table 19) pronoun is positioned directly before the verb.

Table 19 Reciprocal/reflexive pronoun

Form	Gloss	Form	Gloss
<i>me</i>	1S ‘myself’	<i>nous</i>	1P ‘ourselves’
<i>te</i>	2S ‘yourself’	<i>vous</i>	2P, informal ‘yourselves’
			2S, formal ‘yourself’
<i>se</i>	3S ‘him/herself, each other’	<i>se</i>	3P ‘themselves’

(155) *ils se sont donnés l’argent*
 3P PN be give DEF.DET-money

‘They distributed the money among themselves.’ (lit., ‘they gave themselves the money.’)

field notes 2017

The Agent and Goal are both linked to the subject position and the Figure is mapped onto the direct object NP. The reflexive pronoun *se* occurs before the auxiliary verb and main verb.

(158)	<i>l'eau</i>	<i>se</i>	<i>verse</i>
	DEF.DET-water	PN	spill
	'The water spilled.'		

field notes 2017

5.1.4 *Intransitive construction*

In intransitive constructions, verbs can occur with one argument which takes the grammatical relation as the subject. Example (159) shows the verb *tomber* 'fall' in an intransitive construction, where the Figure entity 'mango' is linked to the subject.

(159)	<i>la</i>	<i>mangue</i>	<i>tombe</i>
	DEF.DET	mango	fall
	'The mango falls.'		

field notes 2017

Placement and removal verbs are limited in this construction to *tomber* 'fall'. All other verbs occur in transitive constructions as presented throughout section 5.1.1.

5.2 **Lexical semantics of placement and removal events**

Of the 1242 descriptions of scenes depicting externally caused motion events, 1117 descriptions were analysed. 125 descriptions were excluded for a number of reasons, such as not depicting the targeted caused motion event. An example of a description that was excluded is *c'est le contraire* 'it's the opposite' in response to a removal event, as this does not describe the actions of the Agent in the video. Verb types occurring 5 times or

less across speakers, verbs that did not have at least 1/3 speaker agreement to a particular scene, and verbs that occurred in descriptions of irrelevant events were identified and removed from the lexical semantic analysis. 16 verb types were included in the final analysis and are listed below, along with their frequencies used and the number of caused motion scenes they extended to.

Table 20 Overview of verb types, tokens, and extensions (French)

Verb Type	Tokens	# of Scenes
<i>enlever</i> ‘remove’	181	15
<i>mettre</i> ‘put’	145	15
<i>déposer</i> ‘put’	104	10
<i>prendre</i> ‘take’	65	8
<i>verser</i> ‘pour’	62	4
<i>porter</i> ‘wear’	47	3
<i>jeter</i> ‘throw’	25	2
<i>tomber</i> ‘fall’	25	2
<i>donner</i> ‘give’	16	2
<i>renverser</i> ‘turn over’	18	2
<i>sortir</i> ‘go out’	6	1
<i>ramasser</i> ‘pick up’	14	1
<i>déplacer</i> ‘move, relocate from’	7	1
<i>coller</i> ‘stick’	10	1
<i>decoller</i> ‘unstick’	7	1
<i>pousser</i> ‘push’	8	1

The verbs *enlever* ‘remove’ and *mettre* ‘put’ were extended to the widest range of scenes ($n = 15$ each), with *enlever* ‘remove’ being most frequently used verb type among

speakers ($n = 181$). 6 verb types were semantically specific as they extended to only 1 placement or removal event each.

Similar to the semantics of Kujireray verb types, the lexical semantics of French verbs neatly divide placement and removal events. Table 21 displays the verb types that extend to Goal-oriented (placement) events, and Table 22 shows those that extend to Source-oriented events (removal).

Table 21 French verb types and tokens and their extensions to events (placement)

Events	Verbs									
	mettre	déposer	verser	porter	jeter	tomber	renverser	donner	coller	pousser
PP 5 put fistful of rice on table	8									
PP 11 put apple in bowl	12									
PP 12 drop apple into bag	12									
PP 13 flip block off notepad into bowl	10									
PP 14 put candle into candle stand	9									
PP 15 put celery bunch into recorder case	14									
PP 16 put stone into pocket	13									
PP 17 stuff rag into car exhaust	6									
PP 19 put stone into pot of water	8									
PP 23 put hand into hole in tree	10									
PP 24 put head into bucket	10									
PP 35 put pen in hole	12									
PP 51 take apple from pile of books and move to shoe*	9									
PP 129 put suitcase out of room, while staying in room	6									
PP 50 take bag of corn from table and move to chair*	6	8								
PP 1 put cup on table		14								
PP 2 put plastic cup on table with mouth		11								
PP 3 put banana on table with long tongs		9								
PP 4 put armload of books on table		13								
PP 6 put box up on shelf		7								
PP 7 put book on floor		12								
PP 27 hang rope over tree branch		7								
CP 14 put bottle on table		13								
CP 33 put pot on table		10								
PP 20 pour liquid into container			17							
PP 21 spill water onto table when pick up glass			12							
PP 112 dump blocks out of tin			16							
PP 120 pour water out of tin			17							
PP 25 put hat on head				16						
PP 26 put boot on foot				15						
PP 33 put on coat				16						
PP 8 drop book deliberately onto floor					11					
PP 10 toss book on floor					14					
PP 9 drop book accidentally on floor						18				
PP 113 knock over bucket so blocks spill out						7				
CP 20 flip bottle on table							8			
CP 36 flip pot on table							10			
PP 22 give cup to someone								10		
PP 122 take coke can from someone								6		
PP 28 put poster on wall									10	
PP 52 push suitcase from car to tree*										8
Summary of Verb Type	145	104	62	47	25	25	18	16	10	8

$N = 10$ verb types in French were agreed upon by the majority of speakers to describe the various placement events presented in the table above. The verb types depicting these placement events include *mettre* ‘put’, *déposer* ‘put’, *verser* ‘pour’, *porter* ‘wear’, *jeter* ‘throw’, *tomber* ‘fall’, *renverser* ‘turn over’, *donner* ‘give’, *pousser* ‘push’, and *coller* ‘stick, adhere’. Of the placement verb types, *mettre* ‘put’ and *déposer* ‘put’ were the most frequently used ($n = 145$, $n = 104$, respectively) and extended to the widest set of Goal-

oriented scenes ($n = 15$ scenes for *mettre* and $n = 10$ scenes for *deposer*). Note that two verb types were used for scenes 51 *take apple from pile of books and move to shoe*, 50 *take bag of corn from table and move to chair*, and 52 *push suitcase from car to tree* – as explained later in this chapter, the stimuli present a placement and removal event and thus elicit a placement and removal verb. A second placement verb was used to describe scene 50 *take bag of corn from table and move to chair* which will be discussed further as well.

The verb *verser* ‘pour’ extended to scenes 112 and 120 which depicted a removal scene, however, similar to the verb types *e-wulen* ‘pour’ and *e-yu* ‘pour, spill’ in Kujireray, the verb appears to denote Goal-oriented motion events only. All adjunct prepositional phrases carried information about the Goal rather than the Source. See the following example of the verb *verser* ‘pour’ in response to a removal-intended scene.

(160) *elle a versée des graines par terre*
 3S AUX pour INDEF.DET seeds LOC ground
 ‘She poured some seeds on the ground.’

FB BRI211015CK3 PP 112

It instead appears that speakers interpreted the removal scene as a placement event. The verb *donner* ‘give’ was also extended to the removal scene 122 *take coke can from someone*, however this is treated solely as a placement verb as some speakers were confused by the stimulus clip.

There was less diversity among the removal verb types. $N = 6$ verb types were extended to removal scenes with the vast majority using the verb *enlever* ‘remove’. This verb type

extended to 15 removal scenes and was used a total of 181 times by speakers. The second most widely used verb type was *prendre* ‘take’ which extended to 8 different removal scenes and was used $n = 65$ times.

Table 22 French verb types and tokens and their extensions to events (removal)

Events	Verbs					
	enlever	sortir	decoller	prendre	ramasser	deplacer
PP 51 take apple from pile of books and move to shoe*				7		
PP 50 take bag of corn from table and move to chair*				9		
PP 111 take orange from box	7					
PP 114 take candle out of candle stand	14					
PP 115 take cucumber out recorder case	17					
PP 116 take stone out of pocket	10	6				
PP 117 take rag out of car exhaust	13					
PP 118 take flower out of hair	10					
PP 119 take stone out of pot of water	15					
PP 124 take head out of bucket	6					
PP 125 take off hat	17					
PP 126 take off sock	17					
PP 127 unhang rope from tree branch	12					
PP 128 take poster off wall	7		7			
PP 131 take saucer off cup	10					
PP 133 take off coat	15					
PP 135 take pen out of hole	11					
PP 130 take suitcase out of room, going out of room				7		
PP 101 take cup off table				11		
PP 102 take plastic cup off table with mouth				10		
PP 104 take armload of books off table				7		
PP 105 take handful of beans from flat surface				8		
PP 106 take box down from shelf				6		
PP 107 take magazine from floor					14	
PP 52 push suitcase from car to tree						7
Summary of Verb Type	181	6	7	65	14	7

Other verb types used that extended to removal scenes included *sortir* ‘go out, take out’, *decoller* ‘unstick’, *prendre* ‘take’, *ramasser* ‘pick up’, and *deplacer* ‘remove’. These were used in response to a smaller set of removal scenes and carry more semantically specific information about the removal event.

The following sections look at these verb types in more detail by describing the semantic information they carry. First, the placement verbs presented in Table 21 are described and illustrated with examples from the data. Next, the removal verb types shown in Table 22 are analysed with supporting examples from the data.

5.3 Lexical semantics of placement verbs

The key difference between placement and removal verbs is whether the motion and relocation of the Figure is Goal-oriented or Source-oriented. The Goal and Source are both considered the Ground: the Goal emphasising the destination of the object (*to where*), and the Source emphasising the original location of the object (*from where*). This section examines the verb types and the semantic distinctions made in Senegalese French of Goal-oriented verbs, or, verbs that indicate *to where* the object is being relocated. Here, the individual placement verb types are discussed in order from those used the most frequently and most widely-used, to the most narrowly-used verb types.

5.3.1.1 *Semantically general placement*

5.3.1.1.1 *Mettre*

The most frequently used placement verb was *mettre* ‘put’, with 145 uses across 15 stimuli. *Mettre* ‘put’ is one of the first ‘basic’ verbs acquired by children (Chenu & Jisa 2007) and is a semantically broad-grained verb with a high degree of semantic generality which can be used in a wide range of contexts and arguments (Chenu & Jisa 2006; Hickmann & Hendriks 2006; Gullberg 2011; Hickmann et al. 2011; Alferink & Gullberg 2014; Alferink 2015). Unlike other semantically specific verbs denoting placement, *mettre* ‘put’ requires other syntactic components to express placement events as the verb alone does not denote any properties of the Figure or Ground (Chenu & Jisa 2006; Alferink & Gullberg 2014).

It is analysed as a semantically general placement verb and does not carry semantic information regarding support or containment as the Figure is relocated to the Ground – it extends to both types of placement events. However, it does not extend to placement events where the resulting Spatial Relation is one of suspension. It denotes the intentional

relocation of a solid Figure entity during which the Agent has manual control over the Figure until it reaches the Goal. It is not used to denote liquid, granular, or clothing figure items nor does it describe the unintentional placement of objects. It does extend to both body parts of the Agent and separate objects as the Figure. The following example demonstrates the use of *mettre* ‘put’ to describe the placement of the Agent’s own hand.

(161)	<i>elle</i>	<i>a</i>	<i>mis</i>	<i>sa</i>	<i>main</i>	<i>sur</i>
	3S	AUX	put	3S.POSS	hand	on
	<i>le</i>	<i>trou</i>	<i>de</i>	<i>l'arbre</i>		
	DEF.DET	hole	LOC	DEF.DET-tree		

‘She put her hand on the hole of the tree.’

DD1 BRI131015CK3 PP 23

With regards to the placement of Figures to a Goal of containment, the verb does not differentiate between loose and tight fit containment, as seen in the following examples, respectively.

(162)	<i>elle</i>	<i>a</i>	<i>mis</i>	<i>une</i>	<i>pomme</i>	<i>dans</i>	<i>un</i>	<i>bol</i>
	3S	AUX	put	INDEF.DET	apple	in	INDEF.DET	bowl

‘She put an apple in a bowl.’

SB1 BRI141015CK5 PP 11

The following is an example of the verb *mettre* ‘put’ for tight fit Spatial Relations.

(163) *elle a mis un objet dans sa poche*
 3S AUX put INDEF.DET object in 3S.POSS pocket
 ‘She put an object in her pocket.’

CB4 BRI211015CK1 PP 16

It is, thus, the most semantically general placement verb elicited in by the speakers of Senegalese French and is used the most frequently among speakers, revealing its preferred use overall.

5.3.1.1.2 Déposer

The second most frequently used verb *déposer* ‘put’ was used to a lesser extent as speakers selected this verb to describe 10 placement scenes. Its semantics can be summarised as denoting the intentional relocation of a separate Figure object to a supportive surface or to one of suspension. It does not distinguish among the types of instruments used to cause the Figure’s relocation – the Agent’s manual grasp or a separate instrument can be used. All of these scenes depicted the deliberate placement of separate Figure objects onto a supportive or suspended surface. It thus carries rather semantically general information. See the following examples where the Figure is relocated to a supportive surface (164) and to one of suspension (165):

(166) *elle a déposé une tasse sur la table*
 3S AUX put INDEF.DET cup on DEF.DET table
 ‘She put a cup on the table.’

IT BRI151015CK1 PP 1

(167) *il a déposé la corde sur la branche de l'arbre*
 3S AUX put DEF.DET rope on
 DEF.DET branch LOC DEF.DET-tree
 ‘He put the rope on a tree branch.’

FB BRI211015CK3 PP 27

The verb never extended to a placement event in which the Figure was placed in the interior of the Ground. The semantics differ from those of *mettre* ‘put’ in that *mettre* is used to describe the placement of a Figure via manual grasp only, the Figure may be the Agent’s body part, and it can describe the placement of a Figure to the interior of a Goal, whereas the verb *déposer* ‘put’ does not. Similar to *mettre* ‘put’, however, is that both verbs denote intentionality in the placement of the Figure and the Agent’s control over the entity until it reaches the Goal.

5.3.1.2 *Figure-Ground relation*

5.3.1.2.1 *Coller*

Coller ‘adhere, stick’ is a semantically specific verb type that extends to only one scene in which the Figure is adhered to a flat, vertical Goal. It denotes the intentional placement of a Figure to a Goal in which the spatial relation is one of adherence. See the following example:

(168)	<i>elle</i>	<i>a</i>	<i>collé</i>	<i>une</i>	<i>feuille</i>	<i>sur</i>	<i>le</i>	<i>mur</i>
	3S	AUX	stick	INDEF.DET	leaf	LOC	DEF.DET	wall

‘She stuck a piece of paper on the wall.’

DD1 BRI131015CK3 PP 28

It was only used in response to item 28 *put poster on wall* in which the Figure, the poster, is attached to the wall without assistance from a nail, hook, pin, or other instrument.

5.3.1.3 *Figure properties and configuration*

5.3.1.3.1 *Verser*

The verb *verser* ‘pour’ carries much more semantically specific information regarding the placement event. It was used $n = 62$ times overall and extended to only 4 scenes: 20 *pour liquid into container*, 21 *spill water onto table when pick up glass*, 112 *dump blocks out of tin*, and 120 *pour water out of tin*. It denotes the intentional as well as accidental

placement of liquid and/or granular figures to a new location. The first example below demonstrates the use of the verb type to indicate the placement of a liquid Figure.

(169) *elle* *verse* *de* *l'eau*
 3S pour LOC DEF.DET-water
 dans *un* *casserole*
 in INDEF.DET pot
 ‘She pours some water into a pot.’

FB1 BRI161015CK1 PP 20

The following example illustrates the use of *verser* ‘pour’ when referring to a solid, granular entity.

(170) *il* *verse* *le* *sucre* *dans* *le* *café*
 3S pour DEF.DET sugar in DEF.DET coffee
 ‘He pours sugar into the coffee.’

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It does not specify the type of Ground to which it is moved, e.g., containment or support. It is never used to describe the placement of large, solid Figure entities such as books or fruits, but rather small, granular figures such as sand, beans, and rice or liquids such as water as seen in the example above.

5.3.1.3.2 Porter

Porter ‘wear’ is a semantically specific placement verb that denotes the deliberate placement of clothing articles onto an animate Goal, be it the Agent in a reflexive construction or a transitive construction where it is placed on a different person (to dress someone). See the following examples in which the verb *porter* ‘wear’ is used to denote clothing Figures in minimal transitive constructions.

- (171) *une* *personne* *en* *lunette* *porte* *un* *chapeau*
INDEF.DET person LOC glasses wears INDEF.DET hat
‘A person in glasses wears a hat.’

LS2 BRI141015CK1 PP 25

- (172) *il* *a* *porté* *un* *chaussure*
3S AUX wear INDEF.DET shoe
‘He put on a shoe.’

TB1 BRI231115CK1 PP 26

It is never used to denote the placement of liquid Figures or other types of solid Figures, nor does it describe the accidental placement of an article of clothing.

5.3.1.3.3 Renverser

The verb *renverser* ‘turn over’ describes the noncanonical position of Figure objects as they are relocated to the Goal. The placement of the Figure is deliberate – accidentally placed noncanonical Figures are not denoted by this verb type.

(173) *elle renverse une bouteille sur la table*

3S turn.upside.down INDEF.DET bottle on DEF.DET table

‘She puts a bottle upside down on the table.’

FB1 BRI161015CK CP 20

It was not used in any placement scenes where the Figure was placed in a canonical position, nor was it used to denote the placement of any liquid. The configuration denoted by *renverser* is typically one of being upside down, although few speakers also used it to depict the canonical position of a Figure on its side.

5.3.1.4 *Manner of placement*

5.3.1.4.1 *Jeter*

While the verbs aforementioned all denote the placement of Figures in which the Agent has control over the object until it reaches the Goal, the verb *jeter* ‘throw’ describes placement in which the Agent’s control is lost before the Figure reaches the Ground, as seen in the following example:

(174) *elle a jette un livre*

3S AUX throw INDEF.DET book

‘She threw a book.’

DD1 BRI131015CK3 PP 10

It does not, however, denote accidental placement of a Figure nor does it denote liquid Figures, only solid Figure entities. It only denotes the intentional placement of a solid Figure.

5.3.1.4.2 Tomber

Another verb which denotes the loss of control of the Figure before it reaches the Goal is *tomber* ‘fall’, which is often used in a periphrastic causative construction, as seen in the following example:

(175)	<i>il</i>	<i>fait</i>	<i>tomber</i>	<i>un</i>	<i>livre</i>
	3S	makes	fall	INDEF.DET	book
	‘He dropped a book.’				

FB1 BRI161015CK1 PP 9

Although similar to *jeter* ‘throw’ which describes the loss of control over the Figure, a key difference between the semantics of these verbs is that *tomber* ‘fall’ does not denote the intentionality of the motion, rather, accidental relocation only. It extends to scenes 9 *drop book accidentally onto floor* and 113 *knock over bucket so blocks spill out* in which the Agent relocates the Figure accidentally.

5.3.1.4.3 Pousser

The verb *pousser* ‘push’ carries semantic information denoting the Agent’s movement with the Figure until the Figure reaches its final Goal. It never extended to scenes where the Agent lost control over the Figure before it reached the Goal, even among naturalistic

data. See the following example in response to a scene where the Agent pushes a suitcase to a post.

(176)	<i>un</i>	<i>homme</i>	<i>vient</i>	<i>de</i>	<i>pousser</i>	<i>son</i>
	INDEF.DET	man	come	LOC	push	3POSS
	<i>sac</i>	<i>dans</i>	<i>un</i>	<i>poteau</i>		
	bag	in	INDEF.DET	post		
	‘A man just pushed his bag (in)to a post.’					

BB2 BRI151015CK3 PP 52

In this example, a man has full manual control of the suitcase until reaching the post. As this verb did not extend to other scene types, it is considered a semantically specific placement verb.

5.3.1.5 Animacy

5.3.1.5.1 Donner

The verb *donner* ‘give’ is analysed as a Goal-oriented verb despite its extension to scene 122 *take coke can from someone*. As explained earlier in this chapter, it appears that speakers misinterpreted the stimulus for a placement event given discussions with the speakers afterwards as well as participant observation data.

(177) *une femme donne un tasse a son ami*
 INDEF.DET woman give INDEF.DET cup to 3POSS friend
 ‘A woman gives a cup to her friend.’

LS2 BRI141015CK1 PP 22

As such, the verb describes the placement of a Figure entity between an animate Agent and animate Goal. All Figure types are applicable to the verb’s semantics (i.e., liquids, solid figures, clothing articles), as long as an animate Ground is receiving the Figure. There is manual control over the Figure until the receiver has the entity in their possession.

5.3.2 *Summary of Senegalese French placement verbs*

The two most semantically general verb types, *mettre* ‘put’ and *déposer* ‘put’ were also the most frequently used verb types among the stimuli and were often found in participant observation when speaking French. *Mettre* ‘put’, similar to metropolitan French, carries the widest range of extensions as it denotes the placement of both the Agent’s own body parts as well as separate objects to supportive and containment Goals. *Déposer* ‘put’, on the other hand, did not extend to placement events where the Figure was placed in the interior of the Goal, but did also extend to Goals of supportive surfaces as well as those of suspension.

There were more specific distinctions made, as well. One verb type that was very specific to the Spatial Relation of the Figure and Ground was *coller* ‘stick/adhere’, which extended to only one placement event that denoted the intentional placement of a Figure via adhesion. Liquid and small granular Figure types were categorised by the verb type *verser* ‘pour’, which is used for both intentional and accidental placement of these Figure

types. Other semantic distinctions made were clothing items, indicated by a separate verb *porter* ‘wear’, that depicted a wide range of clothing types from belts to hats to larger articles of clothing such as shirts and pants. The verb *renverser* ‘turn upside down’ denotes noncanonical configurations of the Figure, in particular to items that were flipped upside down rather than on their sides, although the latter configuration did occur among some naturalistic data.

Speakers in Senegalese French pay attention to the loss of control over the Figure before it reaches the Goal, both intentional and accidental, as seen in verb types *tomber* ‘fall’ and *jeter* ‘throw’. The verb *pousser* was more specific in that it denoted the intentional placement where the Agent does not relinquish its control of the Figure until it reaches its destination. Finally, the exchange of an item between people was depicted by the verb *donner* ‘give’. This verb type is treated as a placement verb as the information linked to adjunct prepositional phrases were that of the Goal entity, or the receiver of the item.

5.4 Lexical semantics of removal verbs

This section provides an overview of the lexical semantics that removal verb types carry in Senegalese French. The verbs elicited from the staged communicative data are described with examples from the data set. Overall, there were fewer verb types used to denote removal events ($n = 6$) than there were describing placement events ($n = 10$), aligning with the findings of Kopecka and Narasimhan (2012) of the asymmetrical patterns between the two caused motion orientations.

Certain verb types were used much more frequently than others. These were *enlever* ‘remove’ and *prendre* ‘take’, the former extending to $n = 15$ event types and the latter extending to $n = 8$ event types. These frequently used verb types will be discussed first followed by a description of the semantics carried by the lesser used removal verb types.

5.4.1.1 *Semantically general removal*

5.4.1.1.1 **Enlever**

The verb *enlever* ‘remove’ was the most widely used Source-oriented verb as it extended to 15 different removal scenes and was used 181 times, the most frequently among removal verbs. It is a semantically general verb as it denotes the intentional removal of a range of Figure types: clothing, the Agent’s body parts, and separate objects. The following example demonstrates the use of the verb *enlever* ‘remove’ to denote the removal of the Agent’s hand.

(178) *elle enleve sa main dans le trou*
3S removes 3S.POSS hand in DEF.DET hole
‘She removes her hand from the hole.’

FB1 BRI161015CK1 PP 124

Furthermore, it denotes the removal of Figure items from a various set of Source types, including supportive surfaces, containment, and suspension. It does not, however, denote the removal of a Figure where the Agent moves with the object. A more specific verb type denotes this event.

5.4.1.2 *Figure-Ground relations*

5.4.1.2.1 **Prendre**

The second most frequently used removal verb was *prendre* ‘take’ which was used in response to 8 different removal scenes for a frequency of $n = 65$ uses. It can be

summarised as the intentional removal of a separate Figure item from a flat, supportive surface, as seen in the following example.

- (179) *elle a pris un verre sur la table*
 3S AUX take INDEF.DET glass on DEF.DET table
 ‘She took a glass (from) on the table.’

OS3 BRI211015CK5 PP 101

It is not used to denote the removal of Figure objects from Sources of containment.

Unlike the semantics of *enlever* ‘remove’, it can extend to removal scenes where the Agent moves with the Figure from the Source until its new location, such as event 130 *take suitcase out of room, going out of room* and 104 *take armload of books off table*. It did not extend to any of the scenes described by the verb type *enlever* ‘remove’, and as such, they can be seen as carrying contrastive semantic information. *Prendre* ‘take’ is not used to denote the removal of clothing articles, one’s own body part, for example, unlike *enlever* ‘remove’.

5.4.1.2.2 Sortir

Sortir ‘go out, take out’ is a Source-oriented verb that carries specifically semantic information regarding the type of Source, which is always a type of container. While 6 speakers agreed upon its use when describing item 116 *take stone out of pocket*, follow up discussions revealed that it could be extended to other Source-oriented scenes from which the Figure was contained at the Source. See the following example:

(180) *elle sort de l'argent dans sa poche*
 3S take.out LOC DEF.DET-money in 3POSS pocket
 ‘She takes money out of her pocket.’

FBI BRI161015CK1 PP 116

It was not, however, extended to any removal scenes where the Spatial Relation was one of supportive qualities, such as a table or shelf. It can be considered as a more specific subcategory to *enlever* ‘remove’ which was also used to describe the removal of Figure types from a Source of containment. *Sortir* ‘take out’ did not extend to scenes depicting liquid or granular items, nor did it describe the removal of the Agent’s body parts or clothing items.

5.4.1.2.3 Ramasser

Speakers further distinguish removal events based on the vertical level at which the Figure is located at the Source. $N = 14$ speakers chose the verb *ramasser* ‘pick up’ to denote the removal event depicted in scene 107 *take magazine from floor* in which the Agent bends over to pick up a magazine which is on the ground. This verb type did not extend to any other removal scenes. Its semantics indicate the intentional, manual removal of a Figure from a low-lying Source, such as the ground, as seen in the following example:

(181) *je vois un femme qui ramasse un*
 1S see INDEF.DET woman PN pick.up INDEF.DET
livre par terre

book LOC ground

‘I see a woman who picks up a book on the ground.’

JB2 BRI121015CK3 PP 107

The verb itself does not indicate the use of Instruments in the Figure’s removal – if an instrument other than the Agent’s hand is used to remove the Figure, it is linked to an adjunct prepositional phrase:

(182) *tu* *peux* *ramasser* *les* *graines* *avec* *les*
 2S can pick.up DEF.DET seeds with DEF.DET

 seaux

 buckets

‘You can pick up the seeds with the buckets.’

field notes

Here, the information expressed in the prepositional phrase refers to an instrument used to collect seeds that had accidentally spilt on the ground. It therefore appears that the verb *ramasser* ‘pick up’ indicates the manual removal of a Figure unless otherwise specified in an adjunct phrase. The verb was never extended to scenes where the Figure was at a mid to high level in relation to the Agent – the Figure being removed was always at a location that required the Agent to bend over to remove the Figure.

5.4.1.2.4 Decoller

The placement verb *coller* ‘stick, adhere’ has a lexical opposite *decoller* ‘unstick’. It is a Source-oriented verb that carries semantically specific information about the Spatial

Relation from which it is removed, that is, being adhered to a Source. The example below shows the use of the verb *decoller* ‘unstick’ to describe the removal of a Figure which was adhered to a wall.

(183)	<i>elle</i>	<i>a</i>	<i>decolée</i>	<i>la</i>	<i>photo</i>
	3S	AUX	unstick	DEF.DET	photo
	‘She unstuck the photo.’				

RB5 BRI121015CK5 PP 128

It cannot be extended to other removal scenes where a different Spatial Relation is depicted, such as support or containment. It occurred in response to this stimulus and was used 7 times by speakers.

5.4.1.3 *Manner of removal*

5.4.1.3.1 **Deplacer**

The verb *deplacer* ‘move, relocate (from)’ extends to scene 52 *push suitcase from car to tree*, where the Agent pushes a suitcase across the ground from a car to a tree, depicting the Agent moving with the Figure. The verb type was used $n = 7$ times overall. Analysis of the verb *deplacer* reveals that it denotes the Source-oriented motion rather than the Goal-oriented motion portrayed in the stimulus. Note the following example:

(184)	<i>il</i>	<i>fait</i>	<i>deplacer</i>	<i>la</i>	<i>valise</i>	<i>de</i>	<i>la</i>	<i>voiture</i>
	3S	CAUS	move	DEF.DET	suitcase	LOC	DEF.DET	car
	<i>et</i>	<i>l'</i>	<i>a</i>	<i>mis</i>	<i>pres</i>	<i>de</i>	<i>l'</i>	<i>arbre</i>
	and	PN	AUX	put	near	LOC	DEF.DET	tree

‘He moved the suitcase from the car.’

DD1 BRI131015CK PP 52

The information linked to the adjunct prepositional phrase in the preceding example expresses the Source of the event, thus indicating that the verb carries Source-oriented motion rather than Goal-oriented motion. The Goal-oriented motion of the event is expressed via the verb *mettre* ‘put’. *Deplacer* ‘move, relocate (from)’ was never found in a construction where the semantic information linked to the adjunct phrase indicated the Goal.

5.4.2 Summary of Senegalese French removal verbs

Two widely-used verb types, *enlever* ‘remove’ and *prendre* ‘take’ were the most frequently used verbs among removal events. *Enlever* ‘remove’ is used to denote a wide range of removal scenes and does not distinguish among Figure types such as clothing, separate solid objects, or the Agent’s body parts. Furthermore, it extends to describe the removal of Figures from both supportive and containment Source types, unlike *prendre* ‘take’ which only occurs when describing removal events from a supportive surface. Both verb types indicate the intentional removal of a solid Figure from the Source. *Sortir* ‘take out’ overlaps with the verb *enlever* ‘remove’ by subcategorising the removal of Figure types from an area of containment.

Other semantic distinctions made among removal events in Senegalese French are types of Spatial Relations such as adherence (*decoller* ‘unstick’), the level at which the Figure is located at the Source (*ramasser* ‘pick up’) and whether or not the Agent moves with the Figure from its Source (*deplacer* ‘move’). There are overall fewer verb types denoting removal events in Senegalese French than there are to denote placement events, aligning with the asymmetry of externally caused motion events.

5.5 Conclusion

This chapter provided an overview of the main morphosyntactic elements of placement and removal events in Senegalese French. It demonstrated how semantic components of placement and removal are mapped onto the syntactic constituents based on speech descriptions from 18 multilingual speakers. The main predicating element, the verb, produced the most variation according to various features of placement and removal contexts. As such, the lexical semantics of the verbs were explored to understand where speakers make semantic distinctions. The most evident distinctions were found between placement and removal events themselves, the former event focusing on the Goal and the latter set focusing on the Source of the Ground. Among this broad semantic divide were many fine-grained distinctions according to features based on properties of the Figure, types of Spatial Relations, and positions of the Figure object.

There was little syntactic variation among placement and removal events in Senegalese French. Most descriptions adhere to the same order and construction that encodes the subject NP, the predicate, and adjunct prepositional phrase.

Although there seems to be little difference in placement and removal construction types between Senegalese French and metropolitan French, there are key differences with regards to the use of certain surface forms of grammatical relations and some lexical

semantics. These differences between Senegalese French and metropolitan French may be due to linguistic influences from languages spoken in the speakers' repertoires.

Senegalese French differs from metropolitan French in the way human entities' sex is represented in subject pronoun agreement as well as how in objects agree with their respective determiners' gender. When speakers were asked in discussion sessions about their metalinguistic awareness of this discrepancy, several speakers responded that it was not an important aspect of the language, given that addressees understand the meaning regardless of gender agreement. As described in chapter 4, neither Kujireray nor any of the languages of the Atlantic and Mande families encode gender in subject pronouns. The pronoun *na-* is used to denote any singular animate subject entity, male or female. I suggest that this generalisation is due to crosslinguistic influences from other languages spoken in their repertoires. The use of prepositions such as *dans* 'in' and *sur* 'on' to describe the Source in removal descriptions has not been noted in any literature of metropolitan French. It is again possible that the use of prepositions, especially *dans* 'in' and *sur* 'on' are due to crosslinguistic influences from Joola languages, as the preposition *ni* 'in/on' can be used for both Goal and Source descriptions (Watson 2015). Moreover, as *dans* 'in' and *sur* 'on' were the main prepositions used for describing the Spatial Relation in removal events, and *ni* 'in/on' encodes both support and containment and thus carries semantically general information, the possibility of a crosslinguistic influence here is very plausible.

Among placement descriptions, the verbs *mettre* 'put' and *déposer* 'put' were used the most frequently and among the most placement contexts. However, the two verb types carry their own semantic distinctions.

Déposer ‘put’ was preferred for placement events where the Figure is placed on a supportive surface, such as a branch, a table, or the floor. *Mettre* ‘put’ assumes features of containment, such as a box, a bag, or a hole in a tree as well support. It is also applied for when the Figure is the Agent’s body part, such as a hand or one’s head, similar to Kujireray’s *e-bañ* ‘put’ and *e-kan* ‘make, do, enter’ for body parts and separate objects.

The main removal verbs were *enlever* ‘remove’ and *prendre* ‘take’. Again, these verb types were used for the majority of removal events and were the most frequent verb types used. Yet despite their widespread use, the verb types carry semantic distinctions.

In French, the semantic divisions in placement events were more fine-grained than those among removal events. Lexical semantics of placement verbs correspond to properties of the Figure, such as clothing items (*porter* ‘wear’), liquids (*verser* ‘pour’), and granular objects (*verser* ‘pour’). They also depend on whether the Ground is an animate entity (i.e., a person) in which the verbs *donner* ‘give’ is used, the configuration of a Figure object (*renverser* ‘turn over’), and the deliberate or accidental intention of relocating the object (*jeter* ‘throw’ and *faire tomber* ‘make fall’).

Of course, this research holds some limitations – not all the stimuli used depict events that occur in one’s daily life in the Casamance, such as putting one’s head into a bucket.

Likewise, not all events that occur in the Casamance were depicted in the stimuli. Corpus data, observed communicative events as well as elicitation sessions addressed several of these limitations. For example, there is not verb in particular for putting a baby on one’s back, as there is in Kujireray (*e-gut*), rather, speakers use the verb *mettre* ‘put’.

Some descriptions were excluded from the analysis as again, the stimuli were not clear or the participants produced stative constructions or simple NP (i.e., *une bouteille sur la*

table ‘a bottle on the table’). Some participants were prompted by the research assistant to describe the scene again for clarity, while other descriptions went unnoticed.

Nevertheless, the data collected and analysed provide an initial understanding of the treatment of the placement and removal domain in Senegalese French. The findings reveal some discrepancies between Senegalese French and metropolitan French which offer a foundation for further crosslinguistic research in this semantic domain.

6 Multimodal expression of placement

As discussed in chapter 2, research observing multilinguals has revealed that languages are not discrete entities in one's mind, but that they interact – the L1 bears crosslinguistic influences on the L2, the L2 bears influence on the L1. In bilingual speakers' speech, it appears that speakers drop fine-grained language-particular semantic information and converge to a more general expression (Berthele 2012; Alferink & Gullberg 2014; Alferink 2015). In this chapter, I look to identify the pattern that emerges from multilingual speakers who know and use a wider variety of languages in their repertoires by observing the information expressed in their speech and gestures. In order to provide a complete description and analysis of how multilingual speakers express placement events, this chapter presents three main objectives – first, to compare the way multilingual speakers express these events in two languages of their repertoires, Kujireray and Senegalese French, focusing on the verbs' semantic distinctions, second, to observe and describe speakers' co-speech gestures in the two target languages, and finally, to understand the characteristics of their overall expressions (i.e., keeping semantically specific information or dropping specific information).

6.1 A semantic comparison of the placement and removal domain

I first provide an overview of the most frequently used construction types to express placement in Kujireray and French and highlight similarities and differences between them. Next, I present the number of verb types used in Kujireray and French to denote these caused motion events, then dive deeper to compare semantic distinctions and discuss conceptual overlap between the languages within this domain.

Both Kujireray and Senegalese French use a range of transitive constructions: minimal, full, a passive voice, and a di-transitive construction. In both languages, the Agent is

always expressed except for in the passive voice in Kujireray. The caused motion is always linked to the main verb, and the Spatial Relation of the Figure and Ground is nearly always linked to an adposition. Figures are linked to nouns or pronouns, and the Ground is most often expressed in an adjunct prepositional phrase. Other construction types noted were reciprocal constructions, reflexive, and intransitive. Intransitive constructions, in both languages, were often used to describe the accidental placement or removal of an object.

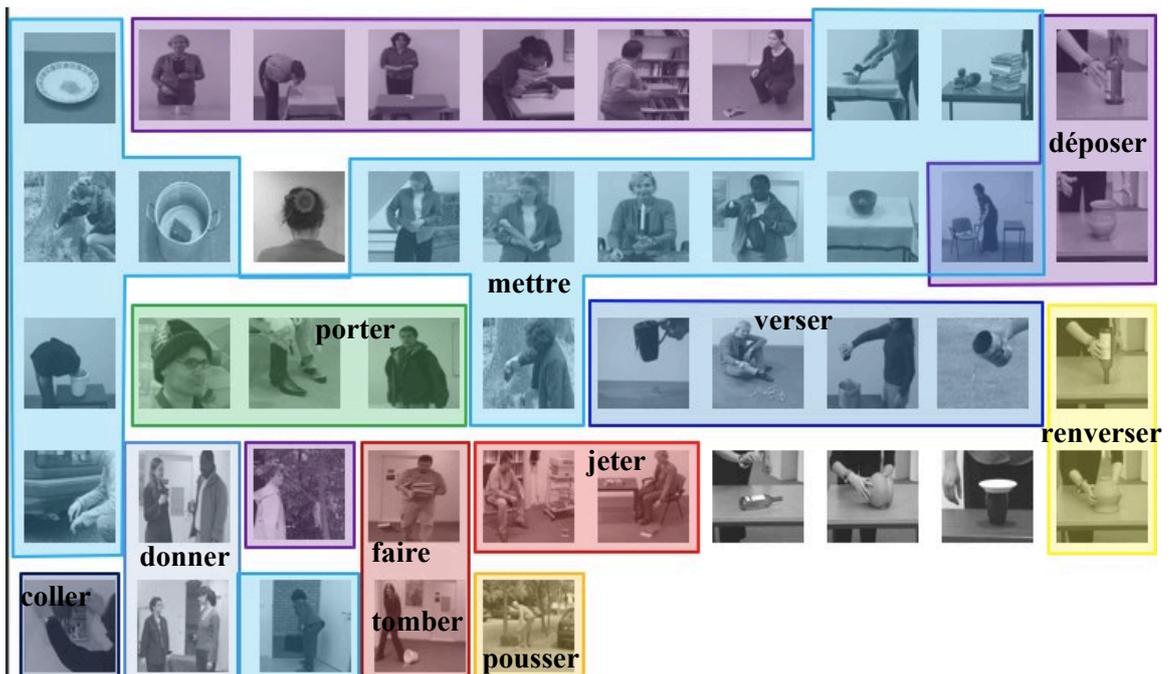
Differences among the argument structures between the languages were few. The passive voice in Kujireray is expressed *without* information of the Agent linked to any grammatical part, contrasting from French where the Agent can be linked to an adjunct prepositional phrase. Finally, the way in which clothing articles are encoded varies between the languages. In Kujireray, the verb *e-kan* enters a reflexive construction with the suffixing of *-o*. In French, clothing items are most often found in a minimal transitive construction where the Ground (the person's body) is not expressed. Looking more closely at other information expressing among these constructions, however, reveal the semantic encoding of noun class paradigms in Kujireray where in French, this information is absent.

Overall, the languages pattern similarly in the way they encode placement and removal information in constructions. This allows for a neat comparison of the two languages as the linking of the caused motion, Agent, Figure, Ground, and Spatial Relation are parallel across the languages and constructions.

Here I look at the semantics carried by the language-specific verb types. An overarching similarity between the languages among the expression of externally caused motion events is the distinctions made between Goal-oriented (placement) and Source-oriented

(removal) events. Table 23 and Table 24 represent the semantic distinctions made between languages according to event type. 13 verb types were used in Kujireray to denote placement events, and 10 verb types were used in French to denote placement events. 9 verb types were used to express removal events in Kujireray, and 6 verb types expressed removal events in French. In both languages, there were more placement verb types agreed upon by a significant portion of speakers than there were removal verb types. Let us first look at the distinctions made among placement verb types in Kujireray and in French and observe the semantic overlaps of the domain.

Table 23 Kujireray (above panel) and French (lower panel) placement verb distinctions



The most semantically general verb types and the most frequently used verb types in Kujireray are *e-bañ* ‘put’ and *e-kan* ‘make, do, enter’, where in French, these are *mettre* ‘put’ and *déposer* ‘put’. These placement verb types will be discussed first.

E-bañ ‘put’ extended to 13 events and was used a total of $n = 167$ times. *Déposer* ‘put’ extended to 10 different scenes and was used an overall of $n = 104$ times among speakers’ descriptions. The verb types overlapped in the majority of their extensions ($n = 9$): they overlap in their semantics in that they both denote the intentional placement of a solid Figure – never a clothing item or the Agent’s body part - to a supportive surface via the Agent’s hand or another instrument. However, where they differ is that *e-bañ* ‘put’ also extends to scenes where the Spatial Relation is one of containment, and *déposer* ‘put’ can extend to placement events where the relation is one of suspension.

The verb types *e-kan* ‘make, do, enter’ and *mettre* ‘put’, also shared a vast majority of scene extensions. *E-kan* ‘make, do, enter’ extended to 13 scenes for a total of $n = 126$ times, and *mettre* ‘put’ was used for $n = 145$ descriptions across 15 stimuli in French. Of these, they overlapped in 9 scenes. Both verb types carry the semantics of intentional and controlled placement of either the Agent’s body part of a separate Figure to a Ground of containment. Thus, these verb types differ from the previously noted pair *e-bañ* ‘put’ and *déposer* ‘put’ as they also extend to scenes where the Figure is the Agent’s body part and they both clearly mark the entering of the figure to a ground of containment. However, between the two verb types, they differ slightly in that *e-kan* ‘make, do, enter’ can extend to the placement of clothing, and *mettre* ‘put’ can extend to include the placement of a figure to a supportive surface. When speaking Kujireray, speakers were also prone to using a more specific verb, *e-nogen* ‘enter’ to further specify tight-fit containment. When

speaking French, the participants did not opt for a more specific verb type to further distinguish tight-fit containment.

E-yu ‘spill/pour’ extended to 4 specific scene types which patterned exactly as the semantic extensions of *verser* ‘pour’, thus revealing a very neat semantic overlap sensitive to the parameters present in these events. Both verb types distinguish the placement of liquids and granular solids, both intentional and accidental. However, Kujireray has access to a more specific verb type which speakers used frequently, which was *e-wulen* ‘pour’, to describe a smaller subset of these placement events ($n = 2$). *E-wulen* ‘pour’ carries more specific semantics in that it denotes the intentional placement of a liquid – its use never extends to an accidental placement of a liquid or any placement of a solid figure, despite its granularity. When speaking French, however, speakers did not opt to use a more specific verb type but preferred the more semantically general (relatively-speaking) *verser* ‘pour’.

Another similarity where the speakers’ languages made overlapping semantic distinctions was between *e-guben* (scene extension to $n = 3$) and *renverser* (scene extension to $n = 2$), of which they both extend to 2 of the same scenes. Both verb types denote the deliberate motion of flipping something over on its side into a noncanonical position, however *e-guben* is more general in that it can also mean ‘to cover’. Kujireray also specifies the configuration of a Figure on its side *e-filen* ‘lay’, which appears to be reserved to Figures that resemble a human entity or present themselves with significant cylindrical length.

The semantic distinction of the intentional loss of control before the Figure makes contact with the Ground are the same in both languages, as seen by the verb extensions *e-tuc* ‘throw’ and *jeter* ‘throw’. Both verb types extend to the same scenes where the Agent intentionally tosses Figures, while relinquishing his or her control over the Figure before

it touches the Ground. Neither verb extends to the placement of liquids or small granular items.

Among the placement events that portray the loss of agentive control over the Figure, the unintentional set of scenes are distinguished by the verb *e-loen* ‘drop accidentally’, extending to one scene, and *faire tomber* ‘make fall’, which extends to 2 scenes, depicting the accidental loss of control when the motion is caused by the Agent’s foot, as well as their hand. Both verb types overlap in that they carry information regarding the accidental loss of manual control over a separate Figure before it reaches the Ground, however *faire tomber* is slightly more general in that it also includes the ‘kicking’ notion of a Figure.

Both languages also distinguished among scenes where the Figure was exchanged between two people, as seen by *e-sen* ‘give’ and *donner* ‘give’ exchange between people. I assert that the verbs denote placement events, despite the speakers’ extensions to removal scenes (take coke can from someone) as speakers themselves explained their reasoning behind the choice of these verb types for these scenes as the manual exchange of the coke can in the video was not clear to them. Furthermore, observational data also points to the speakers’ rather limited use of these verb types to placement events. Indeed, both verbs denote the semantics of intentional placement of a Figure to an animate entity, showing full control over the Figure until it is received by the other person.

A final overlapping distinction made among the verb types dealt with the adhesion of a Figure to a flat surface by means of contact. The verbs *e-taf* ‘stick’ and *coller* ‘stick’ both extend to the same placement event *put poster on wall* where the poster was adhered to the flat wall surface without any instrument used in its joining.

There were a handful of verb types that do not appear to have semantic equivalents in the other language. These distinctions are language-specific. A distinction made in Kujireray is the suspension of figures as seen in the verb type *e-rak* ‘hang’ which extends to one scene where a rope is hung over a branch. Another language-specific distinction is *e-tik* ‘stuff’, where a flexible Figure is fit tightly into a contained ground. In French, speakers make the distinction of Goal-oriented caused motion where the Agent moves with the Figure, as denoted by the verb *pousser*. Another distinction made in French and not in Kujireray is the placement of clothing articles via the verb *porter*.

Core semantic distinctions made and shared among the languages can be summarised as follows. Both languages have access to semantically general verb types which are used the most frequently to describe the intentional placement of various Figure types to either supportive Grounds or ones of containment. Both languages use specific verb types to denote the accidental and/or intentional placement of liquids or granular items, various configurations of the Figure with relation to the Ground, degrees of loss of control over the Figure, adhesion, and finally, exchanges of Figure items between two people. Overall, Kujireray speakers demonstrate the use of more semantically specific verb types that can be used as subcategories to broader semantic distinctions, or separate distinctions from French. Implications of the semantic domain of placement events for the multilingual lexicon are discussed in further detail in chapter 7.

Here, the distinctions made by speakers in Kujireray and French when describing removal events are compared. Table 24 below illustrates the semantic distinctions made by Kujireray on the left, and French on the right.

Table 24 Kujireray (left) and French (right) removal verb distinctions/extensions



E-puren ‘remove’ extends to $n = 19$ scenes and *enlever* ‘remove’ extends to $n = 15$ scenes, of which they overlap in 15 scenes. Both verb types denote the intentional removal of a separate Figure, the Agent’s body part, or clothing items from either a supportive or containment relation. *E-puren* ‘remove’ is slightly more semantically general as it extends to scenes where the Agent moves with the Figure as well as to those where the Agent does not move with the Figure during its removal. *Enlever* ‘remove’, however, does not denote these semantics and is thus slightly more restrictive in its semantic extensions. When speaking French, participants agreed upon the use of *sortir* ‘take out’ for the removal of figures from a ground showing containment features. Speakers were also more careful to denote the removal of the poster from the wall by using the verb *decoller* ‘unstick’, thus revealing a tendency to be more semantically specific via use of their removal verb subtypes.

Another pair of verbs sharing similar semantics were *e-ɲar* ‘take’ ($n = 7$) and *prendre* ‘take’ ($n = 8$), overlap with 6 scenes in total. Both verb types denote the intentional removal of separate, non-clothing items from supportive surfaces or from an animate entity. However, neither are used to illustrate the removal of a Figure from a Source of containment. A difference between the two verb types is that *e-ɲar* ‘take’ never implies the removal of a Figure via means of a body part other than the Agent’s hand or another instrument, whereas *prendre* ‘take’ extends to removal scenes where the Agent’s mouth is used as an instrument.

The verb types *e-faken* in Kujireray and *deplacer* in French both extend to the scene where the Agent moves with a Figure to intentionally remove it. Neither extend to the removal of liquids or other Figure types. Information about the Source is linked to the adjunct prepositional phrase in both languages.

Finally, the removal pair *e-tot* and *ramasser* both carry semantically specific information regarding the level from which a Figure is taken. Both express the intentional removal of a Figure located at a lower level from the Agent. It appears that *e-tot* ‘pick up’ is more restricted to granular, multiple Figure types whereas *ramasser* may also extend to singular items. The verbs both indicate the removal of an item/items via the Agent’s hand.

Kujireray also makes several distinctions that are not shared with Senegalese French. For example, *e-ji* ‘take handful of’ denotes the removal of a plural Figure where the Agent grasps it with his or her hand. Speakers also used the verb *e-teb* ‘carry away’ to specify the removal of an item from a supportive surface where the Agent moves with the Figure as a subcategory of *e-ɲar* ‘take’. *E-yed* ‘lift’ is another semantically specific verb type that does not have an equivalent in French. It is used to denote the removal of a Figure from a lower level, but where the Agent’s hand is not necessarily the Instrument used to

remove it. In French, the more semantically general verb type *prendre* ‘take’ is used. Finally, the verb types *e-loŋen* and *e-bet* are used to describe the same scene extension where a bucket is knocked over by a person’s foot. The verbs denote the accidental removal of a Figure, but where *e-bet* extends to the removal by various body parts of the Agent, *e-loŋen* only describes the Agent’s removal by his or her foot.

Similar to the placement domain, both languages employ semantically general verb types to denote a wide range of removal events. The second most frequently used verb types describe the removal of items from a supportive surface. Other overlapping distinctions made among the languages are the Agent moving with the Figure to its destination and the removal of multiple Figure types from a lower level. Again, speakers engage a wider range of removal verb types to describe semantically specific events in in Kujireray than in French.

The overlap of shared semantics in this domain is discussed in chapter 7, along with a discussion of where the languages differ and its implications for the multilingual’s lexicon. The comparison of the semantics of placement and removal verb types in both languages suggests a preference for partial (non)-equivalence (Pavlenko 2009). Complete conceptual equivalence is not the dominant pattern as seen in the frequently used placement and removal verb types’ extensions to various event types. Indeed, both languages enjoy the use of language-specific verb types that denote further specifications of a more general verb type, such as *e-nogen* ‘insert’ and *e-kan* ‘make, do, enter’, or distinctions not found in the other language, such as *e-tik* ‘stuff’.

6.2 A look at multimodality

Yet a speech analysis only provides half of the picture: when speakers describe events, they express semantic information multimodally, or in other words, in speech and in

gesture (see discussion in section 2.1.2). Research reveals that bilingual speakers use semantically general gestures when discussing placement, thus demonstrating a preference for semantically general expressions across modalities (Gullberg 2009a; Alferink 2015). Given the similarities in Kujireray and French's lexical semantics in the domain of placement in that the use of postural verbs are marginal, we can expect that the multilingual speakers follow similar patterns to bilingual speakers in that they prefer expressing general information in both modalities.

On the other hand, if we find that the speakers display figure-incorporated gestures that occur with semantically general speech, findings would demonstrate that describing the nature of multilingual speakers as bearing semantically general qualities may not be an overarching characteristic applicable to all multilingual speakers.

To investigate, both staged communicative event data and observed communicative event data were collected and analysed. For the staged communicative data, 18 speakers were asked to describe placement events depicted in 17 stimuli clips in the format of a Director-Matcher task²⁸. All stimuli depict the externally caused placement by an animate Agent of various objects to a supportive surface (such as a table top).

The speech results of the staged communicative data are discussed in sections 6.2.1.1 and 6.2.1.2. The analysis of overall gesture types produced and combinations of verb types and gestures are discussed in sections 6.2.2 and 6.2.3. For the observed communicative data, approximately 1 hour and 40 minutes' worth of multilingual naturalistic data recorded on video was collected for co-speech analysis. The results of the observed communicative data are discussed in section 6.2.3.1.

²⁸ See chapter 3 for a full, detailed discussion of the methods and methodology applied, including the coding scheme used for co-speech gesture.

Analyses on the stimuli and naturalistic data were carried out on two main components of placement descriptions: placement verbs and co-speech gestures. For the staged communicative data, I discuss the number of descriptions analysed and the number of descriptions excluded and the reasons for which certain descriptions were excluded. The variety of placement verb types and respective tokens were then counted by language and presented in section 6.2.1.2. Gesture types were analysed for speakers' overall preference by language (without considering the semantics of the co-occurring speech). Finally, the combinations of gesture types that occurred with verb types were analysed in order to observe the preferred combination of semantic expressing in speech and gesture. 4 combination types were analysed:

1. semantically general speech that occurs with semantically general gestures,
2. semantically general speech that occurs with semantically specific gestures,
3. semantically specific speech that occurs with semantically general gestures, and
4. semantically specific speech that occurs with semantically specific gestures.

The chapter concludes with a discussion on the overall findings of the co-speech gesture analysis, limitations (both expected and unexpected), and the type of future research the findings of this study motivate.

6.2.1 *Speech*

6.2.1.1 *Placement descriptions*

There were 612 placement descriptions analysed in Kujireray and in French produced by the 18 multilingual speakers ($n = 306$ descriptions per language). A total of 79 descriptions (19 in Kujireray, 60 in French) were excluded as they were either descriptive

(190) *elle* *depose* *une* *bouteille* *sur* *la* *table*
 3S put DET bottle on DET table
 ‘She puts a bottle on the table.’

FBI BRI161015CK1 CP 14

As described in chapters 4 and 5, the verbs *e-ban* ‘put’ and *déposer* ‘put’ were preferred by speakers when describing placement where the resulting Spatial Relation of the Figure and Goal is one of support. It is, therefore, not surprising to find that speakers used these same verb types in response to the stimuli selected for the speech analysis.

The verbs *e-kan* ‘make, do, enter’ and *mettre* ‘put’ in Kujireray and French respectively were the second most frequently used verb types. While *mettre* ‘put’ is analysed as denoting both supportive and containment Spatial Relations of placement events, *e-kan* ‘make, do, enter’ is analysed as extending to events of containment and not to those of support as it was agreed upon by the majority of speakers (see 4.2.1.2.1). A further look into the number of speakers who used *e-kan* to describe the selected placement events for the purpose of the multimodal study reveals that only $n = 5$ speakers used this verb type. In other words, its extension to scenes of support can be attributed to a rather idiosyncratic use of the verb rather than a substantial agreement pattern regarding its semantics. It is further noted that a majority of its uses described the placement of a tablecloth – indeed, *e-kan* also denotes the placement of clothing articles, so it may be that it also describes the placement of fabrics in general. Examples (191) and (192) demonstrate the use of the verbs *e-kan* ‘make, do, enter’ and *mettre* ‘put’.

(191) *na-kan-e* *ka-bil* *ni* *e-tabul*
 3S-put-PERF CL:ka-cloth LOC CL:e.LOAN-table
 ‘S/he puts the cloth on the table.’

OS3 BRI241015CK2 CP 1

(192) *il* *met* *ça* *sur* *l'* *assiette*
 3S put PN on DEF.DET plate
 ‘He puts it on the plate.’

MB6 BRI221015CK1 PP 5

In the Kujireray speech data, other verbs such as *e-flen* ‘lie’ and *e-ilen* ‘stand’ were used, denoting the Figure’s resulting configuration (see example (193)). In French, however, no postural verbs were used in descriptions. Speakers preferred other semantically general verbs such as *placer* ‘place, put’ and *poser* ‘put’ in their responses (see example (194)).

(193) *na-il-en-e* *ka-rafa* *ni* *e-tabul*
 3S-stand-CAUS-PERF CL:ka.CYLINDRICAL.ROUND-bottle LOC CL:e.LOAN-table
 ‘S/he stands the bottle on the table.’

IT BRI091015CK4 CP 14

(194)	<i>une</i>	<i>femme</i>	<i>a</i>	<i>posé</i>	
	INDEF.DET	woman	AUX	put	
	<i>un</i>	<i>ballon</i>	<i>sur</i>	<i>une</i>	<i>table</i>
	INDEF.DET	ball	on	INDEF.DET	table
	‘A woman put a ball on a table.’				

C11 BRI211015CK6 CP 15

6.2.2 Gestures

A subset of the 18 speakers used gestures that co-occurred with their descriptions of the placement events. As such, the gesture data was analysed separately from the prior speech analysis. Not all speakers gestured at the same rate: some individuals gesture more than others, and some individuals gesture significantly less than others. To analyse the 18 speakers’ gestures without taking into account the individuals with significantly higher or lower gesture to speech rates would produce data too varied to make any conclusions from. To first find the speakers’ gesture to speech rates, I calculated the target placement verb tokens produced and transcribed in ELAN per speaker. Using the ELAN software, I tokenised the transcription tier and used the default token delimiter to count the number of word tokens. Doing so enabled a count of the word tokens produced according to the spaces transcribed. For example, the transcribed noun *muhem* ‘water’ is counted as one word token, whereas *nawulene muhem* ‘he pours water’ is counted as two. Finally, due to the variation of gesture rates per speaker, the co-speech gesture data were analysed in terms of proportion rather than by frequency.

Due to the significant variance of the speakers’ gesture to speech rates, certain outliers were removed from the gesture analyses. Speakers were excluded as their gestures were

more than 3 standard deviations away from the median (5 speaker's gesture production being too low, 2 speakers' gestures being too high). Thus, a total of 7 speakers' gesture data was not included in the analysis.

The 11 speakers of the gesture subset reported speaking a combined 15 named languages, averaging 5.6 languages per individual (range of 3–6, mode = 6). 5 of the total 15 languages belong to the Joola cluster. All reported speaking Joola Kujireray and French, and 8 speakers included Wolof in their repertoires. 3 individuals reported speaking and understanding a Portuguese-based creole. Baïnouk Gubëeher, Mandinka, Sereer, Manjak, and Mankagne were each reported by a single speaker. Other Indo-European languages reported were English and Spanish. Self-reported speech in Kujireray and French revealed slightly stronger speaking and listening skills in Kujireray than in French: on a Likert's scale of 1–5 (see section 3.3.1 for a breakdown of the questionnaire and number values), speakers reported an average of 4.18 of speaking skills in French compared to 4.36 when speaking Kujireray. Listening skills in French showed an average of 4.36 compared to 4.45 for listening skills in Kujireray. The average age of acquisition of French was 6.7 and all speakers reported learning the language in school, whereas Kujireray was reported as having been learned at an earlier age, averaging 4.7 years old, mainly learning the language at home. Language attitudes were also slightly higher for Kujireray than for French, with speakers noting an average rating of 4.8 (strong agreement) to the statement of 'I enjoy speaking Kujireray), as opposed to 4.2 for French. Speakers overall felt more confident when speaking Kujireray ($M = 4.7$) than speaking French ($M = 4.2$).

Here I describe the overall characteristics of the gestures produced by the speakers, regardless of the types of speech the gestures co-occur with²⁹. There were 803 co-speech gestures in total ($M = 73$ gestures per speaker). 66% ($n = 531$) of these co-speech gestures were figure-incorporated, whereas 34% ($n = 272$) displayed Path-only information. 61% ($n = 489$) of co-speech gestures were produced when speaking Kujireray, and the remaining 39% ($n = 314$) of co-speech gestures were produced when speaking French. (Figure 11 illustrates the breakdown of gesture type by language).

Indeed, the higher proportion of gestures produced when speaking Kujireray than when speaking French may be attributed to two observed factors: one being that of the 11 speakers included in the analysis, 7 speakers described the placement events in Kujireray first, followed by the minimum 3-day break before carrying out the same task in French. Although the order was randomised, it was found that 4 of the 7 outliers removed had carried out the tasks in French before carrying them out in Kujireray. A possible explanation is that speakers gestured less after already having carried out the first round of descriptions. The second observed factor is that some speakers kept their hands folded or crossed while describing the stimuli in French. This is not to conclude that speakers gesture less depending on their seated posture, but rather an observation of their level of comfortability in carrying out the tasks in French. When referring back to the participants' sociolinguistic questionnaires, the speakers preferred speaking Kujireray to French, had learned Kujireray at an earlier age, and had slightly stronger attitudes to Kujireray than to French. It is possible that when combining the speakers' self-reported

²⁹The combinations of gesture and the type of placement verb they occur with are discussed in 6.2.3. Gestures analysed here occurred with a range of grammatical relations including the verb, object, and adjunct prepositional phrases.

attitudes toward speaking French with the artificial setting of a staged communicative event, (while having a camera rolling), it affected their gesture production.

Overall, speakers preferred using a figure-incorporated hand shape in Kujireray as well as in French to a semantically general gesture. Figure 11 illustrates the mean proportions of gesture type produced by language.

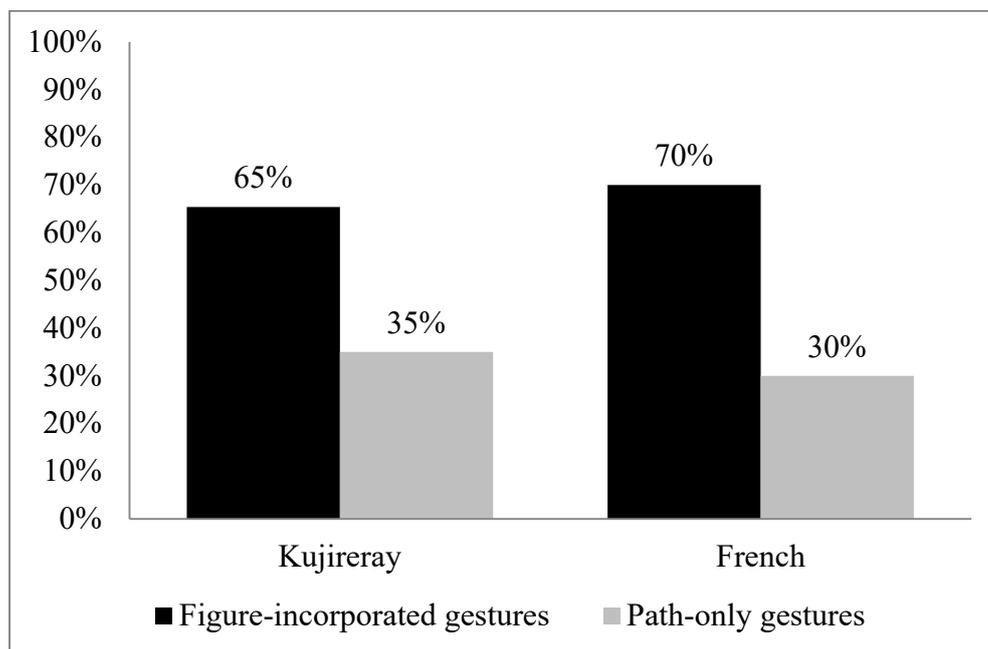


Figure 11 Mean proportion of gesture types by language ($n = 803$)

On average, $M = 65\%$ ($n = 312$) of the gestures produced in Kujireray displayed figure-incorporated information. Similarly, in French, $M = 70\%$ ($n = 219$) of gestures displayed figure-incorporated information ($SD = 12\%$ and $SD = 18\%$ ³⁰, respectively). Example

³⁰ Note that I use the standard deviation when analysing gesture rates due to individual variation of gestures. The standard deviation is provided to demonstrate that there was an even distribution of gestures across the participant sample.

(195) illustrates one of the semantically specific gesture types used when describing the selected placement stimuli in French.

(195)



Rest

elle

3S



Preparation

a

AUX



----- Stroke -----

Retraction

posé

put

une

INDEF.DET

petite

little

calebasse

pot

d'haricot

LOC-beans

'She put down a little pot of beans.'

RB5 BRI121015CK4 CP 9

(196)



Preparation

-----Stroke-----

elle

a

déposée

une bouteille sur

3S

AUX

put

INDEF.DET bottle on



Retraction

Rest

la

table

DEF.DET

table

‘She **put** a bottle on the table.’

S10 BRI081015CK CP 14

The use of a Path-only hand shape was the least preferred gesture type. An average of 35% ($n = 177$) of gestures produced when speaking Kujireray was semantically general, expressing Motion and relocation information, and an average of 30% ($n = 95$) of gestures produced in French also displayed semantically general information.

6.2.3 *Co-speech gesture combinations*

As seen in section 6.2.2, the preferred gesture type among the subset of speakers is figure-incorporated, regardless of the language spoken. Here I look at the 4 combinations of gesture type and placement verb as described in the beginning of this chapter.

The 11 speakers included in this analysis produced a total of 63 gestures ($M = 5.7$, $SD = 3.1$) that occurred with a placement verb. 47 gestures were produced in Kujireray and 16 in French.

When speaking Kujireray, an average of 27% ($n = 13$) Path-only gestures occurred with a semantically general placement verb. When speaking French, an average of 10% of Path-only gestures occurred with a semantically general placement verb ($n = 2$). Example (197) illustrates this gesture-speech combination in Kujireray.

(197)



Preparation



-----Stroke-----

na-baŋ-e

3S-put-PERF



Retraction

ka-rafa

CL:ka.CYLINDRICAL.ROUND-bottle



Rest

ni e-tabul

LOC CL:e.LOAN-table

‘S/he **puts** the bottle on the table.’

FB1 BRI091015CK CP 14

The speaker is describing the canonical placement of a bottle to a table, where it is placed in an upright position. He uses the semantically general placement verb *e-baŋ* ‘put’, which is the preferred verb type for spatial relations of support. While speaking, he extends his right hand vertically into the preparation phrase, and moves his hand in front of him and slightly on a downwards trajectory. He then retracts his hands and returns it to the resting position on his lap. There is no clear, tense form of the speaker’s hand shape to

indicate any specific information about the entity undergoing the relocation (the bottle). The speaker expresses semantically general information about the event’s Motion in both modalities.

The majority of multimodal combinations followed the pattern of figure-incorporated gestures that occurred with semantically general speech ($M = 73\%$, $n = 34$). Example (198) portrays a different speaker in Kujireray describing the same placement event, yet this speaker uses a semantically specific hand shape while using a semantically general verb.

(198)



Rest	Preparation	----- Stroke -----		Retraction	
<i>na-ŋar-lo</i>	<i>a-ju</i>	<i>a-baŋ</i>	<i>k-o</i>	<i>ni</i>	<i>e-tabul</i>
3S-take-MID	3S-go	3S- put	AGR:k-o	LOC	CL:e.LOAN-table

‘A person takes [it] and **puts** it on the table.’

LS2 BRI051015CK2 CP 14

The speaker also uses the verb *e-baŋ* ‘put’ to describe the placement of a bottle to a table, yet his gesture demonstrates information about the object being relocated. There is a change in hand shape from his resting position until the beginning of the stroke. His right hand becomes tenser as he closes his fingers to his thumb. He maintains this hand shape

throughout the gesture stroke, where he brings his hand from shoulder-height down to his waist, illustrating the path of motion as well as information about the object being moved. He retracts his hand, thus ending the gesture stroke. This combination of semantically general information in speech occurring with semantically specific information in gesture was the dominant multimodal pattern across languages.

Similarly, in French, an average of 90% ($n = 14$) figure-incorporated gestures occurred with semantically general speech. An example of the same multimodal pattern is presented in (199).

(199)



Resting



Preparation



a

AUX



Stroke

mis

put



Retraction

une

INDEF.DET



tasse

cup



sur

on

la

DEF.DET

table

table

‘He **put a cup** on the table.’

MB6 BRI221015CK1b PP 1

The speaker in example (199) describes the canonical placement of a cup onto a table. In French, he uses the verb *mettre* ‘put’ to describe the cup’s relocation and the preposition *sur* ‘on’ to denote the supportive spatial relation to the Goal. The speaker raises his right hand from its resting position into the preparation phrase, during which he tightens his hand to form a fist. The index finger protrudes slightly forward. During the stroke and aligning temporally with the placement verb *mettre* ‘put’, the right hand moves across a

downward trajectory, demonstrating the Path of motion. The hand shape changes during the retraction phase into a less tense hand shape, thus losing the gesture's form.

No gesture occurred with any semantically specific speech. This is likely due to the fact that the stimuli selected targeted semantically general verbs.

6.2.3.1 Naturalistic data

To complement the data produced from staged communicative events, data from observed communicative events such as construction and harvesting were also analysed for speech and co-speech gestures. A total of 1 hour and 38 minutes of observed data were collected, transcribed, and coded for analysis. Languages tagged by transcribers included Kujireray, French, English and Wolof.

Of the speech recorded for analysis in the observed communicative event data, there were a total of 24 placement verb tokens analysed, 15 in Kujireray, and 9 in French. Of the 25 verb tokens identified, there were 12 different verb types: 6 different verb types in Kujireray and 6 in French.

Table 26 Verb types and tokens of observed communicative data

Kujireray verb types and tokens		French verb types and tokens	
<i>e-baj</i> ‘put’	7	<i>placer</i> ‘put’	3
<i>e-ilen</i> ‘stand’	2	<i>mettre</i> ‘put’	2
<i>e-kan</i> ‘do, make, enter’	3	<i>donner</i> ‘give’	1
<i>e-nogen</i> ‘enter’	1	<i>descendre</i> ‘bring down’	1
<i>e-omen</i> ‘gather’	1	<i>amener</i> ‘carry’	1
<i>e-teb</i> ‘carry’	1	<i>remplacer</i> ‘replace’	1

The verb types used the most frequently were *e-baj* ‘put’ and *e-kan* ‘make, do, enter’ in Kujireray, and *placer* ‘put’ and *mettre* ‘put’ in French. Examples (200) and (201) demonstrate the use of these verbs in speakers’ speech.

(200) *u-kan* *ni* *e-bol*
 2S-put LOC CL:e.LOAN-bowl
 ‘Put it in the bowl.’

EB1 BRI111115CK1

(201) *on* *a* *mis* *là-bas* *la* *mèche*
 1P AUX put LOC DEF.DET net
 ‘We put the net over there.’

JP BRI111115CK

The context of the verb *e-kan* ‘do, make, enter’ in example (200) is of one man sitting and removing groundnuts from the plant stem. He tells his friend (who is behind the camera) to put the peanuts he has already gathered and to put them into a larger bowl. The verb occurs with an adjunct prepositional phrase *ni e-bol* ‘in the bowl’, denoting containment. However, the object is dropped as it was already mentioned in the prior discourse (and can be understood from the context). The verb *mettre* ‘put’ in example (201) occurs in a full transitive construction in which the adjunct prepositional phrase precedes the object, perhaps to place emphasis on the Goal.

Not all verbs were accompanied with a gesture: only 9 gestures occurred with a placement verb: 66% ($n = 6$) gestures displayed a figure-incorporated hand shape, whereas 33% ($n = 3$) gestures demonstrated a Path-only hand shape. 44% ($n = 4$) of hand shape-specific gestures occurred with a semantically general verb and 22% ($n = 2$) figure-incorporated gestures occurred with a semantically specific verb. 33% ($n = 3$) Path-only gestures occurred with semantically general verbs.

Of the observed communicative data collected of people carrying out construction projects and harvesting peanuts, the recording of making charcoal proved the most fruitful for the study of placement. Two neighbours are helping each other decide where to put logs so that the wood will burn at a slow, steady pace to make charcoal. They discuss the positioning of the logs and their placement in detail. Lexical items of both semantically specific and semantically general information were used. The postural verb *e-ilen* (with the causative morpheme suffixed) was used twice during this recording. Aligning with the description of the lexical semantics of Kujireray’s placement verbs in chapter 4, postural verbs were mainly used when the Figure entity was placed in a noncanonical position. For the task of building an oven for charcoal, it was essential that

the partners be precise in their descriptions of where to put the logs and their positioning.

Example (202) illustrates the use of the verb stem *il* ‘stand’ in a passive voice

construction by one of the speakers.

(202)



Retraction

b-o

AGR:b.OBLONG-PN



Preparation

ni

LOC



bu-il-en-i

AGR:bu.OBLONG-stand-CAUS-PASS



Stroke

me

SUBORD



Retraction

ma

thus

‘And it was stood up as such.’

JP BRI111115CK

The speakers had just described how the logs were set up originally, explaining that some were stood upright. During this description, he used a deictic gesture to indicate a pile of logs on the ground nearby. This gesture was then retracted and his hands returned to a resting position by his side. Subsequently, he used a co-occurring gesture that depicts

information about the figure's upright position while describing the placement of the logs in this passive construction, as seen in example (202).

6.3 Discussion

Here I discuss the results of the co-speech gesture analyses followed by an overview of several limitations to the study. I conclude by suggesting methods and research topics that can both address the limitations noted and further our understanding of these multilinguals' multimodal expressions.

To summarise the findings of the speech, gesture, and co-speech gesture analyses, it was found that speakers prefer expressing externally caused events by using a semantically general verb in both Kujireray and in French while expressing semantically specific information in gesture. The responses revealed that the preferred verb in Kujireray was *e-bay* 'put' and the preferred verb type in French was *déposer* 'put', neither verb encoding specific information about the Figure entity. The gesture analysis showed that speakers had a stronger tendency overall to use a figure-incorporated hand shape in both Kujireray and in French. When the combination of gesture and speech was analysed, it was found that the preferred combination was to express semantically specific information in gesture while expressing semantically general information in speech. Finally, an analysis of observed communicative data was carried out to complement the staged communicative data. The results of these data aligned with the findings from the staged communicative data: semantically general verbs were the preferred lexical choice across languages, although there were occurrences of postural verbs in Kujireray. Furthermore, speakers expressed semantically general information in speech while expressing semantically specific information in gesture.

The findings are striking for several reasons. When we consider Growth Point Theory (McNeill 1992b; 2005; McNeill & Duncan 2000; 2011), which establishes that the imagistic properties co-speech gestures combines with the information in speech to express an event, we can assert that the information provided in co-speech gestures contribute to the speakers' overall description of the event. We can conclude that multilingual speakers have a tendency to keep fine-grained semantic information about the event by means of manual gestures. This finding stands in contrast to those of related studies, which have shown that bilingual speakers express semantically similar information in speech and in gesture, and furthermore, that the information is semantically general (Alferink & Gullberg 2014; Alferink 2015): it is explained that bilingual speakers exhibit characteristics of a more general pattern than their monolingual counterparts as a result of convergence of two language-particular systems. As for the French multimodal data, it is possible that the semantic distinctions made in Kujireray and other languages of speakers' repertoires are factors of crosslinguistic influences at play – these distinctions are presented below. I, however, refrain from discussing the results of this study in terms of convergence since there are no monolinguals to whom the multilingual speakers can be compared. Instead, the results are discussed in terms of linguistic characteristics of the multilinguals' repertoires that may be the factor(s) which motivate speakers to use figure-incorporated gestures, as we know that languages are not discrete, separate systems but interact on all linguistic levels (Grosjean 1989; 1994; 2008; Cook 1992; Pavlenko & Jarvis 2002; Pavlenko 2009).

I posit two possible explanations for the multimodal pattern exhibited by speakers. As demonstrated in the literature, the use of “semi-obligatory” postural verbs among monolingual Dutch speakers is understood as the factor motivating speakers to express

similar, semantically specific information in co-occurring gestures (Gullberg 2009a; Gullberg 2011; Alferink 2015). These findings can be explained by the Thinking for Speaking hypothesis (Slobin 1996) in that the information provided in speech draws speakers' attention to certain features of the event: in the cases of monolingual speakers of postural languages such as Dutch (Gullberg 2011), figure-incorporated information is expressed in the co-occurring gestures. Following the perspective on multilingual speakers put forth by Grosjean (1982; 1989; 2008; 2010) and Cook (1991; 1992), these speakers inherently exhibit crosslinguistic influences and are indeed expected to pattern differently from monolingual French speakers. However, it would be a weak argument if claimed that the figure-incorporated gestures used by the speakers in this study were driven by the use of postural verbs in Kujireray alone, as their use is not "semi-obligatory" (Alferink & Gullberg 2014; Alferink 2015). Although preliminary analyses on Kujireray had revealed a strong use of postural verbs when describing placement events, a more detailed analysis of speakers' use of these verbs showed that their use is somewhat restricted to the placement of entities that result in noncanonical positions (such as a pot or bottle not on its base). Thus, the use of postural verbs in Kujireray is too marginal to claim that their presence in the language is the driving factor behind speakers' strong use of semantically specific gestures.

If postural verbs were to be considered at all as an explanation for this multimodal pattern, the organisation of the semantic domain of placement in other languages of speakers' repertoires would need to be investigated. Certainly, the most apparent difference between the multilingual speakers of the Lower Casamance and W.E.I.R.D. speakers is the breadth and individual diversity of their multilingual repertoires. Recall that the average set of languages reported by speakers of this study was approximately 5–

6: we can presume that each language has its own set of distinctions when describing the domain of placement events. In this study, only the systems of Kujireray and French were examined, leaving much room for future research (refer to section 6.3.2). Therefore, rather than attributing the multimodal pattern solely to the semantic distinctions made in Kujireray alone, we must consider the speakers' full linguistic repertoires and the potential of further semantic distinctions made in other languages. In sum, future research into the semantic domain of placement in other languages spoken in the region may provide more insight to potential factors influencing the multimodal pattern.

A second – and perhaps more plausible – explanation of this multimodal pattern may be due to the noun classification systems of many Joola and Bainouk languages that make distinctions based on a range of features, including size and shape (Sagna 2008; Cobbinah 2013; Watson 2015). The externally caused motion event examined in this research involved the relocation of entities of various physical properties: round objects such as pots and balls, long objects such as sticks and logs, and small, granular objects such as beans and rice. As explained in chapter 4, the nominal classification system in Kujireray can be organised according to semantic features of the referents. Furthermore, the referent is tracked through agreement patterns in the discourse. Let us consider the noun class semantics in example (203), where the speaker is describing item 112 *dump blocks out of tin*, a Source-oriented event. The speaker uses the pronoun *ende* THING to which the noun class *ba-* is prefixed, which denotes a collective number of small, round entities (Watson 2015). It thus results in the noun 'several small things'.

(203)	<i>na-yu-e</i>	<i>ba-nde</i>	<i>b-a-m-en-e</i>	<i>me</i>
	3S-spill-PERF	CL:ba.SMALL-thing	AGR:b.SMALL-REL-INACT-PERF	SUBORD
	<i>ni</i>	<i>e-kas</i>	<i>y-a-y-u</i>	
	LOC	CL:e.LOAN-cup	AGR:y.LOAN-DEF-AGR:y.LOAN-MED	

‘S/he spills some little things that were in the cup.’

DD1 BRI051015CK5 PP 112

The speaker successfully describes the removal event to his addressee by denoting the size and shape of the Figure entity via the productive noun classification system. Let us consider Slobin’s Thinking for Speaking hypothesis that suggests that the distinctions made in languages serve to “guide” speakers to “attend to certain features of events while speaking” (Slobin 1996, p.89). Given that the semantically motivated and productive noun classification system of Kujireray makes distinctions based on size and shape, could speakers be attending to these features when describing placement events? If so, it may explain why speakers use figure-incorporated hand shapes while expressing placement events, as rather than attending to referents’ posture, speakers are attending to their size and shape. Moreover, agreement marking patterns in Kujireray track the referent in discourse: consider the agreement pattern of the passive construction in example (204).

(204)	<i>fu-balon</i>	<i>fu-ban-i</i>	<i>fatiya</i>	<i>e-tabul</i>
	CL:fu.ROUND-ball	AGR:fu.ROUND-put-PASS	on	CL:e.LOAN-table

‘The ball was put on the table.’

C11 BRI241015CK6 CP 15

The noun class prefix *fu-* denotes round entities and, as the subject noun of the clause, it controls agreement patterns to other dependent lexical items, including the verb. As a result, the verb *fu-baŋ* shows agreement marking to the Figure entity's noun class prefix, *fu-baloŋ* 'ball'. Thus, due to agreement marking patterns, speakers maintain reference to the Figure entity (most notably in the passive voice construction), throughout the discourse. If the noun class distinctions made in Kujireray are robust and productive enough for speakers to attend to features of size and shape when speaking, it is plausible that their figure-incorporated gestures provide evidence for these distinctions.

To explore the possibility of a correlation between noun class semantics and gesture type production, an ad-hoc analysis was carried out³¹. This analysis examined two sets of placement descriptions in Kujireray in which one set demonstrated the use of a noun class based on size and shape semantics of the figure, whereas the second set did not. A descriptive analysis was then carried out to observe whether there was a difference in the use of specific hand shape gestures.

The data used for speech and gesture analyses carried out and presented in section 6.2.3 were used to observe patterns between the use of a noun class based on size and shape semantics and figure-incorporated gesture hand shapes. All transitive constructions were coded for whether or not the figure was classified in a size/shape noun class, or in a noun class based on other parameters (i.e., liquids). There was a total of 105 descriptions in Kujireray that used a size/shape noun class for the Figure entity, and 81 that used other noun class systems *not* based on size or shape. The 47 gestures that occurred with the placement verb in Kujireray were then correlated to the type of noun class the figure was

³¹ I am grateful for Marianne Gullberg's comments at the ISGS8 conference for carrying out this ad-hoc analysis.

categorised into. Figure 12 demonstrates the percentage of noun class type and gesture type patterns that emerged in the data.

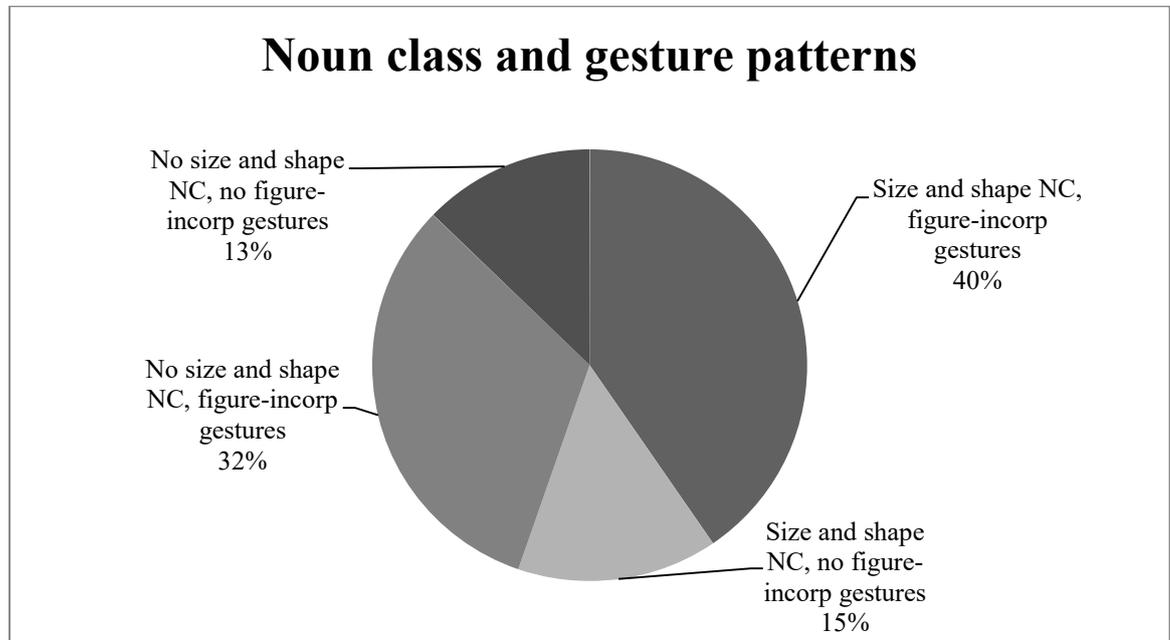


Figure 12 Noun class and gesture patterns

The majority of figure-incorporated gestures occurred with a figure classified in a size/shape noun class (40%, $n = 19$). The second most prominent pattern, however, was a figure-incorporated hand shape that occurred where there was not a noun class based on size or shape (32%, $n = 15$). Overall, the results reflect the speakers' preference to using a figure-incorporated hand shape, and suggest a possibility that the noun class semantics in Kujireray may bear an influence on this modality. Although the data set may be too small to make any strong inferences on the relation between gesture type and noun class semantics, the ad-hoc analysis reveals noteworthy findings as the majority of figure-

incorporated hand shapes analysed occurred when there was a noun class based on size or shape in the description.

Further research into the relation between co-speech gesture types and noun classification systems that distinguish among size and shape features is nevertheless crucial to advance these findings. This includes looking at a larger dataset and looking at different types of placement constructions (i.e., transitive versus intransitive). In section 6.3.2, I propose an outline for further research investigating the influence of noun class systems on speakers' multimodal patterns of caused motion events. But first, let us turn to some of the limitations of the current research and ways to address certain challenges encountered here in the next steps of this research avenue.

6.3.1 *Limitations*

The present research, methods, and findings are not without their limitations. Several challenges were presented throughout the thesis and are inherent to the nature of linguistic fieldwork: they refer to unforeseen complications such as participants leaving for other villages sooner than expected, and unpredicted effects of the tasks themselves, such as distractions with the clipboard, and simple human error. These issues were minor and readily solvable thanks to the collaborative nature of the Brinois community. Here I address some of the broader limitations of the study and consider possible solutions that should be taken into account in future research.

One limitation to the study is attributed to the small sample size of speakers. The individual and variable rate at which one gestures means that outliers must be identified and excluded from the analysis for the sake of a balanced data set, thus restricting the number of eligible participants and gestures to be analysed. A large sample size is favourable to make any inference about a speech community, as it increases the

probability of having more speakers who produce enough co-speech gestures to analyse and therefore affords more robust statistical power. For example, in the early stages of the present study, there was an initial group of 25 speakers willing to participate. However, due to the very mobile nature of the region, several participants had left the village before completing the tasks. 18 participants completed all tasks. As discussed in chapter 6, a total of 7 outliers were removed from the gesture analysis as they produced a number of gestures that deviated too far from the group's average. Thus, the gestures of only 11 speakers were analysed – nearly half of the initial sample size of 25. This is not to say that the data are useless – on the contrary it simply means that the data are too small to make any strong inferences about the multilingual population as a whole. In a large crosslinguistic survey of verb- and satellite-framed languages, Montero-Melis et al. (2017) found that a larger sample size of participants is needed due to much individual variation. I therefore refrained from applying an inferential statistical analysis and instead, opted for an approach that observes the speakers' central tendencies (i.e., mean proportions and standard deviations). For this reason, I am careful not to make strong claims on the multilingual community and the way they organise their mental lexicons. Alternatively, the discussion presents and describes the patterns that emerged from the speakers' multimodal descriptions and offers possible explanations based on typological characteristics of the speakers' repertoires. The results lay a strong foundation for further research into possible motivations for the multimodal pattern, which I outline in section 6.3.2.

To offset any unexpected influences due to the artificial nature of staged communicative events, observed communicative event data were also analysed. However, the analysis of placement verbs and co-occurring gestures in naturalistic data poses both rewarding

discoveries as well as challenges which are presented here. For example, in staged communicative events, different word orders are usually controlled for when studying co-occurring gestures and the semantic information they carry by prompting the speaker with a WH-question (i.e., *what did s/he do?*). When the word orders are not controlled for, as found in naturalistic data, the ability to compare co-speech gestures can become an obstacle. If a speaker introduces the Figure entity before the main verb is produced, the information provided in the co-occurring gesture stroke may reflect specific information about the Figure entity (Gullberg 2011, p.17). This information may be carried across the utterance during a stroke hold. When analysing the co-occurring gesture with the verb, the information provided in gesture may appear semantically specific, but in reality, is an artefact of the word order. One can imagine this by considering the sentence in English, *he took the basketball and he threw it to his friend*. A figure-incorporated gesture representing the size and shape of the basketball may be produced during the first utterance of the Figure entity *the basketball* and held throughout the gesture unit until the prepositional phrase *to his friend*. The specific information is thus carried in the gesture stroke that occurs with the verb *threw*. It is then difficult to compare this type of gesture and speech combination to an utterance of a different word order, such as SVO, *he threw the ball to his friend*. In the SVO word order example, the Figure entity has not been introduced before the main verb, therefore allowing the potential for a semantically general, Path-only gesture to occur with the verb *threw*. In the observed naturalistic data, there was a wide range of word orders that could have had an effect on the information provided in the co-speech gesture.

A second challenge to observing naturalistic data is the exclusion of many potential gestures due to factors the researcher can only do so much to control for. Several gestures

had to be excluded because the speaker was holding something and thus restricted the fully-fledged hand shape to be analysed. Other gestures could not have been included simply because the gesture was not caught on camera. Speakers recorded in naturalistic settings are more mobile than those in a staged communicative event. In one recording, for example, the speakers are building a wooden oven to make charcoal. As the structure is shoulder height, many gestures produced while the speakers were behind the oven were obstructed from the camera's view. Whenever the speakers moved toward the back of the oven, all the gestures produced were lost. Future research should take into serious consideration the use of two cameras and strategically place them to get a broader field, if such resources are available.

In sum, the main limitations of this study can be attributed to effects of a small sample size and the challenges of analysing co-speech gestures in naturalistic events.

Nevertheless, by using a descriptive approach to the analysis of these results, the findings that speakers tend to express fine-grained semantic information in co-speech gesture in both Kujireray and French provide strong motivation for further research in this topic. In section 6.3.2, I propose research that should be carried out to further our understanding of this multimodal tendency, while providing possible solutions that address the limitations described here.

6.3.2 *Further research*

The sample size and number of gestures analysed were rather small to make inferential claims on the multilingual community, and as such, a descriptive statistical approach was applied. Here, I propose several solutions addressing these limitations that must be considered for further research seeking to make stronger, inferential statements about the multilingual community and multimodal patterns. I also present ideas on how to go about

investigating the role of semantically motivated noun class systems and multilingual speakers' multimodal expressions of caused motion.

First and foremost, there is a wealth of audio and video data collected by members of the Crossroads project available for a corpus study. Languages include Kujireray, French, Wolof, Baïnounk, among others, and both staged communicative events and observed communicative events are present. From a practical perspective, a corpus study has several advantages as it requires little financial resources and saves much travel time to and from the field site. As all files are transcribed and corresponding metadata are linked, one can carry out a multi-tiered corpus search for video files and observe the co-speech gestures that occur with various placement verbs. A corpus study would supplement the naturalistic data collected in this research and provide a stronger likelihood to observe placement descriptions and co-speech gestures in naturalistic settings, potentially adding to statistical power depending on the exact nature of the research question. In addition, one may observe whether or not the multimodal pattern occurs when speaking other languages, such as Wolof and Baïnounk, and considering speakers of different linguistic repertoires, providing insight to how widespread or restricted the pattern is.

Here I propose a study to further investigate whether the semantically motivated noun class system may be a factor for speakers' tendencies to use figure-incorporated gestures. One could compare speakers of languages that *do not* have nominal classification systems based on size and shape, for example, speakers of Portuguese Creole, French, Mandinka to name a few, to speakers of languages that *do* have a nominal classification system based on size and shape, such as Joola Kujireray, Banjal, and Baïnounk Gubëeher.

Descriptions of placement events can be coded and analysed for word orders (whether the noun referent occurs before or after the main predicating element) to observe word order

effects, as it has been observed that in passive voice constructions in Kujireray, there is agreement marking on the verb's prefix. Given that speakers in the Lower Casamance region demonstrate high levels of variability among individual linguistic repertoires, it seems likely that such speaker groups can be identified and organised in such a way to highlight the contrast of noun class systems. Research of this nature will serve as a first of its kind in observing the interface of semantically motivated noun class systems and co-speech gestures.

7 Conclusion

The multimodal patterns of Senegalese multilinguals call for deeper theoretical consideration as to what we understand regarding the mental lexicon, multilingualism, and gesture theory. In particular, the results guide us in better articulating how multilinguals organise the mental lexicon and the nature of how languages interact in various directions and to varying degrees. The speech data demonstrates the semantics of verb types in both Kujireray and Senegalese French partially overlap in the domain of externally caused motion events. Language-specific distinctions were upheld by a number of verb types in both languages, and only a few verb types demonstrated complete semantic convergence. The multimodal gesture data reveals that speakers prefer to drop semantically specific information in speech, however, in their co-speech gestures, this fine-grained information is dropped. The lack of cohesion between the information expressed in gesture and that expressed in speech does not align with previous models of the gesture-speech interface which show that bilingual speakers tend to drop specific information across both modalities, thus still approximately matching their semantic expression across modalities. As the present findings are unexpected with respect to certain theories discussed in the introductory chapter of this thesis, they will therefore be discussed with such theories in mind, all within a cognitive linguistics framework.

In this chapter, I propose adaptations of previous speech and gesture models to better represent and explain the multimodal data of this research. Section 7.1 of this chapter summarises the semantic overlap between the multilinguals' Kujireray and French speech, highlighting the similarities and differences among the semantic distinctions made by language-specific verb types. The comparison of the languages' verb semantics and their conceptual convergence (and lack thereof) motivates a following theoretical

discussion on models of the multilingual mental lexicon for such speakers. I reintroduce models presented in the introduction of this thesis and detail how the present results refute certain models but support others.

In section 7.2, I briefly review the multimodal patterns of the present data and discuss their implications for speech-gesture models, in particular the Growth Point Theory (McNeill & Duncan 2000; 2011), Thinking for Speaking (Slobin 1996), and the Interface Hypothesis (Kita & Özyürek 2003). Based on the evidence provided by the multilinguals, I suggest modifications to the speech-gesture interface to better articulate how language-specific information interacts among languages, its influences on the speakers' overarching conceptual component, and the speakers' production of the proposed information multimodally. In light of the theoretical consideration of the findings, I discuss other avenues for future research to conclude the thesis.

7.1 Observing conceptual equivalence in the multilingual lexicon

A comparison of the way in which verb types in Kujireray and those in French carve up the semantic domain of placement and removal provides insight as to how the conceptual component of these speakers is organised. As presented in chapter 6, the comparison of semantic distinctions made in Kujireray and in French reveal significant partial (non)-equivalence where a verb type such as *porter* 'wear' marks more specific boundaries than the Kujireray verb *e-kan* 'do, make'. While many of these verb types overlapped in core elements of the event types, such as intentional relocation and manual placement or removal, they differed in their extension to other event types denoting containment or suspension, for example. There were few fully conceptually equivalent verb types demonstrating total or near-conceptual equivalence (Pavlenko 2009, p.133) in the target languages. To be considered conceptual convergence, the verbs must demonstrate the

same boundaries in their extensions to event types. Finally, there were also very few non-equivalent categories (i.e., being language-specific)³².

Based on the comparison of the two languages spoken by the multilingual speakers, two patterns emerge. First, there is significant partial (non)-equivalence with regard to verb types that carry semantically general information (or, verb types that extend to a number of various event types, distinguished by verbs *e-kan* ‘make, do’, *mettre* ‘put’, *deposer* ‘put’, and *e-ban* ‘put’ for example). The verb types that demonstrated partially-equivalent categories were also among some of the most frequently used verb types, showing a tendency to share only partially conceptual categories. Second, the languages illustrated both conceptually equivalent and non-equivalent categories that can be characterised as semantically specific categories. For conceptually equivalent categories, verb types denoted specific Figure properties such as liquids (*verser* and *e-yu* ‘pour’) or manner such as loss of control over a Figure object (*jeter* and *e-tuc* ‘throw’). In terms of non-equivalent categories, the majority of distinctions were made in Kujireray such as *e-tik* ‘stuff’ and *e-filen* ‘lie’.

Studies on the convergence of placement and removal verb types carried out among bilinguals and L2 learners have shown movement to more conceptually equivalent categories among which verb types denote semantically general information (Alferink & Gullberg 2014; Gullberg 2011). The pattern observed among these multilinguals demonstrates a partial equivalence among verb types also denoting semantically general information. Indeed, it is not surprising that where multilingual speakers present conceptual partial equivalence, the information is rather semantically general, based on

³² Note that the terms conceptual convergence, partial and non-equivalence are not applied to denote a process of restructuring the conceptual component but to detail the types of conceptual overlaps that can be shared or distinct among languages.

these previous studies of bilingual speakers. The pattern observed among the multilingual speakers supports the notion of a mental lexicon in which languages influence each other and in which bilinguals are not the same as two stacked monolinguals (Grosjean 1989; Cook 1992; Kellerman & Sharwood Smith 1986; Odlin 1989; 2003). For example, if compared to monolingual French speakers, it would be predicted that the multilingual speakers of the Lower Casamance portray differing conceptual categories via a more semantically general system than their monolingual counterparts. Evidence of variation between the two varieties have already emerged in informal observations of the overextension of masculine gendered determiners (*le* and *un*) in Senegalese French as compared to metropolitan French. Certainly, sufficient evidence at this point allows us to close the debate of having language-dependant lexicons that do not influence each other, as proposed by Tulving & Colotla (1970), given the overwhelming data from previous studies across many domains of linguistics that languages exhibit various and considerable influences on each other bidirectionally and in spite of only having little knowledge of use of a second language (Pavlenko & Jarvis 2002; Cook 2003; Brown 2007; Brown & Gullberg 2008; Odlin 1989; 2003).

One might predict that more complete conceptual equivalence would have occurred based on the fact that their linguistic repertoires and high usage of multilingual speech on a daily basis would motivate more alignment among conceptual boundaries. That is to say, if the acquisition, use, and knowledge of a second language bear influence on other languages within the bilingual lexicon in such a way that semantically specific information is dropped, one may predict a finer-grained marking of conceptual equivalence throughout any given semantic domain of a semantically general nature. Conversely, the prediction of observing significant language-specific non-equivalencies

would not have been as supported, as again, bilinguals have shown tendencies to converge among conceptual categories (Ameel et al. 2009; Alferink & Gullberg 2014; Gullberg 2011). However, the speech data of this research have shown that there is a preferred pattern for partial overlap, and that complete conceptual equivalence is rather marginal and mainly occurs among verb types denoting semantically specific information.

There are two possible explanations for this partial-equivalence among the domain of placement and removal events. An earlier model, the Distributed Conceptual Feature Model (DFM) (de Groot 1992) represents the converging of semantic categories among bilingual speakers as opposed to their monolingual counterparts, highlighting the extent of overlap between concrete and abstract words. According to the DFM, real-world information is distributed independently of languages via features. The way in which the features combine is determined language-specifically and thus varies crosslinguistically (Ameel et al. 2009, p. 57). The model below illustrates the ability for specific languages to share features of a concept (see language-specific links connecting to the black circles) but also to extend to include features that the lexical partial equivalent does not share (see links to white circles in Figure 13).

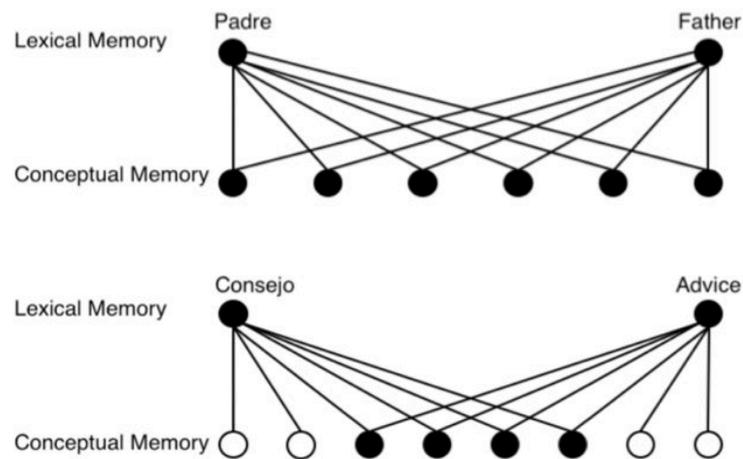


Figure 13 The Distributed Conceptual Feature Model by de Groot (1992)

The model further illustrates the tendency for concrete words to demonstrate complete conceptual equivalence, whereas abstract words such as verbs are more likely to share partial equivalence. This distinction is presented via a concrete word on the top panel and an abstract word on the bottom panel in Figure 13. Indeed, as observed in the present research of multilingual speakers, verb types did not show a pattern of complete conceptual equivalence, but rather of partial (non)-equivalence. If observing the conceptual component of concrete nouns, such as bottles and pots, it would be predicted that the speakers demonstrate stronger conceptual equivalence across their linguistic repertoires. Ameel et al. (2009, p. 58) also refer to previous research carried out by Tokowicz et al. (2002) that observe the rate of conceptual convergence among concrete versus abstract words. Both studies conclude that abstract words and verbs converge less via dropping semantically specific information as it would result “in a too impoverished meaning in both languages” as compared to concrete nouns. Gentner (1981) also suggests that verbs carry more language-specific meaning than nouns crosslinguistically. This

would explain the tendency for speakers of Kujireray and French to only partially converge within the domain of placement and removal events, as speakers need the specification to detail the event type accurately.

Ameel et al. (2009) present a schema based on the DFM to illustrate the convergence occurring among bilinguals as opposed to their monolingual counterparts (see Figure 14).

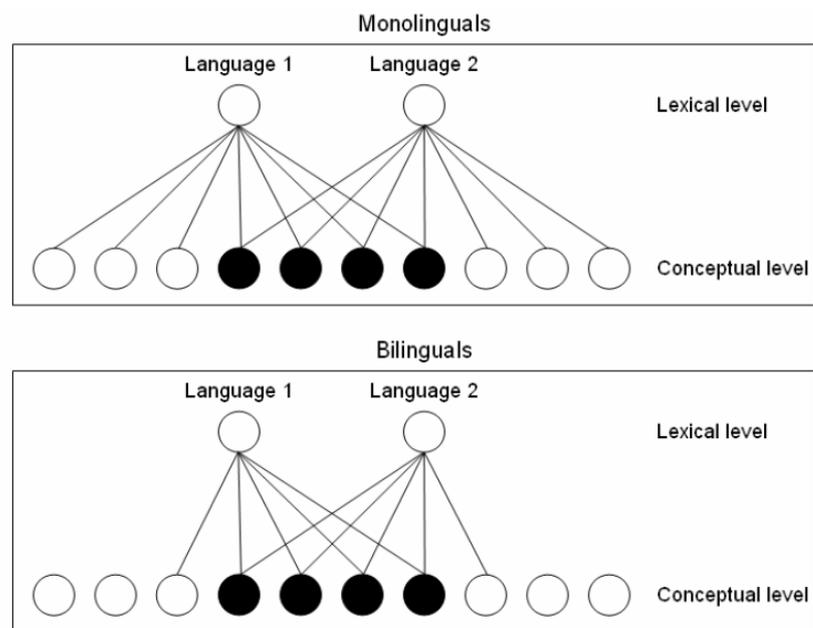


Figure 14 Schematic representation of monolingual and bilingual lexicon (Ameel et al. 2009)

The diagram presenting monolingual speakers illustrates how “rough translations” of a concept in each respective language can have shared conceptual features as denoted by the black circles on the conceptual level, while also retaining language-specific semantics as denoted by the linked white circles. This representation accounts for crosslinguistic variation. The bilingual schema displays the dropping of some language-specific features: while not moving to a full conceptual convergence, the bilingual speakers demonstrate a tendency to drop some otherwise semantically specific information regarding a concept

and its lexical form. Ameel et al. (2009, p.58) suggest that not all bilinguals drop language-specific information to the extent that is denoted in their schema, but that depending on the complexity of the category, specificities may be dropped to varying degrees in order to prevent the meaning from becoming too general. Certainly, for the domains of placement and removal events as organised by the speakers of Kujireray and French, one can observe a preference to partial (non)-equivalence for the most frequently used verb types which also uphold the more semantically general information. Following Ameel et al.'s (2009) suggestion of impoverished meaning, the verb types do not fully converge in order to maintain some differentiation when expressing events. The data revealing semantically specific verb types in the respective languages that fully converge further support this notion as they are semantically specific enough that a convergence of their conceptual overlap allows for precise and adequate information in speech.

It must be noted that the observation of conceptual convergence (or lack thereof) is based on two named languages of the multilinguals' much more complex repertoires. As such, the presentation analysed here only provides a limited snapshot of what the speakers' conceptual component actually looks like as it disregards their full multilingual repertoires. Consequently, we can only observe a small glimpse as to the patterns of conceptual equivalence – we do not have access to the full picture of the semantic and conceptual patterns as of present. One may, however, hypothesise as to how the languages may be interacting based on current and previous findings. In terms of the potential conceptual organisation, the multilingual speakers of this research exhibit a wider array of ways in which the languages they know and use carve up the real world. It is very plausible that the extent to which partial (non)-equivalence is observed is more widespread considering the semantic domain was observed in the other speakers'

languages. For example, where Kujireray and French demonstrate conceptual equivalents in a specific cluster of events, other languages of the speakers' repertoires may also overlap in this same area, whilst partially overlapping with other conceptual features. Complete conceptual equivalence, I predict, would be much less expected but, in its presence, would overlap in the expression of very semantically specific information.

Typological distance also plays a role in the convergence of concepts, where languages of the Atlantic group (Seegerer & Pozdniakov forthcoming) would overlap either completely or partially more often than the more typologically distant languages such as French and Mandinka. The latter two languages, however, would be more similar to the Atlantic groupings as compared to their monolingual counterparts, or even to speakers of these languages but of a different linguistic repertoire excluding those of the Atlantic grouping due to shared cultural experiences and its shaping of language. Where the two languages here demonstrate little language-specific non-equivalence, by taking into account their full linguistic repertoires and the potential for a more intricate categorisation of the domain, it would be more likely that these are in fact partial overlaps with distinctions made in other languages. Figure 15 depicts an adaptation to Ameel et al.'s (2009) schematic representation of bilingual speakers, while including other languages of the multilinguals' repertoires.

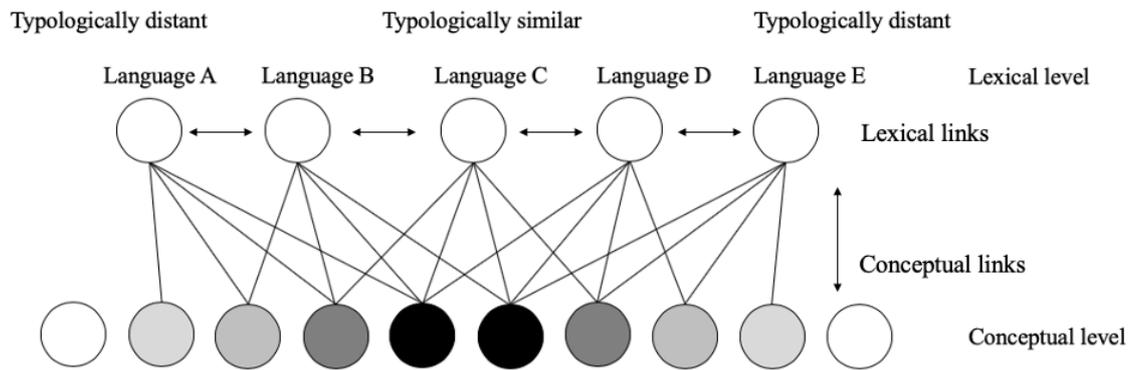


Figure 15 Schematic representation of multilingual partial (non)-equivalence

The lexical level is mapped to the upper row of circles, each circle representing a named language. Note that the labels L1, L2, and so forth are not used as these terms are inappropriate for their unique repertoires; instead, the languages are labelled with letters as to denote named languages. As to represent typological distance, languages such as French and Mandinka would be placed on the ends of the lexical level as to denote their distance to the more commonly shared Atlantic language grouping of Joola and Bāinounk languages, which are predicted to have more similarities and overlap in their links to conceptual features. On the conceptual level, the darker circles represent features that are more commonly shared among named languages, whereas the lighter shaded circles denote features that are shared less widely, depicting a less prototypical representation of the concept for the speaker. Indeed, as each speaker's linguistic repertoire varies on an individual level, the representation would alter accordingly. For example, a speaker of more closely-related languages would exhibit more conceptual overlap and links to conceptual features, such as several varieties of the Joola or Bāinounk clusters and Wolof, than a speaker of a more typologically distant repertoire, such as French, Portuguese Creole, Mandinka, and a variety of the Joola cluster. Overall, multilingual speakers would represent more partial (non)-equivalence among conceptual features when considering the

overlap among other languages of their repertoires. Non-equivalence would be much less common as the probability for the conceptual features to be shared among languages would be greater, however, its presence would more likely reside in typologically distant languages.

The bilingual models presented thus far (i.e., the DFM and the RHM as introduced in section 2.3) do not capture the full essence of multilingualism: they gloss over many dynamic aspects of multilingualism such as language development and acquisition as well as the notion of fluency or proficiency (Pavlenko 2009). These aspects are fundamental to a model that aims to present the organisation of the conceptual component of such speakers and, while they are only partially addressed here, they should be considered in more detail in future research. Certainly, these multilingual individuals acquire different languages at different ages depending on a variety of social factors (cf. section 2.2.1). Figure 15 represents a momentary snapshot of the presumed convergence of the speakers' languages, suggesting a resulting pattern of significant partial (non)-equivalence overall. It does include certain aspects present in the Modified Hierarchical Model (MHM) (see section 2.3.1), which has aimed to capture not only the dynamism of the acquisition and development of language acquired in a sequential order but also the role of lexical and conceptual links among languages indicating semantic and conceptual transfer (Pavlenko 2009, p.148). In her model, Pavlenko (2009, p.148) includes the possibility for lexical links that explain "the mapping between words and concepts [...] and [the] connections between words, which account for phenomena such as collocation, word association, synonymy and antonymy". As such, the lexical and conceptual links are illustrated in this representation of multilingual speakers. Finally, as is crucial for the MHM as well as the proposal of Ameel et al.'s (2009) illustration of the conceptual store, the proposed schema

in Figure 15 demonstrates the possibility for languages to share conceptual features or to remain specific via links to a varying combination of conceptual features (Pavlenko 2009; Schwieter 2015; Wei 2019).

In sum, it is predicted that multilingual speakers have a higher tendency to demonstrate partial (non)-equivalence among semantic domains, particularly as denoted by verbs in their languages. Full conceptual convergence appears to be reserved for semantically specific verb types. Typologically distant languages are predicted to converge more when compared to their monolingual counterparts as a result of such convergence. Finally, multilingual models must consider lexical links among languages and the phenomena of crosslinguistic influences.

7.2 What gestures reveal about the multilingual lexicon

While the information produced in speech is one of semantic generality, the co-occurring gestures display information of semantic specificity. Given that this outcome is rather surprising when considering that the information expressed in gesture ought to match that expressed in co-occurring speech according to the gesture-speech Interface Model (Kita & Özyürek 2003), the results beg for a more theoretical discussion. In chapter 6, I speculate that due to the marginalised use of postural verbs in Kujireray (as well as in French), the influence of expressing semantically specific information in gesture is motivated by the productive noun classification system present in not only Kujireray, but in other Joola and Bāinounk varieties. I have argued that the semantics based on size and shape in Kujireray and other languages are the underlying motivation for the figure-incorporated gestural expression in the participants' descriptions. Factors taken into account for this analysis include the fact that many noun class paradigms carry semantics of size and shape, the robust agreement patterns across clauses and subsequent referent-

tracking in the language as marked by noun classes, and the presence of a similar noun class system that is prominent in other languages of the multilinguals' repertoires.

In the following section, I expand on this idea by reintroducing the Interface Hypothesis and gesture-speech model proposed by (Kita & Özyürek 2003). Then, I frame the discussion of how the noun class semantics present in Kujireray as well as other languages of the speakers' repertoires are influencing the speakers' gestural expressions with relation to their gesture-speech model. While the figure-incorporated gestures as influenced by semantics provided in the on-line speech of Kujireray can be explained, it becomes less clear on why speakers insist on expressing figure-specific information when speaking French which does not carry semantic information of any noun classes. Models of the bi-/multilingual lexicon and speech production in the literature rarely consider multimodality, and gesture-speech interface models rarely consider the bi-/multilingual lexicon (Alferink 2015; Gullberg 2012b). Consequently, I discuss the findings with relation to the multilingual lexicon and the interplay of languages in a multilingual's mind. I then re-examine the Interface Model and propose modifications to the model that would better represent multilingual speakers in light of the findings.

7.2.1 *Influence of encoding noun class semantics in on-line speech*

The Interface Hypothesis (Kita & Özyürek 2003) asserts that speakers' gestures can be influenced in part by the information packaged in on-line, co-occurring speech.

Furthermore, it is argued that gestures can also be shaped by the "spatio-motoric properties" of the event or figure type itself, regardless of its expression in co-occurring speech. Their gesture-speech model proposes that the modality of expression is selected by the Communication Planner, whether via speech, gesture, both, or by a division of labour between the two. The content of what is expressed in gesture is shaped by a variety

of factors: the communicative intention, features of real or imagined spatio-motoric events, and the information provided by the Formulator and Message Generator about available linguistic resources of the target language. Crucial to their model is the bi-directional flow of information between the Formulator and Message Generator and between the Message Generator and Action Generator. The exchange of information explains the patterns found among the similarities between speakers' gestural content and the packaging of information in speech – this exchange is the “interface” of speech and gesture (see section 2.1.2).

Yet, as demonstrated in chapter 6, the findings of the study are not completely expected given that, according to the gesture-speech production model (Kita & Özyürek 2003), the gestures do not fully pair with the information given in the co-occurring speech – unless one were to consider the influence of noun class semantics present in Kujireray. As in the previous chapter, I speculate that the semantics carried in noun class paradigms in Kujireray motivate the gestural content. Here, I detail the implications of this proposition for the gesture-speech production model and the Interface Hypothesis and how the model could be modified to better support these findings.

Let us first consider Kujireray speech. The Communication Planner determines the general information of the event that is pertinent to the communicative task and decides the modalities to employ for its expression. The Message Generator receives the sketch of information to be expressed from the Communication Planner and turns to the Formulator for available linguistic resources in which the message can be encoded. At this stage, the Formulator accesses the lexicon and retrieves the formal component as to how this information is expressed in Kujireray. Indeed, the noun class semantics in Kujireray (and some noun class systems of other languages of the speakers' repertoires) give information

specific to the figure type (the object being relocated). It therefore provides specific information about the referent regarding its size and shape and other physical properties. As Kujireray, in this case, is the activated language at the point of on-line speech, the necessity to express the semantics of size and shape are included in the Formulator's retrieval from the lexicon and is sent back to the Message Generator. Both the inability of certain information to be expressed in speech is fed back to the Message Generator from the Formulator (Kita & Özyürek 2003, p. 29) as well as grammatically-obligatory semantic-based information via the Formulator. In other words, not only does the Formulator relay information about what is not possible to be verbalised, but it adds what further semantics are encoded in the language structure. From here, the Message Generator exchanges this grammatically salient information of the expression with the Action Generator.

During the same time that the Message Generator exchanges information with the Formulator, the Action Generator will have also received a sketch of the information to be expressed from the Communication Planner. The Action Generator additionally receives information from the speaker's Working Memory about the spatial imagery of the event, such as directionality and trajectory, which can contribute to the formation of the gestural content. The role of the Action Generator is to put forth a spatio-motoric representation based on input from the environment (such as whether the addressee can see the speaker's gestures or not), the speaker's Working Memory of the event, and the communicative intent sketched by the Communication Planner. The Action Generator sends this representation to the Message Generator which, in turn, provides the Action Generator with its own proposition based on information given by the Formulator and

lexicon. In the case of speaking Kujireray, it includes semantics regarding spatial information of the Figure via the noun classification system.

At this point, Kita and Özyürek (2003, p. 29) explain that this exchange of information tends to result in a convergence in the modalities' content produced. Indeed, previous work in this area has shown that the nature of this convergence of information is one of generality for bilingual speakers, where specific information of the event is dropped in both modalities when possible (Alferink 2015; Gullberg 2011). But the results of this study differ and suggest that the content of the gesture is semantically specific while speech (the information encoded in the verb type) remains semantically general. If one were to consider the Interface Model as it stands without any adaptations regarding multilingualism, it could be argued that semantically specific information of the noun class system is retrieved from the lexicon via the Formulator which includes this spatial information and forwards it to the Message Formulator and, thereafter, the Action Generator. The Action Generator would assume the responsibility of expressing this additional information required for the language structure of Kujireray by including it in its spatio-motoric representation, and, once the two Generators agree upon what information is to be expressed and in which modality, speech begins and the gestures are produced.

However, questions remain. The above proposal explains during which stages of the Interface Model the semantics divided among speech and gesture and how the specific semantic information is carried through to the Action Generator, yet it does not explain why this happens. What motivates the Action Generator to keep this semantically specific information provided by the noun class system and to prevent it from being dropped

during its exchange with the Message Generator? Furthermore, the model does not account for multilingualism – this issue will be treated in section 7.2.2.

To respond, I frame the discussion within Slobin's Thinking for Speaking hypothesis (1996) by taking into account the notion of prominence in the language's structure to encode certain information. The noun class system of Kujireray is a highly prominent feature in the language structure, i.e., it is used frequently in nearly all construction types in the language, and due to agreement patterns, the referent is tracked across clauses as seen in definite determiners, passive constructions, and object pronouns. The system is productive and nouns can enter different paradigms depending on features speakers wish to emphasise – this can be observed in loanwords entering shape-specific classes such as *ka-livre* 'book', carrying the information about length. If we recall Slobin's Thinking for Speaking (1996), he asserts that during on-line speech production, speakers must attend to the linguistic structures that package information to be expressed according to a language's syntactic and morphological structures. Complex information about the event must be organised in a way that is satisfactory to the target language in order for the speaker to properly formulate and produce the information in speech. When speaking Kujireray, speakers must attend to additional information about the event required by the obligatory noun classification system that includes spatial information of the figure object. Evidence from loanwords entering size- and shape-based noun class paradigms and the productivity of the noun class paradigms further support the notion that speakers actively attend to features of objects' sizes, shapes, as well as other physical properties in order to express them in Kujireray. Thus, there is a certain degree of attention paid to these features during on-line speech production. Kita and Özyürek (2003, p. 27) explain:

‘...if language-specific spatial representation is repeatedly generated for speaking, then it can become part of habitual non-linguistic thought about space [...] that language can shape non-linguistic spatial representation in thinking-for-speaking opens the door to the possibility of language shaping thinking-in-general under certain circumstances’.

I propose that due to the habitual and repetitive use of the semantically-based noun class system in Kujireray and its highly productive qualities in the language, speakers are primed to express this semantic information when speaking Kujireray, regardless of whether or not a semantically specific noun class present in on-line speech. Building on the idea of habitual speech influencing habitual thought, I speculate that speakers have developed a habit of paying attention to figures’ sizes and shapes due to the frequency and omnipresence of classifying nouns into these paradigms when speaking – and possibly when thinking – in Kujireray. Incorporating this notion to the Interface Hypothesis, I propose this as potential motivation for the Action Generator to include figure-specific information in gesture rather than dropping it. In this case, it could be that not only does the Message Generator send information of noun class semantics to the Action Generator prior to speech production, but this habitual encoding of spatial information of nouns additionally influences the Action Generator to express figure-specific gestures via the Message Generator. Furthermore, the Action Generator may have the potential to be primed (Casey & Emmorey 2009) by the information received via the Message Generator to incorporate information about the size and shape of a noun. According to this viewpoint, to a certain extent, the gestural content decided upon by the Action Generator is additionally influenced by the overall prominence of a linguistic feature in a language.

Another point to be addressed is the temporal alignment of the figure-incorporated gesture stroke and the co-occurring speech. These figure-incorporated gestures align with verb types in Kujireray that do not include specific information of the figure type – the noun class semantics are encoded in preceding grammatical relations such as the object. However, the lack of exact alignment, I suggest, does not pose any implications to the findings or modifications to the gesture-speech interface. By following Kita and Özyürek's (2003) proposal that a processing unit can be equated to a clause in terms of linguistic structures, rather than a unit based on a single word, the potential for a wider range of information to be included in the relevant informational unit broadens. The clause *natuçe fu-balon* 's/he throws the ball' in a transitive construction includes information about the noun's shape in the class prefix *fu-* : it is round. When a speaker expresses this clause in the passive construction, as in *fu-balon fu-tuci* 'the ball was thrown', the shape-based noun class is marked on both the subject and the verb. If speakers in Kujireray must habitually decide upon noun classes during on-line speech and process how the noun class is marked depending on the construction used, it could be argued that this widely distributed information is included in the processing unit that is packaged for speech production (Kita & Özyürek 2003, p. 18). Therefore, the Growth Point, or the initial unit that combines imagistic and linguistic content (McNeill & Duncan 2000; 2011), can include the semantically-spatial information carried by the noun classes in Kujireray. By framing this idea within the Interface Hypothesis, it can be observed that the information of noun class semantics encoding size and shape from the Message Generator is forwarded to the Action Generator and is interpreted as imagistic information to be expressed via gesture at the initial stage of the Growth Point. As such, the information packaged in gesture is conflated as it can express the trajectory and

manner of motion of the event as well as traces of information regarding the semantic paradigm to which the noun is classified.

The potential for a division of labour between the two modalities regarding the expression of content has been documented in cases such as manner fog and other scenarios where gesture includes information where it is absent in speech (Kita & Özyürek 2003; Brown & Gullberg 2008). This pattern is evident in expressions from the present data where gesture indexes speech with a more specific, manner-incorporated stroke. Upon re-examination of many of the multimodal examples presented in chapter 6, we can observe the figure-incorporated gesture stroke being held from the beginning of the utterance of the verb type and throughout the utterance of the preceding figure. This supports the notion that the two generators can divide and distribute semantics in their respective modalities, but also that the Action Generator can be influenced and incorporate information that is included in the initial processing unit, only to be produced later in co-occurring speech. In sum, the results support the idea that gesture to speech production does not follow a word-by-word alignment but operates in terms of broader processing units.

7.2.2 *Unspoken influences of the multilingual lexicon*

Thus far, the case has been made that due to the way noun class semantics are linguistically structured and distributed in Kujireray, gestures are produced that reflect such information when speaking this language during on-line speech. However, this cannot explain the multimodal patterns observed during French speech when considering the Interface Model. In brief, there is no semantically specific information grammatically encoded in the latter language that refers to a spatial or imagistic representation.

Therefore, how and why do these speakers express figure-incorporated gestures when

speaking French which has neither postural verbs that express specific information nor has it noun class paradigms based on size and shape? It is also essential to note that the methodologies carried out in this research have thus far treated the speakers as though they were bilingual by activating one language-specific mode, observing the outcome, and later observing the effects of speaking a second language. The previous explanation as to how figure-incorporated gestures occur with Kujireray speech also follows a monolingual or bilingual underpinning, severely glossing over the intricate nature of multilingualism in the mental lexicon. Here, I speculate on how the interface of speech and gesture can be influenced by the noun class semantics of Kujireray – and of other known and used languages present in the mental lexicon – despite its absence in on-line speech in French. In order to do so, the discussion is positioned around multilingualism and the multilingual lexicon.

I propose that, considering crosslinguistic influences are at play in the mental lexicon (Kellerman & Sharwood Smith 1986; Odlin 1989; 2003; Cook 2003), traces of the way in which languages structure information that are not produced in on-line speech can shape gestural content. The prominence and frequency of these linguistic resources also reinforce whether or not they are expressed in co-speech gesture by having a priming effect on the Action Generator (Emmorey et al. 2008). When looking at the presence of noun class semantics in Kujireray alone, it is clear that it is a robust system marked throughout clauses. Moreover, the speakers of this study are, indeed, multilingual, and many of the Atlantic languages in their repertoires also exhibit noun class systems that are equally sophisticated, some of which also encode information of size and shape, in particular Bāinounk and other Joola varieties. It is noteworthy to mention that Interface Model is grounded in the idea of a monolingual lexicon – this model needs to be adapted

to better represent multilingual speakers. As such, I suggest modifications to the model to satisfy these issues.

It would appear that during the speech production process in French, the lexicon is home to crosslinguistic influences from other languages of speakers' repertoires. Because the noun classification system is widespread not only in Kujireray, but in other languages of speakers' repertoires such as Baïnounk and Joola varieties, this linguistic feature carries considerable weight within the multilingual lexicon. When recalling results of Alferink's (2015) bilinguals, it was found that when the bilinguals were speaking French, where the linguistic obligation to encode postural information was absent, speakers tended to drop this information in gesture. When the bilinguals spoke Dutch, speakers tended to move to a more semantically general expression in both speech and gesture. Yet these speakers exhibit two systems of linguistic resources: French and Dutch. The speakers of the Lower Casamance exhibit lexicons that are more intricate, with an average of 6 distinct languages influencing each other within the mental lexicon. Furthermore, as speakers of Dutch, for example, can use strategies to overextend verb types to encompass a wider range of event types, the noun classification systems in Kujireray and other languages of their repertoires is necessary for the noun's specification. Its generalisation would result in a too impoverished meaning. It is important to reiterate that while the domain of placement events that require postural verb types is limited in the sense that they are employed in languages such as Dutch mainly in reference to placement event types, the expression of noun class paradigms are nearly never absent in speech in the majority of the languages of speakers' repertoires. Due to the prominence of this semantically-based system that is widespread in the multilingual lexicon, the information is more likely to be noted during the interface of speech and gesture and ultimately produced in gesture.

While the Interface Hypothesis reflects the effects of a specific language structure onto the gestural production during on-line speech production as based on monolingual speakers, it does not take into consideration multilingual speakers, notions of crosslinguistic influences, or what these might suggest about the intricate interface of gesture and speech. The results such as those detailed in chapter 6 would not have been observed in Kita and Özyürek's (2003) findings as the gestural content was shaped by a more limited set of linguistic factors. Indeed, it is not clear whether the speakers of their study were, in reality, multilingual as it was not mentioned whether or not the Turkish and Japanese speakers had any exposure to English at school or in other contexts. Had the speakers any working knowledge of another language, perhaps this information of another language structure would have influenced their speech and gesture production as noted in previous studies (Brown 2007; Brown & Gullberg 2008). Regardless, the Interface Model presents an articulate representation of how gesture and speech work together to express information of an event but which is, like the vast majority of gesture-speech models, limited to adult monolinguals (Gullberg 2012b, p. 428). It is not the intent to drastically change the model, but rather to adapt it to better represent multilingual speakers. A defining characteristic of natural multilingual speech is the ability of the speaker to codeswitch (Cook 2003), the proposed modification must take this into account. It is unclear according to the Interface Model which component's role it is to determine which language is best suited for the expression of the event as it assumes a monolingual lexicon. While the actions of the Message Generator are influenced and motivated by factors presented by the speaker's Working Memory and Discourse Model, the Message Generator is not directly connected to the speaker's lexicon and is thus unable to access or select a specific language suitable for the message's output. Rather, the Message Generator follows the process of forwarding the proposition to the

Formulator which then accesses and retrieves language-specific information from the lexicon.

Here, I present how multilingualism can be incorporated into the Interface Model to account for how this information is passed from the multilingual lexicon to the gesture component during the multimodal production process. There are not multiple, language-specific lexicons for multilingual speakers. Multiple languages sit in the lexicon and have influence on each other in all directions with little regard to any “ordering” of language acquisition or “proficiency” statements (Brown 2007; Brown & Gullberg 2008; Cook 2003; Grosjean 1989; Pavlenko & Jarvis 2002). Furthermore, during speech, languages are not completely “deactivated” (cf. Green 1986). Regardless of the priming of a monolingual language mode, other languages present in a speaker’s lexicon are still somewhat activated (Grosjean 2010; Paradis 1997).

I propose that the Formulator for multilinguals has subgroups of language-specific Formulators equivalent to Levelt’s (1989) formulator that accesses and retrieves various ways of expressing the proposition based on the formal properties of the specific languages. The overarching Formulator (within which the language-specific ones sit) carries out similar roles to Levelt’s articulator (1989). See Figure 16 for a sketch of the modification to the gesture-speech Interface Model.

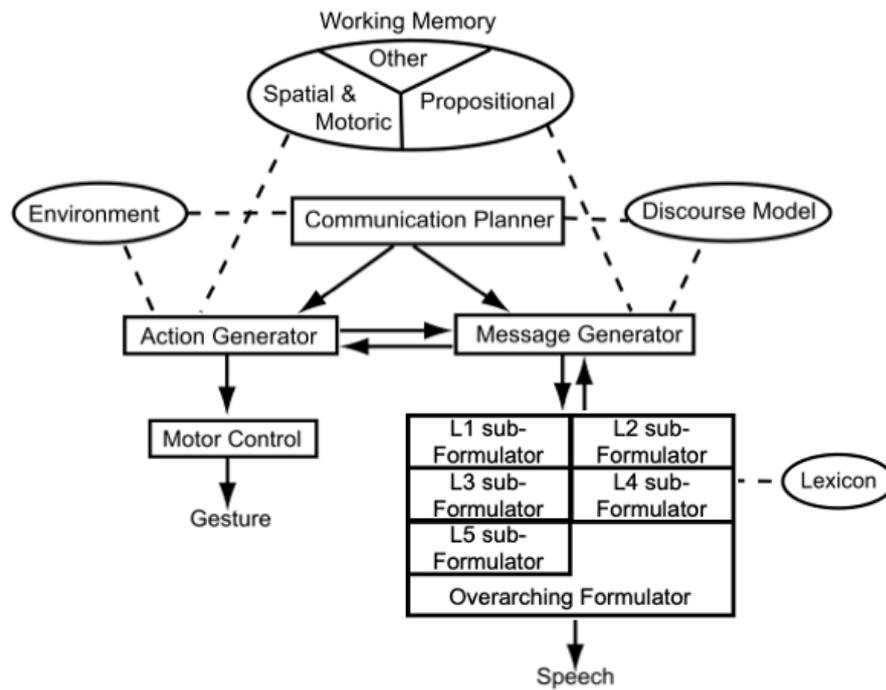


Figure 16 Proposed modification to the gesture-speech Interface Model

The overarching Formulator does not select a singular language to access and retrieve information from, as is presumed for a monolingual-based model. Considering that a completely monolingual mode where other languages are completely deactivated is improbable (Grosjean 2010), the Formulator instead returns a variety of options readily available via the language-specific subgroups. These options must satisfy the initial pre-verbal message and intention of the Message Generator, such as the information to be expressed and the register of speech. In theory, the Formulator is not instructed by the Message Generator to limit its lexical access and retrieval process to a specific language type: the Message Generator is blind to the available languages of the lexicon. If the information can be expressed in a variety of language-specific ways, the Formulator gathers this information and packages them into their language-specific verbalisations. In regards to language mode and the ability to quickly retrieve lexical items from the lexicon

(Green 1986), it is possible that certain language-specific “sub-Formulators” take a longer time to retrieve the specific information in the initial retrieval stage due to a variety of factors such as distance or lack of specific language use for the speaker. In such cases, the Message Generator and the Formulator exchange information until a strategy is found, for example, via codeswitching, its expression via gesture, or reassessing the lexicon for a synonymous item if that specific language is necessary as determined by the Message Generator. This next step is described in more detail below.

The idea of having language-specific Formulators for bi-/multilingual speech production is not novel: de Bot (1992) suggests that the speech production model for bilingual speakers could include language-specific Formulators which have access to a single lexicon. Similarly, Emmorey et al. (2008) adapt the Interface Model to explain bimodal production in American Sign Language (ASL) and English bilingual speakers by incorporating language-specific Formulators that are linked to the Message Generator. Here, however, I propose that the language-specific Formulators are subgrouped within a larger, more general Formulator (rather equivalent to Levelt’s (1989) articulator) whose role is to synchronise language-specific verbalisations in instances of codeswitching. It also allows for a combining and/or merging of language-specific characteristics, such as the prosody or phonology of one language and the morphosyntactic properties of another in the same utterance.

Upon receipt of information from the lexicon and creating potential ways of its expression, the Formulator has two further steps to carry out. The first step is that it sends the various language-specific formulated propositions to the Message Generator, as previously mentioned. This step differs from that presented in the Interface Model as only one language-specific message is assumed to be sent to the Message Generator, whereas

here, I propose that the overarching Formulator puts forth all activated language-specific messages that can be verbalised in order to satisfy the communicative intent. The Message Generator, upon receiving these linguistic possibilities and variations of expressing the communicative intent, has the task of accepting and rejecting the language-specific formulations as based on input from the Discourse Model, Working Memory, and Communication Planner upon reconsultation. The Message Generator's selection of a verbalisation via feedback from the Formulator would support the factors influencing how language choice is shaped by sociolinguistic contexts via the Discourse Model and Communication Planner. For example, for the purposes of this research, French is selected as the communicative task requires the speaker to stay in this language mode. The selection of the language(s) is then sent back to the Formulator for speech production. The overarching Formulator's second step is to (re)organise the formal properties of the clause according to the selection proposed by the Message Generator in a grammatically-sound manner for linear speech production – this includes the synchronisation and cohesion of various language-specific properties (phonological, morphological, and syntactic for example) in cases of intense codeswitching.

During the stage of exchanging information between the Message Generator and Formulator, the Message Generator will have also received and assessed the other language-specific formulations linked to specific languages of the multilingual's lexicon and will have rejected other propositions for verbalisation. Due to the constant exchange of information between the Action and Message Generator (Kita & Özyürek 2003, p. 29), it is possible that imagistic information of other formulations is exchanged with the Action Generator. Indeed, a study observing bimodal bilinguals found results indicating that "...the Message Generator may be encoding information for expression in ASL, even

when English is the target language for production” (Casey & Emmorey 2009). Similar to how the priming of information in ASL influenced the gestural content during English speech production, the Action Generator, I propose, does not reject the noun class information of the other language-specific Formulators, as its spatial encoding in gesture is straightforward via, for example, a figure-incorporated hand shape. Furthermore, I suggest that the dominance of such spatial encoding in the Message Generator also influences the Action Generator’s inclusion in gesture. Bilingual speakers of previous studies (Alferink 2015) have been shown to drop this semantically specific information at this stage. The key difference among the speaker types is the proportion of languages that obligatorily encode this spatial information in their noun classes as compared to bilingual speakers. According to this idea, the Action Generator would be more inclined, or primed (Casey & Emmorey 2009), to express this information as it is predominantly encoded in the propositions present in the Message Generator, albeit rejected for speech production via the Formulator. The prominence of the semantically specific information feedback to the Message Generator is stronger than in Dutch-French bilinguals, for example, and could account for why it is not paid attention to for these bilinguals but is present in the multilingual speakers’ gestures of the Lower Casamance. It would further suggest that not all bi- or multilingual speakers are alike in terms of the type of information included or dropped multimodally, but that the make-up of their linguistic repertoires and those selected for linguistic expression in speech play a role in the shaping of co-speech gesture.

Such a model would demonstrate that there is a likeness to bi- and multilinguals when compared within their linguistic repertoires and potential linguistic resources. Let us consider the similarities of multimodal patterns expressed by the multilinguals regardless

of their co-occurring speech or language mode. The overarching factor of these multilinguals is that they all have a strong proportion of languages that use the noun classification system based on the size and shape of figures. Additionally, their multimodal patterns are remarkably uniform in their congruency: speakers across the group choose semantically general verbs accompanied by semantically specific gestures. This finding indicates that it is the characteristics of their overall linguistic repertoires that can shape their multimodal output, be it semantically general or specific.

The modification of the Interface Model to represent the multilingual lexicon not only supports the multimodal results of this research, but it also opens avenues to understanding other characteristics of multilingual speech and its effects on gesture. To summarise, the presence of a variety of formulated propositions in the Message Generator via language-specific sub-Formulators allows the Action Generator to express prominent spatial information encoded in languages present in the multilingual lexicon despite their absence during on-line speech. Put differently, the Action Generator would otherwise not have access to other languages known by the speaker as it is not directly linked to the lexicon. Another point made is the ability for multilingual speakers to codeswitch and negotiate among a wide variety of language choices during speech production processes. If the Message Generator has access to the possible language-specific formulations, it can decide which segments of which language are best fit according to its feedback from the discourse and other sociolinguistic factors. Multilingual speakers of the Lower Casamance alternate between languages depending on a variety of factors, including the knowledge of others' linguistic repertoires. If the Message Generator and Formulator have access to the potential linguistic resources to express an event, the former's access to the Working Memory of the speaker and the discourse allows it to feed information to the

Formulator as to which language is best suited to express certain components at any given moment. The overarching Formulator's role is to finalise the grammatical and phonological cohesion of the multilingual utterance for speech.

The modifications to the Interface Model were motivated by the empirical data of this research and are a first attempt at harmonising models of the multilingual lexicon and gesture-speech interface while acknowledging the very dynamic characteristics of multilingual speech, such as codeswitching, delays in lexical retrieval, and crosslinguistic influences. Further research is required to fully examine how this modification is upheld especially in light of these other multilingual phenomena which are beyond the scope of the present research. For example, little work has been done on the temporal and semantic alignment of gestures that co-occur with multilingual speech (Alferink 2015; Gullberg 2012b). Certainly, the present research applies a bilingual model to testing the multilingual speakers in one language and then in a second. The next steps of this research shall examine the gestures that co-occur with multilingual speech, opening the potential for an array of questions regarding, for example, the content of the gesture stroke upon alternating between languages in on-line speech. Rather than having speakers embedded in a specific language mode, they would be simply instructed to describe various stimuli without any linguistic restrictions. The extent to which, for example, gesture aligns with co-occurring speech by observing its independence of on-line speech would be fruitful to our understanding of the interface of gesture, multilingual speech and the multilingual lexicon.

7.3 Summary and outlook on future research

Multilinguals are not a stacked equivalent to neither their monolingual nor bilingual counterparts. Not only are there more directions of influence from one language-specific

lexicon to another, but there is a wider variety of semantic distinctions specific to each language (i.e., noun classes in Kujireray) at play. The findings of this research point to a much more complex network of crosslinguistic influences in the mental lexicon.

A comparison of semantics between Kujireray and French placement verbs demonstrate a pattern of partial (non)-equivalence within the domain of placement and removal events. If we were to consider their full, multilingual repertoires, we would expect to observe more of this partial overlap overall. Speakers of typologically distance languages would exhibit more partial (non)-equivalence patterns than monolingual speakers of those languages. Aligning with findings of Ameel et al. (2009), it appears that verbs are less likely to converge fully in their prototypes and boundaries than concrete words to avoid “too impoverished meanings” in their communication. Models such as the MHM (Pavlenko 2009) should be adapted to account for multilinguals’ structure of the mental lexicon and the potential patterns they exhibit in speech. Here, I have proposed a model based on the MHM (Pavlenko 2009) and the DFM (de Groot 1992; Ameel et al. 2009) to capture the predictions of overall partial non-(equivalence) among multilinguals of diverse linguistic repertoires, while accounting for the interaction of languages in the mental lexicon.

The gesture-speech Interface Model (Kita & Özyürek 2003) as it currently stands does not consider bi-/multilingual speakers. Rather, it is based on monolingual speakers, thus hindering its ability to recognise crosslinguistic influences in the speakers’ lexicon and other dynamic aspects of language acquisition and multilingual phenomena such as codeswitching. I propose that during the speech production process, the Message Generator has access to various verbalisations of a message via sub-Formulators that are language-specific, similar to that of Casey and Emmorey’s (2009) and Emmorey et al.’s

(2008) adaptation of the Interface Model. By extending the model to represent multilingual speakers, the model can account for the multimodal patterns of these speakers based on an argument that the gestures reflect the semantic information encoded in noun classes present in other languages of the multilingual's linguistic repertoire despite its absence in on-line speech. The adaptation of the model allows for a more holistic understanding of multilingual speakers and the multilingual lexicon. Future research in this avenue should observe gestures that occur with multilingual speech to examine the extent of co-expressivity to provide better insight as to the more intricate nature of the gesture-speech interface of multilinguals.

In sum, further studies based on the findings of the current study are promising and fruitful to our understanding of multimodal expressions, West African linguistics, and the multilingual mind.

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9 Appendices

9.1 Linguistic questionnaire³³

Nom _____

Sexe: M F

Lieu de naissance _____

Année de naissance (et l'âge) _____

Niveau des études/formation:

Profession/occupation:

Où est-ce que vous avez habité? Combien de temps?

Où est-ce que vous avez travaillé? Combien de temps?

³³ Adapted from Marianne Gullberg and Peter Indefrey's (2003), Language Background Questionnaire. Developed in The Dynamics of Multilingual Processing. Nijmegen, Max Planck Institute for Psycholinguistics.

Quelles langues parlez-vous?

Pour chaque langue, notez les compétences linguistiques évaluées par le participant dans les domaines orales et compréhension.

Mal 1 Pas bien 2 Comme ci comme ça 3 Bien 4 Très bien 5

Langue	Parler/à l'orale	Écouter/comprendre	Commentaires

Pour chaque langue, notez le lieu de l'apprentissage, votre âge, et si vous l'avez apprise à l'école ou à la maison.

Langue	Vous aviez quel âge quand vous avez commencé à la parler? Où?	C'était appris formellement (à l'école)?	Duration de l'apprentissage formel	Duration de l'apprentissage informel

Êtes-vous d'accord avec les phrases suivantes?

Pas d'accord du tout 1 Pas d'accord 2 Neutre 3 D'accord 4 Tout à fait d'accord 5

Langue	J'aime parler cette langue (1–5)	Je me sens confiant/à l'aise quand je la parle (1–5)	Commentaires

Quelles langues parlez-vous avec quelles personnes? Quelle est la fréquence de parler ces langues avec ces personnes?

Jamais 1 Presque jamais/rarement 2 De temps en temps 3 Souvent 4

Tout le temps 5

La personne	Langue(s) parlée(s)	1–5	Commentaires
Mère			
Père			
Frères et les soeurs			
Les enfants			
D'autres membres de la famille			
Autres qui habitent dans la même maison			
L'époux/l'épouse			
Les amis			
Ceux d'autres villages			
Ceux avec qui on travaille			

Combien d'heures par jour est-ce que vous utilisez quelle langue par chaque activité?

Activité	Langue	Nombre d'heures/jour
Lire		
Regarder la télé		
Écouter la radio		
émail/sur l'internet		

9.2 Put Project stimuli

Item #	Description	Screenshot	Item #	Description	Screenshot
1	put cup on table		2	put plastic cup on table with mouth	
3	put banana on table with long tongs		4	put armload of books on table	
5	put fistful of rice on table		6	put box up on shelf	
7	put book on floor		8	drop book deliberately onto floor	
9	drop book accidentally on floor		10	toss book on floor	

11 put apple in
bowl



12 drop apple
into bag



13 flip block off
notepad into
bowl



14 put candle
into candle
stand



15 put celery
bunch into
recorder case



16 put stone
into pocket



17 stuff rag into
car exhaust



18 take flower
out of hair



19 put stone into
pot of water



20 pour liquid
into
container



21 spill water
onto table
when pick up
glass



22 give cup to
someone



23 put hand into
hole in tree



24 put head
into bucket



25 put hat on
head



26 put boot on
foot



27 hang rope
over tree
branch



28 put poster
on wall



31 put saucer on
top of cup



33 put on coat



35 put pen in
hole



50 take bag of
corn from
table and
move to
chair



51 take apple
from pile of
books and
move to shoe



52 push
suitcase
from car to
tree



101 take cup off
table



102 take plastic
cup off
table with
mouth



103 take banana
off table with
long tongs



104 take
armload of
books off
table



105 take handful
of beans from
flat surface



106 take box
down from
shelf



107 take magazine
from floor



111 take orange
from box



112 dump blocks
out of tin



113 knock over
bucket so
blocks spill
out



114 take candle
out of candle
stand



115 take
cucumber
out recorder
case



116 take stone out
of pocket



117 take rag out
of car
exhaust



118 put flower
into hair



119 take stone
out of pot
of water



120 pour water
out of tin



122 take coke
can from
someone



123 take hand out
of hole



124 take head
out of
bucket



125 take off hat



126 take off
sock



127 unhang rope
from tree
branch



128 take poster
off wall



129 put suitcase
out of room,
while staying
in room



130 take
suitcase out
of room,
going out
of room



131 take saucer
off cup



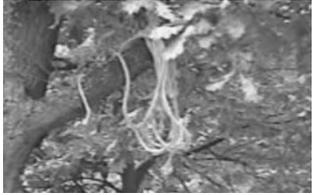
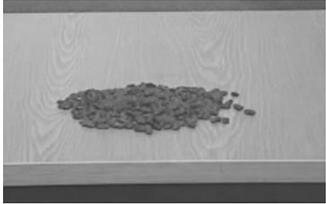
133 take off
coat



135 take pen out
of hole



9.3 Caused Positions stimuli

Item number	Description	Screenshot
1	A; F table cloth; G table	
2	-A; F rope; G branch	
3	-A; F beans; G table	
4	A; F two balls; G table	
5	A; F beans G table	
6	-A; F rope; G table	

7

A; F cassava; G box



8

A; F pot; G tree/branches



9

A; F beans in bowl; G table



10

A; F 2 bottles; G table



11

-A; F ball; G table



12

A; F table cloth (folded); G table



13

A; F stick; G tree/earth



14

A; F bottle; G table



15

A; F ball; G table



16

A; F bottle; G tree/earth



17

A; F ball; G tree/branch



18

-A; F pot; G tree/branches



19

A; F rope; G table



20

A; F bottle; G table



21

-A; F table cloth; G tree branch



22

-A; F bottle; G tree/branch



23

A; F cassava; G tree/earth



24

A; F ladder; G tree



25

-A; F bottle; G table



26

A; F cassavas; G table



27

A; F rope; G box



28

A; F bottle; G table



29

A; F cassava on rope; G branch



30

A; F stick; G table



31

A; F cassava; G tree branch



32 -A; F ball; G tree branch



33 A; F pot; G table



34 -A; F pot; G table



35 -A; F cassava; G table



36 A; F pot; G table



37 A; F cloth (folded); G box



38

A; F rope; G branch



39

A; F cassava; G table



40

-A; F pot; G table



41

A; F stick; G ground



42

-A; F cloth; G table



43

A; F bottle; G tree/branch



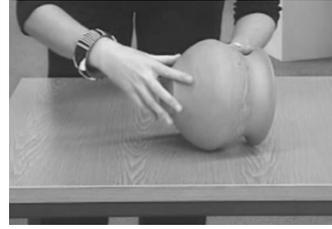
44

-A; F stick; G table



45

A; F pot; G table



46

A; F ladder; G ground



9.4 Individual gesture to speech rates

P ID	LS2	F10	S10	FB1	ID	PS1	JB2	SB1	CB4	OS3	C11
Gesture to											
placement verb	0.46	0.13	0.29	0.21	0.21	0.09	0.21	0.08	0.13	0.14	0.43

Table 27 Proportion of co-speech gesture by speaker