

THE UNIVERSITY OF GHANA, SCHOOL OF LANGUAGES

DEPARTMENT OF ENGLISH

**SPATIAL COGNITION IN L2 LEARNING: A STUDY OF THE USE OF
ENGLISH SPATIAL PREPOSITIONS BY AKAN-ENGLISH BILINGUALS**

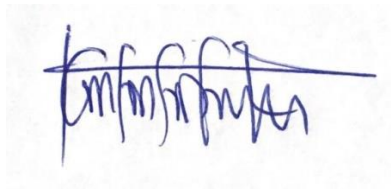


**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR
THE AWARD OF MPhil IN ENGLISH DEGREE**

OCTOBER, 2020

DECLARATION

I declare that this thesis is the result of my original research, except for references to other works that have been duly acknowledged. I also declare that no part has been presented as part of the requirement for any degree in any university.



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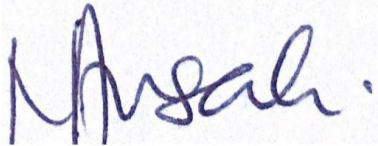
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CERTIFICATION

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DEDICATION

I dedicate this thesis to my parents, Mr. Samuel Appiah Dankwah and Mrs. Esther Oware for their strenuous effort to get me educated. I also dedicate this thesis to my children Kobby, Kwame, and Owarewaa.

ACKNOWLEDGEMENT

Part of the success chalked up as far as the completion of this thesis is concerned is deeply attributed to my supervisors, Dr. Gladys Ansah and Dr. George Kodie-Frimpong for the consideration they showed. Their swift responses to every chapter I submitted are the reason why this thesis is completed.

I am again grateful to all my siblings who wished me well and helped me in my times of difficulty.

ABSTRACT

First language users automatically acquire and internalize the conceptual underpinnings that drive the meanings of the spatial prepositions in their languages. When learning a second language, however, learners are confronted with a new set of cultural and conceptual schemas that require different cognition processes than what they have already internalized.

This study adopts the cognitive linguistics notion of construal drawn from the theory of cognitive grammar to investigate the bilingual conception of spatial scenes. The objective of the study was to investigate whether or not Akan-English Bilinguals' use of English spatial prepositions reflects Akan spatial concepts. The study analyzed spatial prepositions used to describe common spatial configurations that are conventionally described with the English spatial prepositions IN, ON, and AT to represent the spatial concepts of containment, support, and co-location respectively. The data for the study was collected through a picture description task administered to Akan-English bilinguals in Ghana. The study found that the English spatial prepositions IN, ON, and AT have translation and usage equivalence with the Akan spatial prepositions MU (in), SO (on), and WO (at/ to be) in some instances and also differ in use in other instances. It was also found that Akan-English bilinguals' use of English spatial prepositions was not always in agreement with English conventions for space construction. Their use of English spatial prepositions was also found to reflect Akan spatial concepts. In sum, the study has shown that while Akan and English share similarities in a wide range of spatial concepts, there are also many differences in how space is constructed between English and Akan. The findings of the study confirm the assertion that though the spatial concepts of containment, support, and co-location are common to most languages what counts as containment, support or co-location varies across languages.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.0 Introduction

Researchers in recent years, (e.g., Owu-Ewie and Williams, 2017; Amuzu and Asinyor, 2016), have made inquests into the sources of Ghanaian English language learner errors. Such studies have relied on theories such as Contrastive Analysis to identify problem areas English learners face. Included in the areas of difficulty identified by these studies is the use of English prepositions. Advancements in semantic typology have revealed that prepositions encode spatial concepts that differ from language to language. Feist (2000:1) points out that relational terms which are used to describe a relation between two entities appear “particularly challenging due to the fact that they are more likely to describe a wide range of concepts than are concrete nouns”. Language users automatically acquire and internalize these concepts effortlessly in their L1s. In learning L2 spatial prepositions, however, learners are confronted with a new set of conceptual schemas that require different cognition processes than what they have already internalized. Some researchers are of the view that second language users rely on their already internalized L1 structures to navigate their second language (Owu-Ewie and William, 2017; Gass and Selinker, 1992; Fries, 1957). This position led Odlin (1989) to opine that, the problems L2 speakers encounter do not stem from difficulties in the linguistic structures of L2 per se, but rather, from the habits of L1 that interfere in the acquisition of L2. This reiterates Fries (1957 as cited in Gass & Selinker, 2008:95) explanation that “the basic problems arise not out of any essential difficulty in the features of the new language themselves but primarily out of the special set created by the first language habits.” It can be said then that effectively, what a language learner does when mastering spatial

prepositions of a second language is learn new cognitive concepts that prevail in the new language; unfortunately, the first language can get in the way.

This study aims to contribute a new scholarship to the study of L2 English spatial prepositions usage by using a cognitive linguistic approach to explore the expression of topological spatial relations by Akan-English bilinguals in Ghana in order to ascertain the potential transfer of L1 spatial concepts in the L2 domain.

1.1 The Language Situation in Ghana

Ghana has many different indigenous languages. There are different accounts of the exact number of languages spoken in Ghana. There are situations where mutually intelligible dialects are considered as different languages but not dialects of the same language by their speakers. A good example of this situation is Ga and Ada. There are also cases where dialects of a language referred to by a common name, (e.g., Sisaala) are not mutually intelligible (Dakubu, 2006). Although Fante and Asante were considered separate languages before the 1950s, they are now considered dialects of the same language, Akan (Dolphyne, 1988). According to Ansah (2014:2), “a close examination reveals that what is usually described as a language group typically consists of a cluster of socio-culturally and linguistically related ethnic groups who do not see themselves as internally homogeneous”.

However, if we accept an approximate figure of languages of 81 as stated in Ethnologue’s (2018) study, for a population of about thirty million, then we have an average of around 370,000 speakers for each language. It must be noted that some languages have more speakers than others. Akan,

with its various dialects, is the most widely spoken language in Ghana. Over 42% of Ghanaians speak it as their first language and many more speak it as a second language making Akan the majority and most dominant indigenous language in Ghana. Some of the minority languages like Ewe are fairly widely spoken while other minority languages like Akpafu and Logba for example have far fewer speakers, with probably less than ten thousand speakers each (Dakubu, 2006). Other languages like Efutu are endangered (Agyeman, 2019; Akpanglo-Nartey and Akpanglo-Nartey, 2012)

In Ghana, each Ethnic group has its language and has most of its population residing in particular regions of the country. For example, Gas are predominantly in the Greater Accra region and Ewes are predominantly in the Volta region. That been said, every community in Ghana is a mixture of people from different ethnic backgrounds with each group speaking their language under various circumstances or settings. This means that a member of the majority and dominant language could easily find herself in the minority when she enters a community populated by minority language speakers. In other words, “the assumption that multilingual/multi-ethnic communities are clearly bounded and homogeneous along linguistic lines is merely ideological” (Ansah, 2014:1).

Besides the indigenous languages, other languages are spoken in Ghana. English and Hausa are the major non-indigenous languages in Ghana which in addition to Akan, constitute the three major lingua francas in Ghana (Obeng, 1997). All the languages spoken in Ghana are used side by side with each other and the languages are in constant contact. This has given rise to sociolinguistic situations like diglossia, language shift, bilingualism, etc. There is also a lot of code-switching in

the speeches of Ghanaians; even in official settings. It is also evident in Ghanaian artworks like music, novels, and poetry.

In short, Ghana is a highly multilingual country with no national language. As a result, language choice in all settings is determined by factors, such as the background of the interlocutors involved in the communication, the setting, and the purpose of communication.

1.1.1 Akan and its Dialects

Akan is one of the branches of the Niger-Congo language family spoken in Ghana. The Akans are the largest ethnic group in Ghana with about 50 percent of the population (Ghana Statistical Service, 2012). Consequently, it has a lot of speakers and has dialects which include: Fante, Akuapem, Asante, Agona, Bron, Wasa, Akyem, and Kwahu (Saah,1994).

Akan, especially the Twi dialect (Asante, Akyem) is spoken by people across Ghana as a second language and used as a medium for cross-ethnic communication (Adika, 2012). It is the most dominant language in the media apart from the print and computer-based media where the language is predominantly English. Researchers report that such is the dominance of Akan that it shows little evidence of influence from neighboring languages although other languages like Ga, Adangbe, and Ewe have borrowed significantly from Akan and this Obeng, (1997:64) opines indicates Akan's prestige among the other Ghanaian languages.

1.1.2 The English Language in Ghana

Colonialization threw English into the fray of Ghana's linguistic landscape. The initial contact between the British and the people of the Gold Coast (as Ghana was called then) was in

the 16th century. Since then, English has played many roles in the lives of Ghanaians – it is the language of trade, education governance, and as a cross-ethnic lingua franca (Adika, 2012; Adjaye, 2005; Sey, 1973; Sackey, 1997). After Independence, given the multilingual nature of Ghana, English was adopted as the de facto official language and has been the language for all official correspondences even before independence.

Nearly all Languages in Education Policies have placed a premium on the English Language. Quarcoo (2014) contends that since Guggisberg's era till now, though Ghanaian languages have been an integral part of the educational system, the language policies have always skewed towards English thereby relegating indigenous languages to the background.

On the socio-cultural front, many parents prefer their children to learn and speak English than their indigenous languages. Speakers of minority languages, in particular, seek to align themselves with a language that has more prestige than their own.

Ghanaian English models Standard British English (SBE) even though there are traces of influence from Standard American English (SAE) (Ansah, 2011). Standard British English is taught in schools and even oral English tests are modeled after the British accent. The written version of Ghanaian English is very similar to Standard British English in terms of grammar and syntax. However, Dako (2001) has observed that the spoken version of Ghanaian English is a version distinct and unique from Standard British English. Increasingly, there are calls for the acknowledgment of the Ghanaian variety of English. There are therefore studies on the Ghanaian variety of the language. These studies shed light on Ghanaians' use of the English language in all the levels of Grammar like syntax, phonology, semantics inter alia (Ngula, 2011; Owusu-Ansah

1997; Huber, 1999). These studies describe Ghanaians' unique ways of using the English language and the peculiar challenges faced. It must be made clear that the various studies on the Ghanaian variety of English do not only cement the distinctiveness of the English used in Ghana but also reveal Ghanaians' unquenchable thirst and preference for the use of the language.

1.1.3 Akan-English Bilinguals

Ghana's linguistic landscape breeds various forms of bilingualism. Dako and Quarcoo (2017) contend that most Ghanaian English speakers are bilingual with at least one local language in addition to English. They also reckon that "more than 70% of Ghanaians can speak an Akan dialect" (Twi, Fante, etc.). In general, Akan-English bilinguals acquire English as a second language at school. It does not mean however that Akan-English bilinguals learn English only in the classroom. The dominance of English on TV especially in movies and children's cartoons exposes children to the English language even before they start learning English in the classroom setting. Today, due to globalization, and technology, there is even greater exposure to English language content through mass and social media than ever before.

As a rule of thumb, Akan-English bilinguals are likely to have their English expressions replete with some linguistic features that are not wholly patterned after the native speakers of English at all levels of grammar. This is as a result of the influence of the first language (L1) of the Akan-English bilinguals. The influence of one's L1 on their L2 is largely argued by Ngula (2011) as he posits that the feature of the speech of the Ghanaian child concerning English is acquired at home. This goes to mean that in relation to levels of grammar like syntax, phonology inter alia, Akan-English bilinguals' use of English is shaped by their L1.

Ansah (2011:15) asserts that “Akan speakers in Ghana have very little socio-cultural motivation to be bilingual in other Ghanaian languages”. However, despite the overwhelming dominance of Akan in many Ghanaian communities and commerce (especially in the informal sector), there are huge socio-economic advantages in being bilingual in Akan and English in Ghana. Being bilingual in Akan and English is the most realistic approach to functioning in both formal and informal settings. Ansah (2011:15) considers the complexity of the ethnolinguistic nature of urban populations in Ghana as often “demand[ing] ... Akan-English bilinguals, like any other group of bilinguals in urban Ghana, to use their two languages on a regular basis”.

1.2. Prepositions

Prepositions play a very important role in languages. They are crucial in forming utterances because most language users rely on such relator words to construct well-formed sentences.

Quirk et al. (1985) define prepositions as items that express a relation between two entities, one being that represented by the prepositional complement, the other by another part of the sentence.

Bloor and Bloor (2004:27) also contribute that “by definition, prepositions occur in prepositional phrases with a nominal group as complement’. The definition of prepositions in the literature above can be exemplified by the grammatical construction '*Kojo is at home*'. In this sentence, ‘at home’ is the prepositional phrase, 'home' is the nominal complement, and ‘at’ is the preposition that expresses the relationship between 'john' and 'home'.

A preposition, therefore, is a word used to link entities within a sentence. By link, here, is meant that prepositions provide a structural relationship between words in a sentence (Klammer et al., 2009).

Prepositions are a common word class in many languages. Even languages that do not have the grammatical category that is commonly known as prepositions do express syntactic or topological relations in one way or the other. For example, some languages use grammaticalized forms of other word classes (like nouns and verbs) to perform the functions of prepositions (Ameka and Levinson, 2007).

1.2.1 Prepositions in English

Prepositions abound in English and do not have a fixed number since different sources report different figures. According to Lindstromberg (2010), for single word prepositions alone, there are over 90 in English. Similarly, Essberger, (2012) opines that in all, there are around 150 prepositions in English.

With a high frequency and richly polysemous usage, prepositions cause a lot of challenges for L2 learners (Taylor, 1989). This is confirmed by the argument made by Alotaibi et al (2018:517-518) that “there are many reasons why prepositions are found to be difficult for English learners”.

They further maintain that “some of these reasons relate to the properties of prepositions in English and the difference between the properties of prepositions when compared to the learners L1”. They further report from the literature on the reasons for the difficulty of use of prepositions that English prepositions are “polysemous” which means that a lot of them can have a variety of meanings depending on the context. For example, a preposition such as *in* indicates location either in time or space and can be used to indicate containment of an entity in another. The exact meaning of a preposition would be affected by the semantics of its complement noun and therefore the preposition’s meaning is rather functional and not straightforwardly lexical. This factor causes

frustrations amongst learners when trying to determine the meaning of a preposition in order to be able to use it appropriately (Koffi, 2010, cited in Lorincz and Gordon, 2012).

Second, several English prepositions are monosyllabic hence difficult to recognize, particularly in oral speech, such as *on*, *for*, and *to* (Lam, 2009). As a result, language learners may not be able to recognize prepositions in rapid, naturally occurring speech. Third, the sheer number of prepositions in the English language also contributes to their difficulty. English has up to 120 prepositions. Therefore, it seems difficult for language learners to systemize English prepositions (Lorincz and Gordon, 2012). When comparing English to Arabic prepositions, for example, it is noted that some English prepositions are morphologically complex formed from two or more words such as *apart from* – which is categorized as compound prepositions - or *by means of* – which is known as phrasal prepositions. Arabic prepositions on the other hand are most commonly simple prepositions made from one word only such as *fii* ‘in’, *ilaa* ‘to’ etc (Almarrani, 2009). All these factors can contribute to the difficulty seen in the acquisition of English prepositions.

English Prepositions are fluid in that they can occur at various positions of a sentence and are hence considered as free morphemes. Some scholars refer to the whole inventory of prepositions as adpositions though the term prepositions have been generally accepted to include relator words irrespective of where they occur in a sentence.

According to Fion (2005), there are many types or functions of prepositions. They can be used for expressing the spatial relationship between entities in a sentence, for giving reasons, or for showing temporal aspect, manner, circumstance, and state. This study focuses exclusively on spatial locative uses of the English prepositions ‘in’ ‘on’ and ‘at’.

1.2.2 Prepositions in Akan

There are issues in describing words that show relations between words in sentences in Akan. According to Osam et al. (2011:107), in various works on Akan, morphemes which express Spatio-temporal and locative concepts have been classified as postpositions because they are thought to be the counterpart of prepositions. Osam et al. (2011) however disagree and suggest that such classifications need reconsideration. To him, the classification of such words needs to be situated within the framework of grammaticalization and thus suggests that they be called relator nouns rather than prepositions.

Earlier contributors to the debate on the classification of words that express relations between entities have seen such words from different angles (Christaller, 1875; Zimmermann, 1858; Balmer and Grant, 1929). While Zimmermann (1858) classifies this syntactic category as ‘postpositions’, others, like Balmer and Grant (1929) offered a descriptive approach. They explain that prepositions are particles that have become worn down from larger words that were once fuller and more concrete in meaning, such as nouns are. Welmers (1946:53) as cited in Osam et al. (2011) side with Balmer and Grant (1929). He refers to the Fante forms *mu* (inside), *do* (top), *ase* (under), *nkyen* (side) *anyim* (front) *ekyir* (back), *ho* (side) as nouns.

Apronti (1972) in his description of other Kwa languages argues that the use of the term postpositions is a linguistic legacy that is the result of the quest of earlier linguists to achieve translation equivalents. Apronti (1972:1) concludes that the “word-class postposition appears to ... fit uncomfortably into the description of some languages ... to which it is applied”. By Apronti's assertion, there is yet to be a term that is ideal for the nature and function of relator words in Akan.

In general, prepositions in Akan can be considered as particles specialized in representing or introducing a spatial or temporal relation between words in a sentence and the most common are:

Ani	surface
anim	before, in front of
akyi, Akyire	behind, back
nkyen	beside
so, eso	on
mu, emu	in, inside
ase	under
ntam	between, in/between
mfimfini	middle
ano	by, at the entrance
wo	at

Tuffuor (1996:23)

Akan has a distributional class of items similar in sense and function to English prepositions but this class always follows than precedes the noun phrase with which it is in construction and they are often called postpositions (Brown and Miller, 2020). For this study, however, I will stick to the word prepositions to refer to the Akan adpositions or postpositions. The reason is to assume some homogeneity in terminology to avoid the possible confusion that can arise from constantly switching from prepositions to postpositions in the analysis.

1.3 Statement of the Problem

Spatial prepositions show the location of objects in space. Though the capacity to experience and operate in space is universal, studies on the use of spatial relational terms have shown that there is a large diversity in the resources languages afford speakers to locate entities in space (Kusmanto, 2010; Kleiner, 2005). The differences are mainly conceptual since spatial prepositions encode spatial concepts that vary from language to language (Herskovits, 1986). Due to this, the acquisition and use of English spatial relational terms are highly problematic for users of English as a second language (Erarslan & Hol, 2014; Galleguillos, 2013) and this is particularly so for Ghanaian students (Ameka, 1995). Unfortunately, in Ghana, studies undertaken into the problems faced by English language users or students in their use of English prepositions have all ignored the conceptual import of prepositions and have largely discussed it as a lack of knowledge of English grammar. This is particularly problematic given that the appropriate use of spatial relational terms is not determined by grammar alone but also through conceptual cues or schemas which must be acquired by the second language user if they are to use spatial prepositions appropriately. There is the need, therefore, to investigate if the non-conventional use of English spatial prepositions in Ghanaian English is the result of the transfer of L1 spatial concepts into the L2 domain.

1.4 Aim

This study aims to identify the differences, if any, in how Akan-English bilinguals use spatial prepositions to express spatial concepts in English and Akan.

Objectives

The study seeks to achieve the following objectives:

- 1 To investigate how Akan-English bilinguals express spatial configurations that are conventionally described with the English prepositions IN, ON, and AT
- 2 To infer how Akan-English bilinguals construe these spatial configurations from their linguistic descriptions MU (in/inside), SO (on/on top of), and WO (at/to be) in Akan.
- 3 To examine the similarities and differences in the use of English spatial prepositions IN, ON, and AT and their Akan equivalents MU (in/inside), SO (on) and WO (at/to be) and
- 4 To ascertain if Akan-English bilinguals' use of English spatial prepositions reflects the spatial concepts of Akan.

1.5 Research Questions

To achieve the objectives of this study, the following research questions shall serve as a guide:

- 1 How do Akan-English bilinguals linguistically describe scenes that are typically described with the English spatial prepositions IN, ON, and AT?
- 2 How do Akan-English bilinguals construe spatial configurations that are conventionally described in English with the prepositions IN, ON, and AT in English?
- 3 What are the similarities and differences in the use of English spatial prepositions IN, ON, and AT and their Akan equivalents MU (in/inside), SO (on/on top of) and WO (at/to be) ? and
- 4 In which ways do Akan-English bilinguals' use of English spatial prepositions reflect spatial concepts in Akan?

1.6 Significance of the Study

This study is significant in several ways. The acquisition and proper use of English spatial prepositions require the learner to juggle between syntax and semantics and this presents a whole new degree of difficulty to the already complicated area of prepositions. The difficulty arises from the differences in the conceptualization and usage between English prepositions and their Twi equivalents. The hope is that the study will highlight these conceptual differences between English and Akan spatial prepositions. This will enable teachers to know how to revise their pedagogy in their quest to find remedial solutions to the problems students encounter in their use of English spatial prepositions.

In addition, given that the study is a crosslinguistic exercise on English and Twi spatial prepositions, the findings provide insight into the performance of Akan learners of English's use of English spatial prepositions. As a result, curricula developers can be equipped with additional knowledge to help them frame the English curriculum in ways that will be of optimal help to the students. This is particularly the case because most Ghanaian languages belong to the same language family as Akan and share similarities (Ewe, Ga, etc.). The findings could be generalized though with restraint, leading to a general understanding of the problems Ghanaians have in learning English prepositions.

Also, the findings of the study could trigger the interest of other researchers who would want to delve further into other aspects of cognitive linguistics and or crosslinguistic studies involving Ghanaian languages.

Finally, there are not many cognitive linguistics studies that involve Ghanaian languages. The study, when undertaken will be a valuable addition to the existing knowledge in that area.

1.7 Delimitation of the Study

The study limits the investigation to just three of the most frequent simple English prepositions (IN, ON, AT). This is mainly due to time constraints. Limiting the scope, however, allows the researcher to thoroughly discuss the findings despite the time constrain.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The objective of this chapter is to discuss all the themes that encapsulate the study to give a holistic picture of the scope of the study. The chapter presents the definition and issues with bilingualism and crosslinguistic transfer. As well, the nature of the role of the first language in the second language context is addressed. The chapter also discusses cognition, issues about language and cognition, spatial cognition, and bilingualism and cognition. A part of this chapter is dedicated to the review of related literature where works done within the scope of the study are reviewed to present the current state of the field and where this study fits.

2.1 Bilingualism

The world is a bilingual reality. Many languages are spoken next to one another as mother tongues and second or third languages, serving the purposes of communication and identity. Bilingualism is found in “every country of the world, in every class of society, in all age groups” Grosjean (1982:1). Crystal (1997) in considering only bilingualism involving English, provided statistics that indicated that, of the approximately 570 million people worldwide who speak English, over 41 percent or 235 million are bilingual in English and some other languages. One can conclude that, far from being exceptional, as many lay people believe, bilingualism which, of course, goes hand in hand with multiculturalism in many cases, is currently the rule throughout the world and will become increasingly so in the future (Bhatia and Ritchie, 2006).

Though it is not difficult to get an idea of what bilingualism means, given the morphs bi and lingual therein the morphological structure of bilingualism, there is no consensus on how to define

it. Wei (2000) attributes the difficulty in arriving at a common or homogeneous definition to the complex and multidimensional nature of bilingualism. Liddicoat (1991:1) agrees with Wei (2000) as he observes that “bilingualism means different things to different people” and this Skutnabb-Kangas (1981) confirms has contributed to a conceptual confusion in the field. Skutnabb-Kangas (1981) further asserts that the many dimensions of bilingualism attract researchers from diverse fields who define the concept through the lenses of their disciplines. For example, Bhatia and Ritchie (2014: 679) posit that forensic linguists look at bilingualism from the “unconscious dimensions of the bilingual mind and its structure ...[to] uncover an individual’s linguistic fingerprint” while sociolinguists like Weinreich (1968) and Mackey (1970), also base their definitions of bilingualism on the functions of the two languages in the speech community. As evident in the above definitions, the area of research features heavily in the discussion on what bilingualism is.

Bloomfield (1933) offers another perspective from which bilingualism could be defined. He emphasizes competence as the index for testing the existence of bilingualism. Bloomfield (1933:56) defines bilingualism as the “native-like control of two languages.” This definition, however, has been found to exclude many people who speak multiple languages but do not possess 'native-like' control of all their languages. Bloomfield's definition of bilingualism is problematic because the greater percentage of people who speak two or more languages do not exhibit native-like control in all the languages they speak. Some researchers like Gottardo & Grant (2008:1) claim that native-like proficiency in both languages, which they referred to as “true bilingualism” is rare. The question to be answered therefore is “how competent should a speaker be in her languages in order for her to be considered bilingual?”. Haugen (1953:7) attempts to answer by suggesting that bilingualism begins “at the point where a speaker of one language can produce complete, meaningful utterances in the other language” but Diebold (1961) disagrees with Haugen’s (1953) supposed meaningful competence. He (Diebold, 1961) believes that bilingualism has even commenced when a person begins to understand utterances in a second language but is unable to produce utterances herself. Diebold, (1961) by this position opts for a more minimalist approach as against Bloomfield’s (1933) maximalist stance. It must be noted here that, as a theoretical Linguist, Bloomfield narrowly based his definition on linguistic competence thereby totally ignoring the nonlinguistic dimensions of bilingualism like an individual’s function or use

of her languages in a community. Another problem with the competence-based (theoretical linguistics) approach to the definition of bilingualism is the fact that proficiency levels differ in the four traditional linguistic skills (speaking, reading, writing, listening). Is it the case then that given that speech is prior to writing, an individual who can speak but cannot read and write is bilingual but another who can read and write but cannot speak is not? This led Ansah (2011) to ask “which of the five language abilities must one have in a second language to be classified as bilingual, and what is the criterion for selecting particular language ability over the others as the factors that determine bilingual ability”

Baker (1993) advocates for a distinction between competence and function in the definition of bilingualism. He argues that language skills such as listening, speaking, reading, and writing which are usually used as the yardstick for measuring an individual’s competence emphasize but only language ability but not function. Hence, Baker believes bilinguals are to be measured not just for their proficiency but also for their use of their languages. Subsequently, Baker (2001:40) concludes that “language competence includes not only linguistic competence (e.g. vocabulary, grammar) but also [competence in the usage of language] in different social and cultural situations”

Valdez and Figueora, (1994) have also attempted to define bilingualism. According to them, in its simplest form, bilingualism is defined as “knowing” two languages. However, like other definitions of bilingualism, a major difficulty occurs when one attempts to define what it means to “know” a language. Cook and Bassetti (2010) on their part avoid the term bilingual in order to steer off the confusing definitions of bilingualism. They used the term “L2 user” whom they consider as the average person who uses a second language in her everyday life for her needs.

At this point, it can be said that in general, besides the discipline-specific definitions of bilingualism, the literature suggests two spectrums on the definition of bilingualism. For some, whoever speaks and or functions in a second language in any way is bilingual. To others, bilingualism begins at the point where a speaker of one language can produce meaningful utterances in another language; others however suppose that a bilingual is someone who speaks

two languages competently. Evidently, language experience lies on a continuum where individuals are not categorically bilingual or monolingual (Luk & Bialystok, 2013).

Anderson et al., (2018:251) postulate that a sensitive instrument or guideline that provides a “comprehensive description of bilingualism that applies to a broad range of languages and contexts is crucial”. Such an instrument, they believe will “clarify definitions of bilingualism and allow researchers to resolve conflicting results based on different interpretations of bilingualism” (Anderson et al., 2018:251). Ansah, (2011:19) however remarks that among recent researchers “function-based definitions have become the basis for defining bilingualism”

Of special note, however, is Liddicoat’s (1991:3) fair and thorough assessment of the variables in the definition of bilingualism which must be specified to better understand the matter. He summarizes Grosjean’s (1982) views on bilingualism as follows:

“we need to consider a holistic view of bilingualism. The linguistic abilities of bilinguals have often been compared to those of monolingual speakers of the languages concerned. The bilingual, however, should not be considered as the sum total of two complete or incomplete monolinguals. The presence of two languages and their interaction in the bilingual produce a different but complete language system which responds to the individual's needs to communicate using one or other language or, in some settings, a mixture of both languages”

By this assessment, the notion of monolingual default, thus taking naiveness and monolingualism as natural organizing principles for the measurement of a bilingual’s competence and function in the additional language is discredited. Bilingualism is seen as a “multifaceted experience shaped by social, individual, and contextual factors” Anderson et al., (2018:251).

This study adopts the dualist, general, and less problematic definition of bilingualism used by others like Anderson et al. (2018), Ansah (2011), Edwards (2006), Wei (2000), and Valdez and Figueora (1994) which is the use of more than one language by an individual or a community.

2.1.1 Issues and Scope of Terminology

Just as there is a lack of homogeneity in the definitions of bilingualism, it is not always clear if the term refers to an individual who possesses or uses two languages only or those who use multiple languages. Some researchers (Bak and Mehmedbegovic, 2017) have observed that the term bilingualism refers to the knowledge of two languages, but it is often used to encompass also three, four, or more, as opposed to the knowledge of only one language, referred to as monolingualism. The problem that stems from this situation is that it is not always clear in the literature whether the terms bilingual/bilingualism and multilingual/multilingualism are substitutable (Ansah, 2011). The scope of the term is thus not always well defined.

There are also issues in determining the object of bilingualism studies. Mackey, (1970) considers the bilingual individual as the focus of bilingualism studies and defines bilingualism as “the alternate use of two or more languages by the same individual” (Mackey, 2000:22). This definition supports his argument that bilingualism pertains to an individual and not the entire community. This is because though an individual’s use of two languages suggests the existence of two different language societies it does not necessarily mean the existence of a bilingual community (Mackey, 2000).

Multiple reasons put languages into contact. These include migrations of various kinds (economic, educational, political, religious), colonialization, nationalism and federalism, education and culture, trade and commerce, intermarriage, etc. These factors create various linguistic needs in people and communities “who are in contact with two or more languages and who develop competencies in their languages to the extent required by these needs” (Grosjean, 1997:162). This, however, does not presume the reality of a bilingual community (Mackey, 2000). The reasoning behind Mackey’s (1970) position is that without bilingual individuals there cannot be bilingual communities; thus, even though the language is the property of a community, the bilingual individual is the sole owner of the multiple languages she speaks.

Other researchers like Romaine (1995:8) suggest that “bilingualism exists in the cognitive systems of individuals as well as in families and communities”. Myers-Scotton (1993) and Bhatia and Ritchie (2004) are of the view that a speech community can be considered bilingual because languages develop alongside the growth of human societies. Therefore, a community can be easily identified by a particular language(s), norms, beliefs, and practices peculiar to it.

This dichotomy also adds to the frustration in determining the definition of bilingualism

Leinyui (2006:1) states that “human beings inherit the ability to speak, though they do not inherit the ability to speak a particular language”. A child, therefore, acquires the language of the people of her immediate environment as she receives linguistic input from them. However, the learning of a second and any subsequent language is quite a different matter. Except in the case where a child’s parents are bilingual, or in the case where children are brought up in a “compound house” of multilingual families, “learning a second language becomes either a deliberate activity or one imposed on second language learner by extraneous factors” (Leinyui, 2006:1).

There are two major ways of acquiring a second language and the distinction is based on the chronology of acquisition. If a child is exposed to two or more languages at birth or if she acquires her second language before the age of three, she is deemed to have acquired the languages simultaneously. Before three years, the first language’s structures may not have been so ingrained hence the brain is able to learn or acquire the additional language just as it is learning the initial language (Liddicoat 1991). In such a situation, McLaughlin (1984) maintains that it is not suitable to refer to any of the child’s languages as a first language or second language. Both languages, McLaughlin (1984) believes, are effectively the child’s first languages “although one may dominate in certain situations or with certain people” (Liddicoat, 1991:5).

In the case where a second language is acquired after the first language is well established sequential or successive bilingualism is believed to have occurred. In this case, the first and second languages can be clearly differentiated, and the added language is learned as a second language (Liddicoat, 1991:5).

2.2 Cross-Linguistic Influence (Transfer)

Bilingualism comes along with other factors that result in many linguistic situations including code-switching and linguistic transfer. Gass (1988:317) posits that the function of the first language (L1) in a “second language context” has been the subject of debate among linguists for more than 2000 years”. Despite the back and forth debate, the fact that native language influences second language acquisition and use is not in dispute. Like many linguistic phenomena, it is not easy to come up with a definition of transfer. This, Gass (1988) believes is fundamentally due to the fact that attempts at defining transfer have been based on theoretical and philosophical frameworks. In general, the concept of first language (L1) transfer is associated historically with the behaviorism theory, which holds that language transfer is a consequence of the habit formation process (Odlin,1989). The behaviorist view states that the problems second language (L2) speakers encounter do not stem from difficulties in the linguistic structures of L2 per se, but rather, from the habits of L1 that interfere in the acquisition of L2.

With the above discussion in a hindsight, it must be mentioned that while many researchers assert that, L1 transfer has an influential role in the acquisition of L2 (Owu-Ewie and Williams, 2017; Gass & Selinker 1992; Odlin, 1989; Fries, 1957), some researchers such as Dulay and Burt (1975, 1974, 1973) hold a contrary stance that the role of L1 transfer in language learning is minimal. They attribute learner errors mainly to developmental factors or intralingual interference. In support of their position, Dulay et al. (1982) argue that the path of second language acquisition is different from that of first language, but the errors of L1 and L2 learners are very similar thereby reinforcing the position that other factors could be the culprit of the L2 errors.

Second language acquisition evaluation theories like error analysis have not been helpful in aiding us to construe the actual nature of the role first language plays in the acquisition of a second language. Also, it has been established that L1 transfer does not always result in errors or faulty target language production. For Instance, Selinker (1983) points out that positive L1 transfer facilitates the acquisition of second language thereby debunking the notion of extremist error analysts that second language usage errors are necessarily the result of L1 transfer.

Over the years, many studies have been done in second language acquisition research leading to the development and growth of an autonomous discipline in linguistics (Gass, 2001).

As Gass (2001) acknowledges, the issues and questions surrounding the use of native language information in second language use have changed. A review of the literature shows changes in the dimensions of arguments on the subject. Initially, primary importance was placed on the native language (e.g. Lado, 1957). Later, researchers (e.g. Dulay and Burt, 1974) discussed other factors (other than the first language) which include interlanguage, non-linguistic factors, and prior knowledge thereby minimizing L1 negative impact in L2 Acquisition. Currently, there is a greater shift or a new attempt at conceiving the concept of second language acquisition. Researchers are taking a holistic view of the discipline such that keywords like transfer (used in the sense of L1 to L2 and resulting in errors) are being used less and replaced with influence. As a result, the L1, L2 situation is discussed now as a two-way stream (Alonso, 2012; Gass, 2001).

Also, traditionally, transfer studies focused on grammar, semantics, phonology, and other traditional levels of language as that which L2 learners tended to transfer from L1. Current researchers are however enthused about the nature of the nonlinguistic transfer. Arguments that suggest that the bilingual is an individual living two cultures or a hybrid of two cultures have led scholars to inquire if such nonlinguistic aspects of L1 as hand gestures, emotions, cognition, etc. interfere in L2 use (Boroditsky, 2017; Ansah, 2011; Bylund and Jarvis, 2011)

2.3 Cognition

In the final paragraph of the previous section, it was established that many researchers are paying attention to non-linguistic features of the L1 as potential sources of cross-linguistic influence. This section presents a brief overview of the debate on the relationship between language and cognition, spatial cognition, and bilingualism and cognition. Because the current study draws conclusions from conceptual representations based on inferences from bilingual spatial cognition, such a review is important to the study.

Kihlstrom (2016:a) defines cognition as “encompassing the mental functions by which knowledge is acquired, retained, and used”. He lists functions such as perception, learning, memory, and thinking and explains that while “some cognitive processes are carried out consciously and

deliberately, others are carried out unconsciously and automatically”. This is in agreement with Evans’ (2006) earlier submission that cognition relates to all aspects of conscious and unconscious mental function. He (Kihlstrom, 2016) further explains that processes of cognition could be low-level tasks as listening or high-level functions such as planning and decision making. Cognition is therefore a human property, common to all. That we think is self-evident whenever we undertake an activity as humans. Kusmanto (2017:3) sums it up by explaining that human cognition enables man to be “aware of (i) his/her existence, (ii) space, and (iii) his/her existence within a space”. Alluding to Descartes’ “cogito ergo sum”, cognition can be deemed as fundamental to every living human as it is the evidence of a person’s awareness of her own existence.

Cognition is also discussed as a biological phenomenon. In such discussions, an explanation for the composition of the brain and neurochemical processes our brains go through as our minds manipulate the world we live in is offered. Research in this field has shown that bilingualism affects the structure of the brain, including cortical regions related to language (see Pliatsikas et al., 2017; Maturana; 1970).

2.3.1 Language and Cognition

Over the years, linguists, philosophers, and cognitive scientists alike have toiled over the relationship between language and cognition; whether language and cognition are separate language faculties or whether language is a function of or emerges from general mental capacity. Harris (2006) and Perlovsky and Sakai (2014) like many others ask the questions: What is the relationship between language and cognition? Why do children acquire language by the age of six, while taking a lifetime to acquire cognition? According to Harris (2006), questions as these were of interest to twentieth-century linguists and thinkers and they remain important in various disciplines of knowledge today. Chomsky’s conception of language abilities as the function of a mental device or organ is one of the most significant propositions in linguistics in the discussion of language in relation to cognition as it rekindled the role of the human brain in language acquisition and use.

The linguistic relativity hypothesis, commonly known in linguistics as the Sapir-Whorf hypothesis is prominent in discussions on the language cognition relationship. The Whorfian hypothesis refers to the proposal that speakers of different languages have different ways of thinking, viewing, or perceiving the world (Whorf, 1956). Whorf hypothesizes as follows:

“users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world” (Whorf, 1940/1956, p. 221)

It can be said then that according to this hypothesis, one’s reality of the world is as permitted by the language one speaks.

Zinken (2008) contributes that the term was used rhetorically by Sapir and Whorf, and has since become a major keyword in the debate on the psychological significance of language on thought or cognition.

Many studies have provided evidence for the hypothesis. For example, Boroditsky, 2017, in an extensive study presented scientific data on the Kuuk Thayorre people, an aboriginal community in Australia who live in Pormpuraw at the very west edge of Cape York. She found that in their language lexemes for left and right do not exist, instead, everything is in the cardinal directions: north, south, east, and west. As such, according to Boroditsky (2017), the Kuuk Thayorre language is wrought with statements like “move your cup to the north-northeast a little bit”. In an experiment, Boroditsky (2017) observed that a 5-year-old Kuuk Thayorre child has a full understanding of cardinal directions while American adults struggled to tell south-east from where they stood. Also, Boroditsky, (2017) reports that speakers of languages that have grammatical genders where every noun is assigned a gender describe feminine objects with feminine words and vice versa. A German would, as a result, describe a bridge with words that are stereotypically feminine since a bridge is grammatically feminine in German. Boroditsky (2017) concludes that there is a close correlation between language and

cognition and that even in simple basic perceptual decisions, language gets to determine the direction of our thought.

On the bilingual front, scientific studies have shown that regular use of a second language makes bilinguals literally see the world in a different way from a monolingual (Athanasopoulos, 2009; Caskey-Sirmons and Hickerson 1977).

2.3.2 Language and Spatial Cognition

Space is one of the important elements of human life. Evans (2009:21) posits that our experience of space as humans includes knowledge that relates to “the size, shape, location, and distribution of entities in a stable three-dimensional environment”. Hickmann and Robert (2006) allude to Kantian philosophy as they state that space is a universal cognitive primitive. Glanzberg (2015, as cited in Kusmanto, 2017) also asserts that broadly speaking, “spatial cognition can be thought of as a set of fundamental and central cognitive abilities that enable a variety of conceptual processes, both nonverbal and verbal”. That is, humans, in their endeavors (both linguistic and nonlinguistic), are reliant on their conception of space. It is not surprising then that Kant considers space as constituting an important part of all conceptualization and meaning (Zlatev, 2007) and fundamental for “every mobile specie with a fixed territory or home base” (Levinson and Wilkins (2006: 1).

According to Winksel (2007), cognition is considered to be prior to knowledge or as the driving force behind spatial language acquisition. But that is if the assumption of the ability to cognitively process information is not in itself a form of knowledge acquired. Winksel’s (2007) view however suggests that children, before they acquire and use language develop spatial orientation even before they are able to refer to spaces with language. Support for this standpoint comes from the common chronology identified with the acquisition of linguistic concepts by children in different languages and in different environments.

A typical example is Johnston and Slobin’s (1979) cross-linguistic study that found that locative terms emerge in a remarkably consistent order both within and across languages, and it was

assumed that as spatial terms such as in, on, under, up, down, in front and behind emerge or are acquired “they are directly mapped onto spatial concepts that children have already formed on the basis of their nonlinguistic [cognitive] development” (Winksel 2007:2). Bowerman and Choi (2001) have also made similar observations through a psycholinguistics study.

In recent years, works by Bowerman et al. (2001), and much recently by Boroditsky (2017) have confirmed that languages conceive space differently. Thus, even if the assertion that prelinguistic spatial universals are binding, adults belonging to different language environments are likely to possess different spatial concepts. This is because after receiving sufficient linguistic input their spatial cognition “diverges in the direction of the semantic system of the input language” (Winksel 2007:2). At this juncture, a legitimate question will be why do languages conceive space differently. Answers to this question could reside in the domain of cultural linguistics. Researchers in this field believe that one’s environment (ie culture) molds her language and thus renders the language of a group of people living in a specific area different from the language of another set of people who reside in a different environment (See Sharifian, 2015). Increasingly, the picture that is emerging in the literature on language and spatial cognition looks more and more like a continuum, an interplay of language, space, and cognition. All three fundamental elements of human beings in a relationship that aids the individual as she navigates and manipulates her environment, conceive her ideas, and communicates her thoughts.

2.3.3 Bilingualism and Cognition

The language we speak shapes our reality of life irrespective of how minimal it might be. It is understandable then that linguists are curious about the cognition processes of the bilingual mind. Valian (2014) opines that the relation between bilingualism and cognition is informative about the connection between language and mind. Thus, knowledge of how the bilingual with her two or multiple languages perceive provides great insight into the nature of bilingual cognition and, if necessary, cement the notion that language affects thought or acts as an attention-drawing mechanism. Studies that sought to unravel the nature of bilingual cognition somewhat relied on the earlier discussed “linguistic relativity principle”, which states that “users

of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world” (Whorf, 1940/1956:221)

One of the earlier studies was by Caskey-Sirmons and Hickerson (1977). Their study showed that bilingual semantic representation shifted from the norm in categorizing color prototypes in each of their two languages. People from different first languages who were all bilingual in English had shifted their prototypes for a range of L1 color terms towards the English prototypes. The researchers were therefore led to conclude that “the worldview of bilinguals, whatever their first language, comes to resemble, to some degree, that of monolingual speakers of their second” (Caskey-Sirmons and Hickerson 1977: 365). This finding must not be misinterpreted. What it suggests is that the world view of the bilingual is neither same as that of monolinguals of her L1 nor it is the same as her second language. In recent years Boroditsky et al., 2003; Bassetti, 2007; and Athanasopoulos et al., (2010) have all found evidence, through various studies, that the presence of a second language does present the bilingual with a worldview that is not the same as that of any of her two languages.

Athanasopoulos et al. (2010:14) in particular aimed to find out if the bilingual evaluate perceptual distinctions of color differently from monolinguals and reported that Japanese–English bilinguals displayed “a cognitive pattern that was “in-between” the two monolingual groups, suggesting that knowledge of two languages with contrasting ways of parsing reality has profound consequences for cognition”. These studies confirm the language cognition correlation, as well they assume that bilinguals have a worldview that is though distinct from monolinguals of their various languages, resides within the boundaries of their two languages but is a whole different system of cognition.

2.4. The Semantics of Spatial Prepositions

As established in the two previous sections, humans express their interaction with space with language. Spatial prepositions or locative grams to be general, are commonly used to describe space in all languages. The terms figure and ground were proposed by Talmy (1983, 2000) for the discussion of spatial scenes. These are space-time configurations that help enable discussions on the relationships between objects in space. Objects are the everyday things, items, or even abstract concepts that can be found in the environment, the human body itself, or other locations that are the focus of attention (McCloskey and Rapp, 2000). The figure in a spatial scene usually refers to the moving or movable entity (usually smaller than the ground) whose orientation is referenced to the ground. The ground, on the other hand, is a reference object, one that is usually static and to which the figure is referenced or characterized (Talmy, 2000). Alternative terminologies for figure and ground are trajectory and landmark (Langacker, 1987).

Prepositions indicate relationships. When the conceptualization that encodes the relation a preposition expresses is spatial, the preposition is deemed a spatial preposition. A spatial relation is a semantic relation that indicates the location of an object in relation to another in space (Alshammari, 2017). Levinson and Wilkins (2006:1-2), opine that ‘where’ questions are normally responded to with basic locative constructions (BLCs) to indicate the location of objects in space.

Traditionally, spatial prepositions have been treated syntactically as functional or grammatical words (Brenda, 2014). Their semantic content has long been ignored, especially in the second language acquisition context. Present developments in cognitive linguistics have provided insight into the nature of the content expressed by prepositions and spatial prepositions in particular. As a result, prepositions have become known to encode rich, diverse, and complex semantic information. This information on the relationship between the figure and the ground as expressed by the spatial preposition is what speakers unconsciously or consciously conceptualize to formulate or arrive at a meaning.

Feist, (2000) did a thorough review of the various cognitive semantics approaches offered by researchers towards unraveling the various senses of spatial grams. In his heavily cited work, he

calls the total of information deducible from a spatial gram in context as “abstract attributes”. In all, Feist (2000:54) arrives at three umbrellas under which abstract attributes can be classified as he states that “the abstract attributes about which spatial relational terms tend to impart information include geometry, function, and qualitative physical properties”. Each of the attributes Feist, (2002) explains has a value in physical scenes that depict relationships between objects. That is, there are three attributes to consider in the analysis of spatial grams that describe the configurations between a Figure and a Ground.

The geometrical relation that holds between a figure and a ground includes information that pertains to the axial orientation of the figure and the ground and their proximity to each other (Feist, 2000). Therefore, when we use a preposition to indicate space “we do so in relation to the dimensional properties, whether subjectively or objectively conceived, of the location concerned” Quirk et al (1985:673).

The value of the functional relationship between objects in space, on the other hand, is determined by the knowledge speakers have about the normal uses of the objects in a spatial relationship (particularly the Ground). Such knowledge may include the animacy of the figure and the ground, its physical state (gas, solid, liquid), and the conceptual and cultural attributes of the objects involved in the spatial relationship.

This knowledge about the physical properties of the figure and the ground and how their particular physical properties enable them to interact informs language users on which BLC to apply to a given spatial scene. For example, in 'the ball is on the table', knowledge of the uses of ‘table’ (the ground) and the interaction it has with the ‘ball’ (the figure) will determine the functional attribute depicted in the scene. Here, the selection of a spatial relational term is appropriate if the relation specified in the meaning of the lexeme selected holds between the Figure and the Ground. Functional relations include containment and support (Feist, 2000).

Finally, qualitative physical relation pertains to information about the configuration of the Figure and the Ground. For example, the physical concept of support relation could be from above or below. Also, the qualitative physics attribute provides information on the kind of support involved and this could be adhesion or adjacency (Feist, 2000).

In the following sentences, different attributes are realized for the different spatial terms

1. The soap is on the shelf
2. The tea is in the mug
3. The man is at the door

The spatial scene in the first example shows the soap is in contact with the upper surface of the shelf in a configuration where the shelf provides support for the weight of the cup.

In the scene in sentence 2, the tea is located inside the hollow confinement of the cup. There is a three-dimensional configuration of containment. In such a spatial relationship, all the boundaries of the tea are situated within the cup such that the cup prevents the tea from spreading out of the cup. Evans and Tyler (2003) explain that in such a configuration of containment or full inclusion if the ground moves, the figure moves with it.

The scene in the final example establishes a spatial relationship between one object and another that represents a dimensionless location. ‘at’ here represents a mere point in relation to which the position of a referent object can be indicated. It does not suggest contact or containment but co-location

As shown above, the meaning of a preposition is contained in its weighted attributes, these attributes are however not visually perceptible. Like a word with an implied zero morph, native speakers of all languages have the attributes internalized such that usage and understanding of these spatial terms are automatic cognitive functions. However, whether an attribute is encoded by a term varies from term to term, context to context, and language to language. This complicates “the enterprise of describing the semantics of spatial relational terms” (Feist 2000:12) and it is even more complicated for a second language learner.

Also, the description of spatial scenes with different spatial grams does not always suggest a difference in the conceptualization of the scenes. The difference in register or genre could lead to

the description of a scene with different terms though they are conceptualized the same. Lindstromberg (1997) suggests that the spatial terms *within* and *inside* have similar meanings and while they may be used to describe a spatial configuration of containment to indicate the same conceptualization, *within* sound loftier in tone than *inside* difference could be one of speech register or tone. The difference between them, Lindstromberg (1997) believes, is more rhetorical than conceptual.

2.5 Current Trends in Spatial Prepositions Research

In recent years, the semantic complexity in the content of spatial relator terms in languages has received attention from scholars because ‘they are notoriously hard to learn and frequently subject to negative transfer’ (Bratož, 2014:325). Equally prominent in the discourse on the difficulty of prepositions is the conceptual content of prepositions which vary from language to language. Many have observed the differences in their usage from language to language and have, as a result, investigated how bilinguals fare in their use of spatial prepositions as they switch from one language to another. Other researchers have paid particular attention to conceptual differences. In such regards, studies have sought to uncover the nature of conceptual transfer among dual language users.

Bowerman and Pedersen (1992) investigated how speakers of different languages described particular scenes using the Topological Relations Picture Series (TRPS). The scenes were grouped based on the spatial term used to describe them. They observed that scenes that are typically described with *in* and *on* were categorized differently by speakers of other languages. They also found that scenes that are described with different spatial terms in English were all described with one spatial term in other languages as in the use of the Spanish preposition *en* which can be used to mean *in*, *on*, and *at*. Bowerman and Pedersen’s (1992) work is monumental in cross-linguistic topological studies. The TRPS serves as an important tool for scientific inquiry into the spatial concepts of languages. Ultimately, their study revealed that languages construe space differently.

Levinson et al. (2003) applied Bowerman and Pederson’s (1992) methods to research how spatial relations are represented across different languages. They used the TRPS as a stimulus to collect data. The result of the study showed differences across the languages investigated in how they

grouped the spatial scenes. Just as Bowerman and Pederson (1992), Levinson et al. (2003) found that languages encode spatial concepts in diverse ways and that what counts as containment in one language is conceptualized as support in another language.

Another comparative study was carried out by Munnich and Landau (2010). They compared Spanish and Korean learners of English's performances in the description of various spatial configurations depicted in pictures and sentences representing the spatial notions of support, containment, and vertical placement. The results of the study showed that the participants were comfortable with prepositions that express simple geometric relationships like 'under' and 'over'. Older learners, whose age of immersion was greater than 13 had difficulty in using the prepositions *in* and *on*. The results showed that they struggled with *in* and *on* because of the geometric and functional elements that these prepositions encode. The study confirmed that the preposition *in*, entails the attribute of inclusion and constraint of movent while *on* encodes contact and support.

Though the results of Munnich and Landau's (2010) study found the transfer of L1 concepts in the L2 performance of the participants, the researchers concluded that the findings suggest "maturational constraints on receptivity to spatial semantic input" (Munnich and Landau, 2010:32)

Causarano (2014) adopted the linguistic relativity theory and Vygotsky's theory on thought and language to expand on Slobin's (1996) study of "first-language thinking in second-language speaking. He investigated how L1 thinking influences L2 speaking among Chinese native speakers who are learning English and English native speakers learning Chinese. Specifically, Causarano (2014) examined the cross-linguistic habitual language use of spatial and temporal referents. An experimental approach to data collection was adopted by the researcher. 21 Chinese language learners who are native English speakers and 20 English language learners who are native Chinese speakers participated in the experiment. The participants told two stories each in both Chinese and English and the researcher analyzed the data by narrative analysis with statistical support. The researchers' deliberate attempt to ensure that participants of the study are both native Chinese speakers who are learning English and Native English speakers who are learning Chinese gives credence to the study – especially when the data collection method is considered. The researcher

found, after comparing native language and second language data, that Chinese speakers used more horizontal and vertical terms to reference time, whereas English speakers opted for horizontal and vertical terms to reference physical space. The researcher's analysis also revealed that L1 habitual language behavior in the use of spatial concepts or spatial references were carried over to their L2 speech. The results showed that the dynamic changes in using spatial and temporal referents in L2 speakers across proficiency levels are consistent with Vygotsky's framework of verbal thinking.

Like Causarano (2014), Alonso et al. (2016) tested how Spanish and Danish speakers construe spatial configurations that are typically referred to by native English speakers with the prepositions IN, ON, and AT. They examined if Danish-speaking and Spanish-speaking learners of English differ from each other in their construal of these spatial configurations in L2 English and if Danish-speaking and Spanish-speaking learners' spatial construals in L2 English reflect an influence of spatial construal patterns in their L1s. Three groups of participants were used for the study. A group of Native Spanish speakers and Native Danish speakers, Spanish and Danish speakers who are learning English as a Second Language, and Native English speakers. The proficiency level of the Spanish-speaking learners of English and Danish-speaking learners of English was C1 (i.e., advanced) on the Common European Framework of Reference. The researchers' tactfulness in selecting Spanish-speaking learners of L2 English and Danish-speaking learners of L2 English with advanced level affirms the credibility of the data collected. Data from Low level L2 English learners could easily be discredited if is discussed in light of spatial conceptual transfer since other factors such as lack of target language knowledge could easily be the reason for their possible erroneous use of English prepositions. This cue is one that is incorporated into the methodology of the current study.

The researchers relied on a picture-description task and a sentence-completion task taken from Murphy's (1991) *English Grammar in Use* for data collection. They based the study on Jarvis' (2000) methodological framework for investigating L1 influence on L2 learning. The framework proposes three types of evidence for L1 influence that should be considered in any rigorous study of L1 influence on L2. They are intra-L1-group homogeneity in learners' target-language behavior, inter-L1-group heterogeneity across groups of learners performing in the same target language, and congruity between learners' L1 and target-language behavior. All items included in the study

were statistically analyzed using Fisher's exact tests in order to determine whether different groups of participants exhibited significant differences in their prepositional choices. They found that in general the Danish participant's responses were identical with those of the native English speakers' responses. The Spanish speakers on the other hand showed a divergent pattern in their choice of prepositions. The researchers concluded that the results of the study imply that spatial configurations of English should be taught to students who are acquiring English as a Second Language. The study acknowledged the disconnect between the reality of the use of spatial prepositions and the kind of instructions offered in L2 classrooms.

Establishing whether Chilean secondary school students who are L2 English learners construct new conceptualizations of space as they acquire the English spatial prepositions 'in,' 'on,' and 'at.' was the general objective of Galleguillos' (2013) paper. She collected data through the use of Cloze Tests and interviews. Twenty (20) students from The Deutsche Schule in Los Angeles, Chile, were used for the study. The researcher grouped the participants into four subgroups depending on their proficiency levels which ranged from very low beginner proficiency to very high native-like proficiency. Given that the objective of the study was to establish whether Chilean secondary school students who are L2 English learners construct new conceptualizations of space as they acquire the English spatial prepositions, choosing English learners with low proficiency as participants was not appropriate. Unsurprisingly, the study which's data analysis was based on the cognitive aspects of interlanguage showed that Chilean EFL learner errors with English prepositions may be due to their lack of knowledge of how to apply the rules, overgeneralization of rules, or just, because they thought "it felt right" when choosing certain preposition Galleguillos, 2013:62). The sources of learner errors recorded are characteristic of low proficiency language learners (James, 1998). Opting for only balanced bilinguals would have allowed the researcher to access if the participants' use of English prepositions is evidence of a new conceptualization of space or not. It has however been established once again that an individual's L1 plays a role in their acquisition and use of L2 spatial prepositions.

Huu et al (2019) did a cross-linguistic study of the non-linguistic factors that affect the use of English prepositions by Vietnamese native students at Ho Chi Minh City University of Food Industry (HUFU) in Vietnam. The researchers hypothesized that the application of prepositions is affected by some geographical and social factors rather than linguistics factors. Besides a questionnaire that required the 141 randomly selected students used for the study to provide personal information such as age, gender, location, religion, favorite color, time management, time consumption, and qualifications, a twofold approach to data collection was adopted. A 70 item multiple-choice test in which students were asked to fill in the blanks with the most appropriate prepositions and a picture description writing task was used to collect data for the study. With the help of SPSS as the analytical tool, the study found that gender did not affect the use of English prepositions; geographical factors and the attitude of the participants to colors strongly influenced their choice of English prepositions.

The researchers also observed evidence of Vietnamese negative transfer in the use of English prepositions. Revision in pedagogy was recommended by the researchers to help Vietnamese students properly acquire and use English prepositions. The study in general is speculative in that it fails to properly define its scope. There is no mention of the specific nonlinguistic factors being investigated neither is there mention of the specific prepositions under study. A narrowed scope would have given the researchers the opportunity to thoroughly discuss the issue as it pertains to specific nonlinguistic factors and specific English prepositions. Also, since the study involved 141 participants who responded to two data collection instruments, it is plausible that SPSS was used to analyze the data. The study's discussions and findings are however purely based on the numerical outputs of SPSS which lends a purely quantitative outlook to the study. A study like this must be qualitative even if it has a quantitative element to it since the study is a cognitive linguistic exercise, a qualitative approach to discussing the findings would have given more credence to the study.

Mahmoodzadeh's (2012) paper is a contrastive study that investigates the errors made by Persian EFL learners in their use of English prepositions due to the cross-linguistic influence between their L1/SL and L2/TL language. 53 adult Iranian English as Foreign Language (EFL) learners at the intermediate level are used as subjects of the study. Thirty of the participants are male and twenty-

three were female and they are all students at a Foreign Language Institute in Mashhad, Iran. A placement test, developed by the teachers of the institute the participants attend, was used as the criterion for the selection of the participants. This step in the participant selection process reveals a participant's English proficiency level, it, therefore, pre-informs the researcher of the kind of participants needed to achieve a particular finding resulting in a predictable result thereby not making the research somewhat natural and authentic. The data collection instrument applied for the study was the translation of a text developed by the researcher. The translation task included 15 sentences in Persian selected based on the most cross-linguistically challenging prepositions observed by the researcher in Iranian EFL classrooms throughout his teaching experience. This data collection instrument which forces students to use target language structures that they find problematic is commendable.

The subjects of the study could have opted for structures they are comfortable with leaving the researcher with poor quality data to analyze. Also, the deviation from the over-reliance on fill-in blank spaces test in data collection for error analysis and cross linguist studies is a breath of fresh air in the field. With Contrastive Analysis and Error Analysis as guiding frameworks, the study revealed that omission of prepositions, redundant use of prepositions, and wrong use of prepositions are the type of errors likely to be committed by Iranian EFL learners through a translation task. Like the study of Huu et al (2019), the direction of the study was not clearly defined. The researcher discussed phrasal verbs, co-location involving prepositions, and the use of single prepositions in one breath. While it is not necessarily wrong to look at all of such instances of preposition use in a study (even though that will be too broad an exercise to undertake), such a study will then have to clearly define its scope. That is not the case with Mahmoodzadeh's (2012) study. This study however presents a different perspective to the discourse on second language learner problems with insight from another part of the world.

Almahammed (2016) investigated negative Arabic transfer in the acquisition of English prepositions by Jordanian EFL learners. Grammaticality judgment and correction task and cloze test were used to collect data. The researcher selected a total of 355 Jordanian EFL learners from 14 different universities at bachelor's degree level to participate in the quantitative study. Error and Contrastive Analysis were the frameworks within which the data collected was discussed. To interpret the large data produced by the 355 students, the researcher used one-way ANOVA. The

major observation of the study is that prepositional errors resulted from negative Arabic transfer thereby leading the researcher to conclude that the total set of errors the students made were influenced by both L1 transfer and intralingual interference. This however seems like an exercise of convenience since the analysis that led to this conclusion did not consider the reasons behind the students' erroneous selection of prepositions. It is difficult to accept the finding that student errors are the result of L1 interference just because a participant opted for a preposition that, given the context, translates into his L1 meaningfully. The problem with the study lies also with the methodological framework. Error Analysis offers a procedure for error identification and evaluation and Contrastive Analysis provides a methodology for comparing two languages to identify their similarities and differences. These frameworks however do not provide templates for the discussion of cross-linguistic conceptual influence.

In Ghana, Owu-Ewie and Williams, (2017) looked at Grammatical and Lexical Errors in Students' English Composition Writing of three Senior High Schools (SHS) in the Central Region of Ghana. Their qualitative study aimed at finding the lexical and grammatical errors Senior High School students commit in their essay writing. The study used a corpus of 150 essays written by second-year SHS students. Content Analysis approach as guided by Contrastive and Error Analysis was adopted in the analysis. The study identified that the lexical errors in the students' writing were due to homophone problems and lexical-semantic errors. Among the many observed specific errors include the wrong use of prepositions which to an extent is the focus of the current study. Implications of the findings to the teaching of English writing, according to the researchers, are that teachers should understand both the L1 and L2 of the students and explicitly teach for transfer. The researchers' acknowledgment of the need for recognition of transfer in the teaching-learning process is laudable. However, typical of studies done in Ghana on learner problems with the use of L2 English, the study is silent on the cognitive semantic aspect of L2 use.

Attention has been paid to spatial locative prepositions from the conceptual viewpoint, especially in other jurisdictions. In Ghana, in particular, studies on prepositions have still not ventured into the conceptual realm. Studies conducted on English prepositions focused significantly on the

acquisition and use of prepositions as lexical or grammatical elements of the English Language. Repeatedly, error analysis is been done on the language use of Ghanaian students without much attention to the conceptual import of English Prepositions. That is, little attention has been given to prepositions as cognitive semantics concepts. As well, not much has been done on transfer study that investigates L1 conceptualization transfer into L2 learning in Ghana. Therefore, this study is a step in the needed direction.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

Kaplan (1964) refers to methodology as the identification and utilization of the best approach for addressing a theoretical or practical problem. Riazi (2016:275) reiterates Kaplan's (1964) position as he defines methodology as how researchers plan their studies to obtain answers to the stated research questions. This chapter discusses the data source, and sampling technique, study site, data collection material, and procedure of administration. The chapter also talks about research design and issues relating to ethics. Finally, the chapter presents the theoretical framework that guides the study: Cognitive Grammar.

3.1 Research Design

The quantitative research approach is “the systematic empirical investigation of a social phenomenon through statistical, mathematical or computational techniques” (Benaquisto & Given, 2008). In the case of this study, statistical techniques shall afford the researcher the ability to give numerical evidence of the results of the research for an easy and quick understanding of the emerged patterns. This said, Ansah (2011) cites Carruthers (1996) that while experiment-based and quantitative methods may have several advantages which include maximizing accurate observation, findings from such methods are not conclusive and remain open to a variety of interpretations. For example, a quantitative approach to analyzing the data in this study can help the researcher know the number of participants who described spatial scenes with deviant relator terms. However, to know why this evidence is the case, a qualitative method needs to be applied to bring to bear the reason for such a finding. Sinha (2007:1269) thus advocates for quantitative methods to be complemented with what he calls “methods proper”.

This study, therefore, considered both quantitative and qualitative research approaches in the analysis of the data. As Patton (1990: 132) suggested, 'qualitative data can put flesh on the bones of quantitative results, bringing results to life through in-depth case elaboration'.

3.2 Population and Sample

According to Furlong et al., (2000) The population of the study generally refers to the large group the researcher is interested in. It can also refer to the population that generalization of the findings can be made about. The population of this study is L1 Akan – L2 English bilinguals in Ghana.

Ghanaian senior high school students from the Eastern region who were selected through purposive sampling methods participated in the study. The resort to the purposive sampling technique implies that a specific group of people is chosen from a larger population. In selecting participants for the study, care was taken to ensure that apart from the participants being senior high school students, they met the following criteria:

- They are Akans who speak Akan as their L1
- English was their only second language.
- They learned their mother tongue first and learned to speak English only after the age of three years, most likely, in school.
- They are final year senior high school students of Kibi Technical Senior high school.

Given that the objective of the study is to test for conceptual transfer between L1 Akan and L2 English, participants were expected to be individuals who have had adequate studies in English. A final year senior high school student would have had a minimum of twelve years of formal studies in English. It can as well be hypothesized that as students who are preparing for the final tertiary entry requirement examination, their knowledge of the grammar of English would have been polished.

With the permission of the head of school, an announcement was made during a morning devotion to tell the students about the study and invite final year students of the school who are interested

in participating in the study to meet the researcher at a designated location. During the announcement, the criteria that qualify a student to participate in the study were mentioned. Fifty-three students showed up. The researcher, one after the other, investigated the background of the prospective participants and selected 20 students out of the 53 whom the researcher deemed as qualified to participate based on the criteria for participation.

In all, 20 final year Akan-English bilingual high school students were selected for the study because they could be thought of as approaching a status of balanced bilingualism such that if they committed errors in their use of English spatial prepositions it could not be easily written off as resulting from developmental or interlanguage errors

3.3 Study Site

The data for the study was collected from Kibi Technical Senior High School. The school which is situated in Kibi, in the eastern region of Ghana was strategically selected. Kibi is a close-knit indigenous Akan town. It is the capital of the Akyem Abuakwa state and the seat of the paramount King. Akan is the language of the indigenes and non-Akans are forced to get assimilated socio-linguistically. As a result, the school offered the researcher a big pool of potential participants that meet the criteria from which to purposively sample.

3.4 Instrument / Material

Ansah, (2011) observes that psycholinguistic research into (bilingual) cognition generally tends to rely on task-based experiments. Researchers like, Almahammed (2016), Jarvis (2011), Ansah (2011), Bylund and Jarvis (2011), Feist and Gentner (2007), and Bowerman and Pederson (1992) have all relied on semantic and or pragmatic based tasks such as role-plays, story-retelling, discourse completion, stimulated recall and picture description tasks to investigate various aspects of bilingual cognition.

The study aimed to compare the relator terms Akan-English Bilinguals use in both English and Akan in order to determine a possible transfer of L1 spatial concepts in L2 spatial descriptions. In

line with tradition, and per the particular demands of the study, a picture description task was used as the data collection tool. The picture description task is ideal for the study because it is an instrument that collects data by providing naturalistic context in still images for participants to respond to.

Bennett-Kastor (1988:26) has characterized data collection procedures for second language research as “naturally observed” or as elicited under “controlled observation”. Data collected with the use of naturally observed or non-restricting procedures provide true samples of the second language user’s L2 production of the linguistic element under investigation since it is “uninfluenced by artifactual aspects of an elicitation method, as well as potentially less influenced by the learner’s careful monitoring or application of learned rules” of the items the elicitation method is designed to measure (Chaudron, 2003:767).

Such approaches, however appealing they may be to a researcher are not free from disadvantages. Chaudron (2003:767) reports that non-restricted data collection procedures are deficient in that “particular target structures or competences” of the L2 user that are being investigated may be “avoided or underrepresented” by the participants thereby leaving the researcher with scanty data. This disadvantage is however well catered for with the use of restricted or diagnostic procedures. This is because, with the use of restricted data collection procedures, data “can be tailored to specific points of L2 learning that are the theoretical focus of the research”. It is due to this that the employment of picture description task as a data elicitation tool is particularly appropriate.

Chaudron (2003:773) asserts that picture description tasks can “elicit an extensive range of potentially natural ... learner performance appropriate to a given genre of speech behavior”. Loschky and Bley-Vroman, (1993) as cited in Chaudron, (2003) also assert that relative to naturalistic observation, such task-based experiments can be designed to promote specific productions, known as “task essentialness” which represent the actual performance of language users. That is, though a restricted approach to data collection, a picture description task was used for this study because it presents a natural setting that stimulates natural responses from participants.

3.4.1 Material

30 different pictures that depict spatial scenes were used to elicit spatial descriptions from the participants. In each picture, a particular spatial relationship between a figure and a ground is evoked to simulate a natural setting that requires a specific relator term or preposition to describe. Given the dynamic and fluid nature of language, it is fair to envisage that a countless number of spatial configurations can be thought of. The 30 pictures or scenes elected to be used for the study were carefully selected spatial relationship scenarios that capture a wide range of relationships relevant to the demands of the study.

There were 8 pictures that showed eight different potential scopes of use of each of the prepositions under investigation (*in*, *on*, and *at*) on the picture description task. However, one spatial scene which depicts a scene described with *at* was not made part of the analysis since it was found to be problematic. In addition, 6 pictures depicting other types of relationships such as *under*, *behind*, and *above* were included. Since the focus of the current study did not include these prepositions, they only functioned as distracters and were excluded from the analysis.

The pictures were largely selected from the Topological Relations Picture Series (TRPS) developed by Bowerman and Pederson (1992). According to Zhang (2013:17), most scholarly discussions on the way languages express spatial relationships were, until the early 1990s, “descriptive reflecting authors' intuitions”. Due to this, the TRPS is deemed as a major leap in bilingual cognition research. The TRPS consists of 71 pictures designed to incorporate a wide range of spatial scenes. This tool is commonly used among researchers to explore how linguistic representations are structured in the cognitive domain and expressed by real language users across various languages.

The pictures in the TRPS which are line drawings developed by Bowerman and Pederson of the Max Planck Institute for Psycholinguistics depict scenes where a yellow-colored abject is contrasted with a black and white background, in order to simplify the identification of the Figure and Ground.

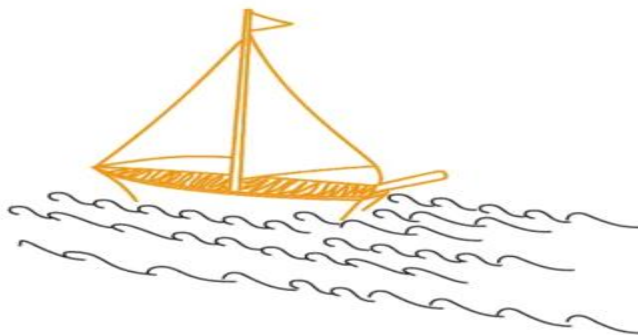


Figure 3.1 A boat on a river (sea). (Source: Bowerman and Pederson's (1992) TRPS)

Even though the TRPS is highly regarded and extensively used by many linguists in the field of semantic typology, the pictures in the series do not offer enough scope as required by the current study. Also, the TRPS mainly depicts scenes that require the prepositions *in* and *on* to describe. Due to this, the researcher developed other pictorial spatial scenes that expanded the scope of spatial scenes covered by the prepositions *in* and *on* and others that aimed at testing the preposition *at*. For example, a picture that shows a bird in the sky was developed by the researcher and made part of the pictures described in the study but is not part of Bowerman and Pederson's (1992) TRPS.



Figure 3.2. A bird in the sky

The pictures depicted a wide range of spatial arrangements involving attributes that include contact, support and containment, and co-location. Also, functional and causal notions like support from vertical and horizontal directions, attachments of various kinds (adhesion, hanging, etc.) that are described in English with the terms *in*, *on*, and *at* are captured. Participants cognitively processed the pictures and described the relationship between the objects in the scenes based on their conceptualization of the static scenarios.

3.4.2 Pretesting

The material was pretested. Ten final year students of Abuakwa State Senior High School who fit the profile of the sample participated in the pretesting. Pretesting was done individually. Each pretesting participant was shown the pictures used for the study one after another and was invited to describe the location of an object in the shown picture in relation to another object in the same picture.

Following pretesting, pictures that were deemed difficult or depicted scenes that were foreign to the Ghanaian setting were replaced with pictures that showed scenes of everyday situations in the linguistic community of the participants. For example, a scene showing the residence of a man as

indicated by his street number was replaced since participants in the pretesting struggled to understand the import of the picture. This is because residential address systems in Ghana are typically given in relation to landmarks and not by street names and numbers. For example, a statement like ‘I live behind the community library’ is more common than ‘I live at 24 mango lane’.

It has to be noted here that by this omission the researcher does not suggest that there is no need for students to know such use of the preposition *at*. Such omissions are rather necessitated by the fact that the study does not aim at finding errors in the language of L2 English users but to explore the possibility of differences in conceptualizations affecting the use of L2 (English) spatial concepts. It is only appropriate that common everyday scenes are described such that unconventional responses are not attributed to a lack of familiarity on the part of the participants with the scenes in the picture.

Also, pictures that were not easy to comprehend were replaced with clearer ones that showed the same scenarios. Mackey and Gass (2016, 2005) affirm that pictures used for description tasks must contain items that can easily be described. They further state that such pictures should contain “appropriate items for description” and objects in the pictures must be at appropriate locations. For example, a picture with a table on top of a tree, adds another element of difficulty to the task. Though such a spatial scenario can be described, it is odd and does not present a natural language setting.

In addition, pretesting offered the researcher insight into the nature of responses to expect. For instance, in responding to a picture in the picture-description task that depicts a shoe on a lady's foot and asks "Where is the shoe?", some participants simply answered "foot". This was despite the fact that participants of the pretesting exercise had been briefed as to how they should describe the picture or state the location of the objects. The researcher could hence devise questioning maneuvers that helped elicit full-fledged descriptions that represent natural responses in an everyday speech during the actual procedure.

3.4.3 Procedure

Participants completed questionnaires before starting the task. The questionnaire gathered information regarding their age and gender, the ethnicity of their parents, their first language, the language they speak at home, and when and where they started learning English among other things. After they filled the questionnaires the picture description task began.

The picture description sessions were carried out individually. Participants described pictures in Akan and in English. The Akan sessions were carried out first and the English sessions were done five days after. This was to prevent participants from casually applying the responses of the Akan session for the English sessions. The 5-day interval meant participants construed the images anew and described them in English as they would naturally do.

In each session, whether in Akan or English, participants were briefed to describe the location of the figure or an object indicated by the researcher in relation to the background as they saw fit. The picture description task was administered to the participants individually. They were presented with the 30 pictures one after the other. Whenever they expressed the location of the figure to a ground other than the one indicated they were re-asked the question in a manner that led them to describe the spatial scene by relating the figure in the scene to the ground required. Each recording session lasted about four minutes. There were participants who took more or less time depending on whether there was the need to re-ask the question or explain an object.

3.4.5 Coding

The data was coded by the initials of the activity, (Picture Description i.e. PD), the gender of the participant, M for Males and F for Females, the position in sequence at which they participated, (say number 1, 2, 3, etc.) and whether the picture description is done in Akan (T) or English (E). Thus, the participants were coded, for example, as PDM1-E and PDM1-T. As can be seen, given that each participant had two sessions (Akan and English) there are two codes for each participant

distinguishable only by the language in which the activity was carried out. For example, PDF9-T and PDF9-E. The coding was done to ensure the confidentiality of participants.

The recordings were replayed and the responses were transcribed into a table where the elicited items are recorded against the tested items.

3.5 Theoretical Framework

3.5.1 Introduction

Since transfer studies became an intriguing field of study, the linguistic investigation into it has been done in two distinct but related directions: Error Analysis and Contrastive Analysis. This study is however not necessarily an error and contrastive analysis exercise as it does not seek to identify errors of second language learners per se. Secondly, error and contrastive analysis are apt for transfer studies of the regular traditional levels of language like grammar, phonology, morphology, etc. but not for cognitive linguistic studies on crosslinguistic influence. The objective here is to explore if L1 spatial cognition influences the learning and application of L2 spatial grams. As a result, I will steer clear of the traditional trend and venture into the cognitive linguistics sphere.

A good deal of earlier works done on language and cognition has relied on cognitive linguistics frameworks which comprise many interrelated theories (Bylund and Jarvis, 2011). These include cognitive semantics (Evans, 2006, 2009; Talmy, 2000; Filmore, 1976), Metaphor theory (Lakoff and Johnson, 1980), Construction Grammar (Filmore, 1988), Cognitive Grammar (Langacker, 1987, 2008; Radden and Dirven, 2007) and many more. Even though the crux of this current study is on cognitive semantics, the questions I explore in this paper are better served by cognitive grammar since it offers a bridge between the grammatical aspect and the construal of the meaning of spatial prepositions in a functional way. The reason for selecting this theory is that it views language as an integral part of human cognition and tries to explain syntactic constructions based

on the terms of general cognitive abilities and this makes it a “powerful full-scale model of language” (Holmqvist, 1998:153).

3.5.2 Cognitive Grammar – Definition

Crystal (1995) defines grammar as the system of a language that we learn as we grow up. Ogu et al. (2016:1) also define grammar as “the rules guiding the formation of sentences in a language”. The assertion that rules suffocate is the motivation for Langacker’s cognitive grammar. According to Langacker (2008:3) in linguistics, grammar is defined “in a manner hardly designed to inspire general interest”. His particular problem with grammar is how it appears as a system of arbitrary forms based on abstract principles that are “unrelated to other aspects of cognition or human endeavour” (Langacker, 2008:3).

Unsurprisingly, Cognitive Grammar is a theoretical framework for describing language structure as “a product of cognition and social interaction” (Langacker, 2013:v). The linguistic model views grammar not as an independent formal system, rather, it considers grammar as meaningful and can only be “revealingly characterized in relation to its conceptual import and communicative function” (Langacker, 2013:v). The meaning of a lexical item, a spatial preposition for example is in its conceptual import and communicative function. Like other grammars or linguistic theories that consider human experience as an essential part of meaning, cognitive grammar is central to cognitive linguistics, which, in turn, is part of the functionalist tradition.

Cognitive Grammar was introduced in the 1980s by Ronald Langacker. With his two-volume study “Foundations of Cognitive Grammar” Langacker introduced cognitive grammar as a reaction to Chomsky’s (1988) Generative Grammar which he (Langacker, 1987) felt privileges a logically formal approach to grammar that does not consider either usage or the human experience hence incapable of accounting for figurative language. Originally called “Space Grammar” in the 1970s, Langacker developed Cognitive Grammar in line with the cognitive linguistics movement on the belief that grammar can be engaging when properly understood and when language usage is described but not prescribed.

Cognitive Grammar (Langacker, 1987, 1991, 1999a) is one of the approaches to Cognitive Linguistics. The central claims of the theory are:

1. Semantic structure is not universal; it is language-specific to a considerable degree. Further, semantic structure is based on conventional imagery and is characterized relative to knowledge structures.
2. Grammar (or syntax) does not constitute an autonomous formal level of representation. Instead, grammar is symbolic in nature, consisting of the conventional symbolization of semantic structure.
3. There is no meaningful distinction between grammar and lexicon. Lexicon, morphology, and syntax form a continuum of symbolic structures, which differ along various parameters but can be divided into separate components only arbitrarily. (Langacker, 1987, pp. 2-3)

Based on these fundamentals, several assumptions have been made about cognitive grammar. These assumptions are posited not only by Langacker but also by other cognitive grammarians like Radden and Dirven, 2007. The assumptions are that:

- The grammar of a language is part of human cognition and interacts with other cognitive faculties, especially with perception, attention, and memory.
- The grammar of a language reflects and presents generalizations about phenomena in the world as its speakers experience them.
- Forms of grammar are, like lexical items, meaningful and never 'empty' or meaningless, as often assumed in purely structural models of grammar.

- The grammar of a language represents the whole of a native speaker's knowledge of both the lexical categories and the grammatical structures of her language.
- The grammar of a language is usage-based in that it provides speakers with a variety of structural options to present their view of a given scene. (Radden and Dirven, 2007)

As can be deduced from the assumptions, the theory places much emphasis on the need to characterize language or linguistic structures within the data known about human cognition in general. Therefore, the grammar of a language is held the same with certain cognitive abilities. Consequently, an account of language and grammar cannot be given without the description of human cognitive abilities.

3.5.3 The notion of Construal

Central to the Cognitive grammar framework is the notion of Construal. Construal is understood in the setting of lexical meaning, cognitive domain, and conceptualization. It is only appropriate then that these terms are discussed or defined before the notion of construal is addressed.

According to Cognitive Grammar (as is the case with many cognitive linguistics theories), the meaning of a lexical item is encyclopedic, that is, any and all knowledge that one possesses about a lexical item forms part of its meaning. Consequently, a lexical item does not have a single semantic representation but rather evokes a myriad of concepts and knowledge systems – "a number of related senses that form a complex category, a network consisting of categorizing relationships" (Stepanov, 2004:13). These concepts and knowledge systems are referred to as cognitive domains (Langacker (1999a), (see also Evans, 2006). The cognitive domain is accessed and processed through the cognitive ability known as conceptualization which refers to "the process of selecting individual concepts that pertain to the meaning of a word or expression and organizing them together ... in working memory" (Jarvis, 2011:4)

Now that the premise has been defined, the notion of construal can be discussed. According to cognitive grammar, to construe is to conceive and portray the same conceptual content or expression in alternate ways. Langacker (2008) describes construal in the following way:

“An expression’s meaning is not just the conceptual content it evokes – equally important is how that content is construed . . . It is hard to resist the visual metaphor, where content is likened to a scene... In viewing a scene, what we actually see depends on how closely we examine it, what we choose to look at, which elements we pay most attention to, and where we view it from”. (Langacker, 2008: 55)

Construal, therefore, refers to the perception or portrayal of conceptual content in a way that reflects or highlights a particular dimension of a specific word, expression, or situation. "Among the dimensions of construal are the level of specificity at which a situation is characterized, the perspective adopted for “viewing” it, and the degree of prominence conferred on the elements within it".

The way we construe or see things is informed by language, due to this, the way people conceptualize the world differs and is crucial for the languages they speak. First, it is essential for concept formation and determines the scope of possible relations that can exist between entities. Moreover, grammatical relations are based on these conceptualizations as well (Langacker, 2009).

As captured in the assumptions of cognitive grammar, the grammar of a language is part of speakers’ cognition and represents conceptualizations of phenomena in the environment of the speakers. Consequently, it represents the whole of the native speakers’ knowledge of linguistic items and expressions in their language. Through construal, as presented by cognitive grammar, speakers are able to sift through the various notions or senses of words or expressions to arrive at the meaning implied in a given context. Construal thus provides a conceptual interface between syntax and semantics and this is the framework within which the study is undertaken.

In analyzing the data, the responses of participants are discussed in relation to the spatial scenes they described to explain the attributes of the objects in the scene they conceptualized in the process of deciding on which spatial preposition to use. Through the notion of construal, the researcher will be able to discuss which parts of the ground the participant gave prominence to or the perspective with which the description was offered to the scene.



Figure 3.3 A ball under a table. (Source: Bowerman and Pederson's (1992) TRPS)

The location of the ball in Figure 3.3 can be described as:

“The ball is under the chair”

In this sentence, the location of the figure (ball) is given in reference to the ground (chair).

The use of ‘under’ suggests that the ground has a hollow space beneath it where the ball is found.

In the scene, the ‘ball’ is not in contact with the chair and the chair does not contain the ball. The ball is only found beneath the chair.

As per the configuration in the scene, the spatial preposition ‘under’ is used when an object is found beneath another such that there is no contact and where the ground does not contain the

figure. The two objects are therefore deemed to be in a spatial relation that represents the spatial concept of co-location.

3.6 Ethical issues

In the first place, the researcher sought ethical clearance from the Ethics Committee for the Humanities (ECH) before carrying out the study. The researcher also submitted an introductory letter issued by the head of the English Department that introduced him and his research to the headteacher of the school. The researcher only collected the data after approval from the school administration had been granted and after they had also vetted the instrument and procedure.

3.7 Summary

This chapter has described the methods of data collection used in this study. Also, the procedure of their analysis was discussed. The data and the source, the specific tools for their collection, and the reasons for which they were employed have been explained. In this chapter, it has been emphasized that combining quantitative data analysis methods with qualitative analogy could produce more insight into the phenomena under study than would a single approach. The next chapter analyses the data.

CHAPTER FOUR
ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter presents the results and interpretation of the data analysis of Akan-English bilinguals' performance in the use of spatial prepositions in a bid to provide answers to the research questions. The following research questions guide the study:

- 1 How do Akan-English bilinguals linguistically describe scenes that are typically described with the English spatial prepositions IN, ON, and AT?
- 2 How do Akan-English bilinguals construe spatial configurations that are conventionally described in English with the prepositions IN, ON, and AT in English?
- 3 What are the similarities and differences in the use of English spatial prepositions IN, ON, and AT and their Akan equivalents MU (in/inside), SO (on/on top of) and WO (at/to be) ? and
- 4 In which ways do Akan-English bilinguals' use of English spatial prepositions reflect spatial concepts in Akan?

In all, 20 participants provided 920 responses to descriptions of 23 scenes in both English and Akan. The responses, which were audio-recorded, were transcribed verbatim. The relator terms or spatial prepositions were then extracted and analyzed in terms of the spatial concepts they represent.

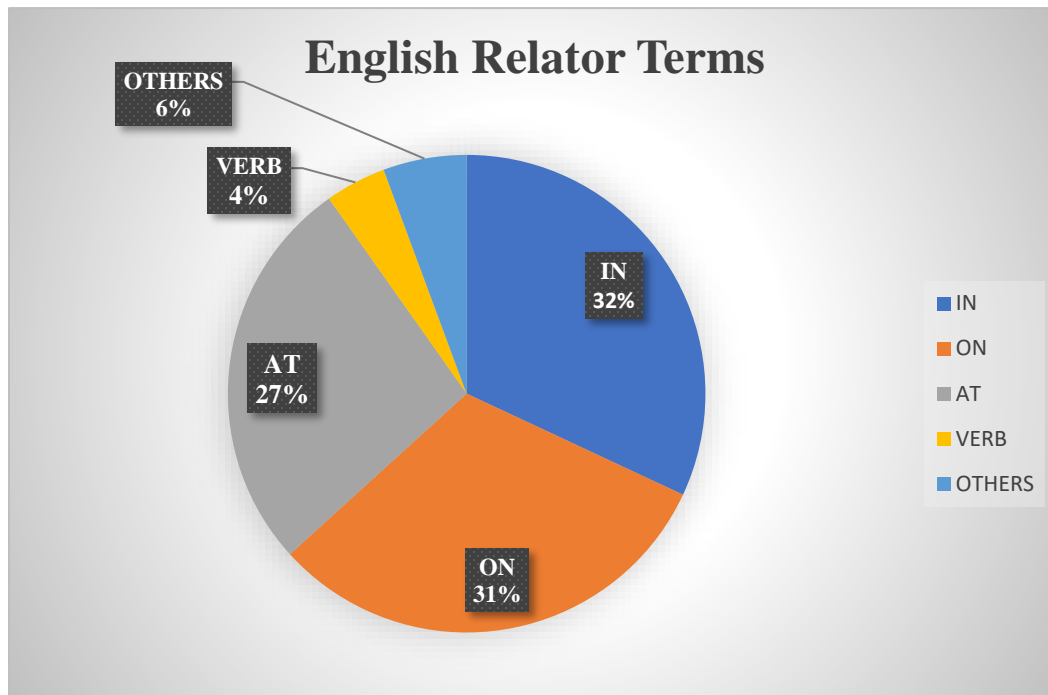


Figure 4.1 Relator terms used by participants to describe the scenes in English

All the prepositions and relator terms used by the participants to describe the scenes were statistically analyzed. In the English data set, the prepositions with the highest frequency of use are IN with a count of 147 representing 32% of all English responses. ON was used 144 times (31%) while AT was used 121 (27%). That is, the prepositions under investigation make up 90% of all participants' responses in English. However, in 4% of the responses provided in English, participants used no preposition to describe the figure-ground relationship. In those instances, participants used verbs and phrasal verbs to show the relationship between objects in the scenes. Other prepositions made up the remaining 6% and include 'around', 'beside', 'behind', 'under', 'through', and 'in front of'.

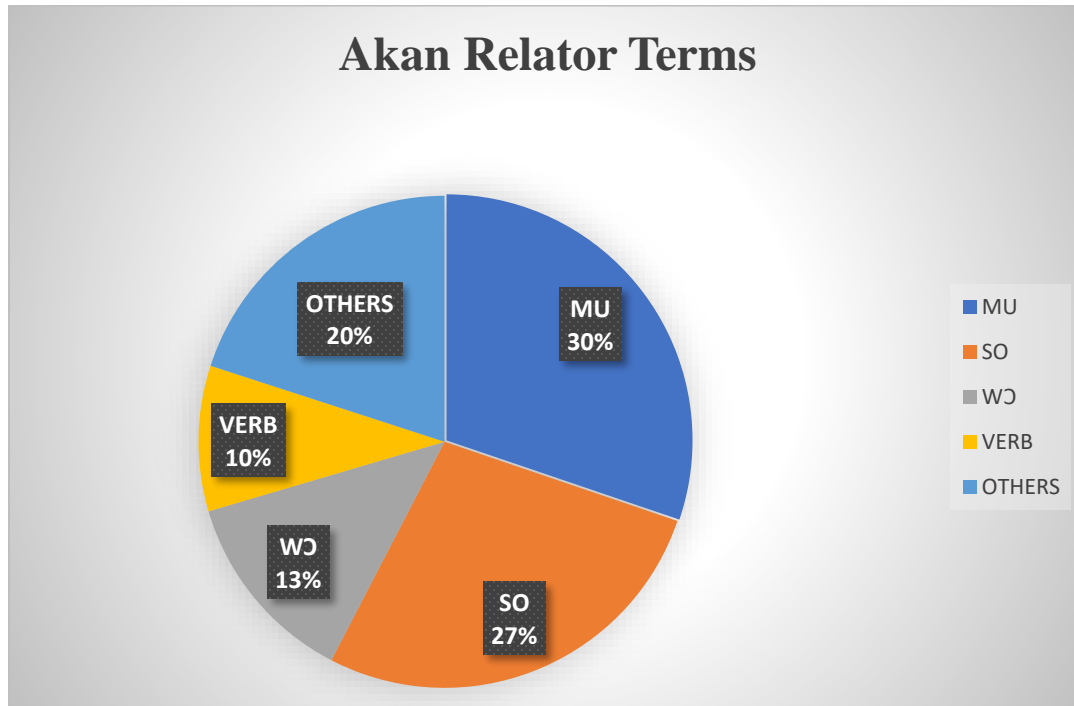


Figure 4.2 Relator terms used by participants to describe the scenes in English

The Akan responses showed a similar pattern. The prepositions MU (in/inside), SO (on/on top), and WO (at/existential be) constituted the greater percentage of the relator terms used by the participants. MU was used with the highest frequency. It was used 138 times which is 30% of all relator terms used by the participants. SO was also used 126 times which represents 27% of the Akan prepositions used to describe the spatial scenes and WO was used 59 times which is 13%. Of the remaining 30% of the relator terms used to describe the scenes, 10% were verbs and 20% were other prepositions among them are ‘akyi’(/back/behind), ‘nfininfini’ (middle), ‘ase’(below/under), ‘ho’(self/side) and ‘ano’ (mouth/entrance).

The data is analyzed around the spatial concepts of containment, support, and co-location. The results obtained from the data analysis are displayed in tables in a manner that helps answer the research questions.

As has been explained earlier, this study does not seek to find correct and incorrect usage of prepositions. Its objective is, chiefly, to investigate the presence of L1 spatial concepts in the use of L2 spatial prepositions. Due to this, words like ‘correct’ and ‘incorrect’ are avoided in the analysis and discussion of participants’ responses to the static scenes.

4.1 Participants’ Description of Scenes Typically Construed in English as Containment

The scenes displayed in Figure 4.3 below show spatial configurations conventionally described with the preposition IN and represent the spatial concept of containment in English. Participants’ responses in English and Akan to these scenes are presented in Table 4.1 and discussed below.

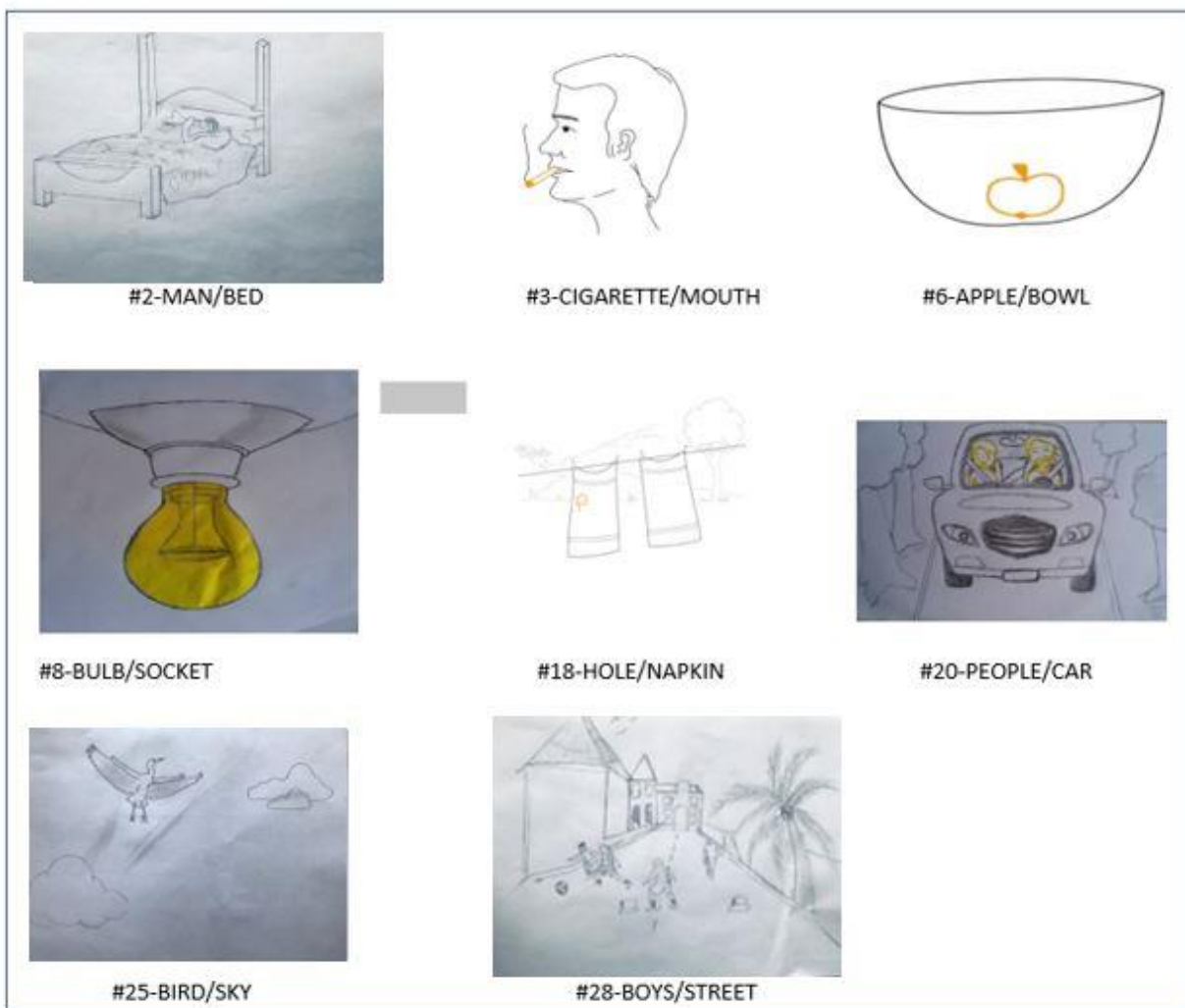


Figure 4.3 Pictures showing various spatial configurations conventionally construed as

containment in English. Pictures numbered 3, 6, and 18 are from Bowerman and Pederson's (1992) TRPS.

Table 4.1 Participants' English and Akan description of spatial scenes conventionally construed in English as containment (or typically described in English with the preposition IN)

SCENES	RESPONSES			
	ENGLISH	%	AKAN	%
#2-MAN/BED	ON	95	SO (ON)	95
	IN	5	MU (IN)	5
#3-CIGARETTE/MOUTH	IN	100	MU (IN)	35
			ANO (MOUTH)	65
#6-APPLE/BOWL	IN	100	MU (IN)	100
#8-BULB/SOCKET	IN	100	MU (IN)	100
#18-HOLE/NAPKIN	IN	95	MU (IN)	100
	THROUGH	5		
#20-PEOPLE/CAR	IN	100	MU (IN)	100
#25-BIRD/SKY	IN	95	MU (IN)	100
	ON	5		
#28-BOYS/STREET	ON	70	SO (ON)	45
	IN	30	MU (IN)	55

As indicated in Table 4.1, participants overwhelmingly used the English spatial preposition IN to describe six (6) out of the eight (8) scenes in this category. For scenes, #3-CIGARETTE/MOUTH, #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, and #25-BIRD/SKY respondents' preference for IN was dominant at between 95% and 100%. Also, 30% of the participants used IN to describe the location of the figure in scene #28-BOYS/STREET.

A close examination of the pattern of configurations in the scenes described with IN by the participants in Table 4.1 shows that the spatial preposition IN was used when the figure was contained either fully or partially, within the outlines or borders of the ground.

That is, the participants saw the figure-ground relationships in scenes #3-CIGARETTE/MOUTH, #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, #25-BIRD/SKY, and #28-BOYS/STREET as representing various relationships of containment and or inclusion where the ground is construed as:

- (a) a three-dimensional object with an interior (like 'bowl' in scene #6-APPLE/BOWL)
- (b) representing an object that has clearly defined boundaries (like 'street' in scene #28-BOYS/STREET or an unbounded space (like the 'sky' in scene #25-BIRD/SKY), and
- (c) having impressions that penetrate the ground or occupy space in the ground that would have been occupied by the ground itself if not for the presence of the impression or figure within it, (like scene #18-HOLE/NAPKIN).

Many Linguists (e.g., Munnich and Landau, 2010; Tyler and Evans, 2003; Feist, 2000) in discussing the use of the English preposition IN from the cognitive semantics perspective, assert that the geometry of the ground should be such that it has an interior, or be an object with or without clearly defined boundaries within which the figure can be located. Fonseca (2002) also explains that the use of IN in such configurations reflects the spatial concept of containment in English. This confirms that participants' construal and or use of IN to describe these scenes listed above align with the conventional or typical way the scenes are described in English.

The grounds in scenes #2-MAN/BED and #28-BOYS/STREET displayed in Figure 4.3 have similar characteristics as the grounds in the scenes discussed as dominantly described with IN

above. In particular, they have clearly defined outlines within which the figures are found. Yet, participants preferred ON in their description of scenes #2-MAN/BED (95%) and #28-BOYS/STREET (70%). Thus, nearly all the participants in describing scene #2-MAN/BED, and most of the participants in describing scene #28-BOYS/STREET conceptualized the reference objects or grounds not as containers but as two-dimensional planers with which the figures are in contact. Consequently, they described the scenes with the preposition ON. Their descriptions of those scenes were thus, predominantly:

(1) The man is on bed (scene #2-MAN/BED)

(2) The boys are playing on the street (scene #28-BOYS/STREET)

These construals expressed in sentences 1 and 2 above are different from the conventional ways in which those scenes are construed in English. In English, item #28-BOYS/STREET is typically construed as a relationship of containment and is conventionally described with the preposition IN. 30% of the participants did describe scene #28-BOYS/STREET the conventional way with IN as has already been mentioned.

When the Akan-English bilinguals were asked to describe the scenes in Figure 4.3 in Akan, they used the Akan preposition MU exclusively (100%) to describe scenes #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, and #25-BIRD/SKY. The Akan relator, MU (in/inside) was used when the object was located within the borders of the ground or reference object. Sentences 3 to 7 below are examples of participants' responses to scenes #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, and #25-BIRD/SKY respectively:

(1) Apple no da boolu no mu

Apple DET sleep.PRS bowl DET in

'The apple is in the bowl'

(2) Bulb no hyɛ socket no mu
bulb DET insert.PRS socket DET inside
'The bulb is in the socket'

(3) Tokro no da napkin no mu
hole DET sleep.PRS napkin DET in side
'The whole is in the napkin'

(4) Nkorɔfoɔ no te-te kaa no mu
people DET sit-RED.PRS car DET inside
'The people are in the car'

(5) Anomaa no wɔ wie-m(u)
bird DET be.PRS sky-inside
'The bird is in the sky'

Sentences 1 to 5 above are sample responses from participants that show various forms of containment relationships described with the preposition MU (in/inside). In sentences 1 and 4, the figures are fully contained in the grounds. The relationship in sentence 2 is one of partial insertion where just a section of the figure is found in the ground. In sentence 3, MU (in) is used to describe negative space and in sentence 5, the figure 'anomaa' (bird) is in the vastness of the ground 'wiem' (sky) which has no defined boundaries.

Again, participants used different relator terms in their Akan description of scenes #3-CIGARETTE/MOUTH and #28-BOYS/STREET. The responses provided for scene #3-CIGARETTE/MOUTH is peculiar. 35% of the participants saw the figure as contained in the ground and described it accordingly with the preposition MU (in/inside). Thirteen (13) out of the

20 participants which is 65%, described the scene with a linguistic resource that has no preposition or clear relator term yet aptly describes the location of the figure in relation to the ground in Akan. For the item cigarette in mouth, the Akan responses were mainly:

(1) Sigareti no hyɛ na'-nu-m
 cigarette DET insert.PRS 3SGOBJ-mouth-inside

‘The cigarette is inserted into his mouth’

(2) Sigareti no hyɛ n-'ano
 cigarette DET insert.PRS 3SGOBJ-mouth

‘The cigarette is inserted into his mouth’

In sentence 1 above, MU (in/inside) is the relator term. In sentence 2, HYE (inserted) which is a verb shows the relationship between the figure ‘sigareti’ (cigarette) and the ground ‘ano’ (mouth/entrance). In the scenario in sentence 10, the verb HYE (inserted) acts as both a verb and a localizer. Thus, HYE (inserted) diverged functionally to take on the grammatical function of a spatial preposition while maintaining its status as a verb thereby demonstrating Hopper’s (1991) principle of divergence. This suggests that, in Akan, when a syntactic structure has no preposition to inherently relate a figure to a ground, verbs take a spatial sense. This finding is confirmed by Ameka & Levinson (2007) who claim that in many languages, topological concepts are expressed with locative verbs. Osam et al. (2011) however assert that the status of such verbs as adpositions in Akan is part of a long debate though they form a good part of a broader set of relator terms in Akan.

It can be said, based on the data that, in Akan, partial insertion or inclusion of a figure in a ground can, as shown in the context of scene #3-CIGARETTE/MOUTH, be described with a spatial preposition or without a spatial preposition by employing a verb to show the location of objects.

Both linguistic situations, however, express the same topological notion or spatial concept of containment in Akan.

There is a near-even use of the two prepositions adopted to describe scene #28-BOYS/STREET. As shown in Table 4.1, 11 participants, constituting 55% of the 20 respondents described the scene with the Akan preposition MU (in/inside) indicating the concept of containment. The remaining 45 percent of the participants saw a scene in which the figure is merely in contact with the ground. They thus used the Akan preposition SO (on) to indicate support.

The dominant use of MU (in/inside) and SO (on) to describe scene #28-BOYS/STREET means both construals are permissible in Akan. It suggests mainly that the figure can be conceptualized as either residing in the marked borders of the ground or the ground is a plane surface with which the figure is in contact. Participants' show of preference for the prepositions IN and ON in the description of the same scene in English confirms a similar conceptualization as was used in the Akan description since the prepositions IN and ON used to describe the scenes in English, encode the same senses as SO (on/on top of) and MU (in/inside) in this context. It is observed though, that, while in Akan MU (in/inside) which is the Akan counterpart for IN was used more than SO (55 and 45% respectively), participants used ON (70%) more than they used IN (30%) when describing the scenes in English. The underlying pattern, however, is that the dual permissible spatial constructs of the scene in Akan were the same used in English. This indicates a transfer of L1 conceptual pattern in the spatial construct of the participants' L2 performance.

On one hand, the Akan construal of the scene is congruent with the conventional description of the scene in English. The transfer of the Akan spatial concept into their English thus led to the conventional description of the scene by a section of the participants. On the other hand, participants' construal of the scene in Akan is not congruent with how it is described in English, yet, it was represented in the description of the participants in English leading to non-conventional behavior – this points to negative transfer.

Finally, in the description of scene #2-MAN/BED in Akan, 19 out of the 20 participants, representing 95% described the scene with the preposition SO (on/ on top of) to show a construal of contact and support. In English however, the configuration in scene #2-MAN/BED is

conventionally construed as a relationship of containment where the figure (man) is conceptualized as residing within the borders of the ground (bed).

It is interesting to note that the conceptualization of scene #2-MAN/BED as containment is possible in Akan only when there is an extralinguistic context, e.g., if a person is confined to the bed because of illness, disability or simply feeling lazy to get out of bed during the day/work hours as shown in the sentence below.

(1) Papa no da mpa mu
 man DET sleep.PRS bed inside
 ‘The man is in bed’

Based on the characteristics of the grounds in the scenes described with the Akan preposition MU (in/inside) and English preposition IN, the semantic profiles or scopes of use of these prepositions extend beyond configurations where the figure is within a ground that is a three-dimensional object with an interior. Herskovits (1986:148-155) theorizes that geometric representations reflect the ideal meanings of prepositions. In effect, they reflect the spatial configurations like inclusion, surface, contact, boundaries, containment, etc which language users consider in applying a preposition to a scene. Most of the schematization types of the scenes the Akan-English bilinguals described with IN and MU (in/inside) do not constitute the core sense of what is considered as the prototypical use of the spatial preposition IN (Fonseca, 2002).

This is particularly evident in the fact that the features of some of the grounds in the scenes, for example, ‘sky’ which is called ‘wiem’ in Akan, lie in the periphery of objects that have the property to contain or include another. The Akan-English bilinguals, therefore, chose IN in English and MU (in/inside) in Akan to describe scenes #18-HOLE/NAPKIN, #25-BIRD/SKY, and #28-BOYS/STREET because such uses of the prepositions are permissible by the spatial conventions of English and Akan. That is to say, in English and Akan, the spatial concept of containment extends beyond the situation where an object resides in the hollow bounded interior of another; it includes what Levinson & Wilkins (2006: 515) refer to as ‘negative space’ (Example: scene #18-

HOLE/NAPKIN), and objects with or without clearly defined borders as evidenced by the characteristics of the grounds in the scenes described with IN and MU (in/inside) in Figure 4.3. Herskovits (1986) explains that in such spatial scenes where the ground has no bounded interior, language users need a geometrical imagination to mentally create the boundaries.

The English and Akan results of participants description of the scenes that are conventionally construed in English as containment reveal that scenes #3-CIGARETTE/MOUTH, #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, #25-BIRD/SKY and #28-BOYS/STREET which are the scenes participants described with the English preposition IN are the same scenes they described with the Akan preposition MU (in/inside). Their preference for IN and MU (in/inside) confirms that they cognitively processed the scenes the same way or had a similar mental image of the scenes when they spoke both Akan and English. It means, therefore, that the English spatial preposition IN and the Akan preposition MU (in/inside) are close translation and usage equivalents.

Conventionally, scenes #3-CIGARETTE/MOUTH, #6-APPLE/BOWL, #8-BULB/SOCKET, #18-HOLE/NAPKIN, #20-PEOPLE/CAR, and #25-BIRD/SKY and #28-BOYS/STREET are construed in English as relationships of containment and are described with the preposition IN (Alonso et al., 2016; Feist, 2000). It can be concluded then that these scenes are similarly conceptualized in Akan and in English and participants used prepositions that encode the spatial concept of containment to describe the scenes in both languages.

The Analysis also revealed that in describing scene #2-MAN/BED in English, the Akan-English bilinguals chose ON which is the English preposition used for the cognitive concept of support. In this instance, participants' performance in English did not align with the conventions of English since the scene is typically construed as containment and is described with IN. Given that the scene is conventionally construed in Akan with SO (on) which is the preposition for the concept of support in Akan, it suggests that the Akan-English bilinguals' performance in English in this instance reflects the spatial conceptualization of Akan rather than English.

In general, the prepositional choices of the Akan-English bilinguals in English and Akan, in the description of scenes in Figure 4.3 show a pattern in their cognitive processing of the spatial scenes

which suggests that there are translation and usage equivalence and also differences between the English preposition IN and Akan MU (in/inside). By extension, it shows similarities and differences in which spatial configurations count as containment in the English of the Akan English bilinguals, in conventional English and Akan.

4.2 Participants' Description of Scenes Typically Construed in English as Support

The scenes displayed in Figure 4.4 below show spatial configurations conventionally described with the preposition ON and represent the spatial concept of support in English. Participants' responses in English and Akan to these scenes are presented in Table 4.2 and discussed below.

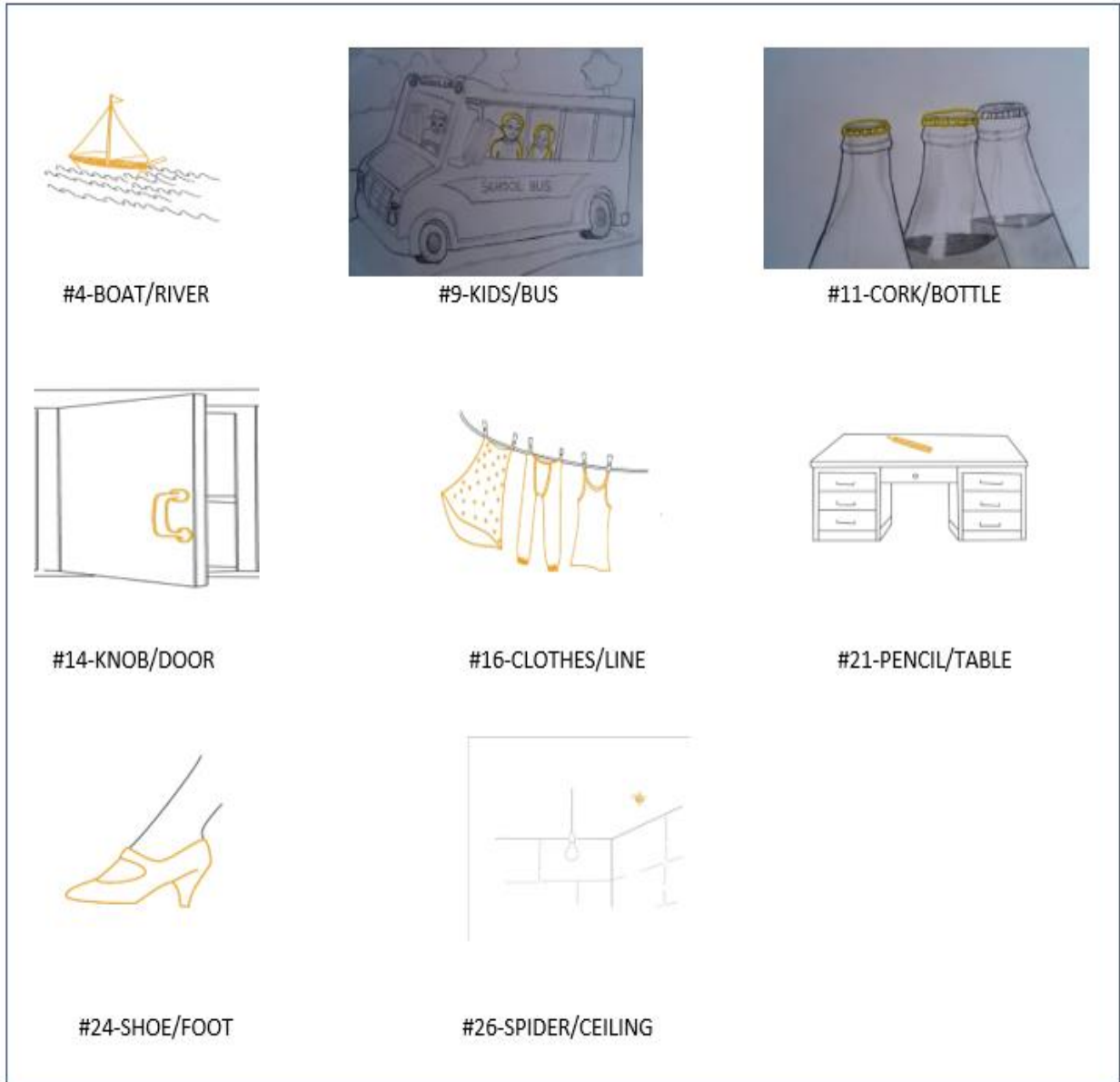


Figure 4.4 Spatial scenes conventionally construed as Support in English. All the pictures, apart from 9 and 11 are from Bowerman and Pederson’s (1992) TRPS.

Table 4.2: Participants’ English and Akan description of spatial scenes conventionally construed in English as containment (or typically described in English with the preposition ON).

SCENE	RESPONSES			
	ENGLISH	%	AKAN	%

#4-BOAT/RIVER	ON	100	SO (ON)	100
#9-KIDS/BUS	IN	95	MU (IN)	100
	ON	5		
#11-CROWN CORK/BOTTLE	IN	5	SO (ON)	95
	ON	95	ANO (MOUTH)	5
#14-KNOB (HANDLE)/DOOR	AT	10	HO (SELF,)	65
	STUCK TO	20	ANO (MOUTH)	20
	ATTACHED TO	30	MU (IN)	10
	IN	10	SO (ON)	5
	IN FRONT OF	10		
	ON	20		
#16-CLOTHES/LINE	ON	100	SO (ON)	100
#21-PENCIL/TABLE	ON	100	SO (ON)	100
#24-SHOE/FOOT	ON	45	HYE (WORN/INSERTED)	100
	WORN	45		
	AT	10		
#26-SPIDER/CEILING	ON	75	SO (ON)	90
	AT	15	ASE (UNDER)	10
	UNDER	10		

The Akan-English bilinguals used varied prepositions to describe scenes in Figure 4.3 than they did when describing the pictures in Figure 4.4. As can be seen in Table 4.2, in describing the scenes conventionally construed in English as support, participants showed a preference for ON (95 to 100%) for items #4-BOAT/RIVER, #11-CROWN CORK/BOTTLE, #16-CLOTHES/LINE, #21-PENCIL/TABLE, and #26-SPIDER/CEILING. Also, as shown in Table 4.2, the Akan-English bilinguals overwhelmingly (80 – 100%) used the Akan preposition SO (on) to describe the same set of spatial scenes in Akan. The geometric constraints of the configurations in these 5 scenes indicate that the English ON and Akan SO (on) were applied by the participants when a figure is in contact with a ground or a reference object that is:

- (a) a two-dimensional planer – (river in scenes #4-BOAT/RIVER, table in scene #21-PENCIL/TABLE, ceiling in #26-SPIDER/CEILING) or
- (b) a line one dimensional entity – (line in scene #16-CLOTHES/LINE) and
- (c) a conical three-dimensional structure – (scene #11-CROWN CORK/BOTTLE)

In (a), the figure freely rests on the upper surface of the ground (#4-BOAT/RIVER, #21-PENCIL/TABLE) or is stuck to its lower surface (#26-SPIDER/CEILING). In (b), the figure adheres to the ground and in (c), the figure is affixed onto the top opening (mouth) of the ground. Thus, the figures in these spatial scenes ‘boat’, ‘crown cork’, ‘clothes’, ‘pencil’, and ‘spider’ are in contact with the grounds ‘river’, ‘bottle’, ‘line’, ‘table’, and ‘ceiling’ and the grounds provide support in diverse ways for their respective weights. The English spatial preposition ON encodes the spatial concept of containment and so does the Akan spatial relator term SO (on). The dominant use of these lexical items to describe the same set of scenes by the Akan English bilinguals is evidence that ON and SO (on) are semantically congruent. Consequently, it indicates that the spatial configurations in scenes #4-BOAT/RIVER, #11-CROWN CORK/BOTTLE, #16-CLOTHES/LINE, #21-PENCIL/TABLE, and #26-SPIDER/CEILING depict a common spatial concept (support) in English and Akan.

Contrary to the spatial conventions of English, scene #9-KIDS/BUS was described in English by the Akan-English bilinguals with terms that do not align with the conventional description of the scene in English.

(1) The kids are in the bus

Sentence 1 is a sample response from the participants. The Akan-English bilinguals, per their prepositional choice, saw the configuration in scene #9-KIDS/BUS as a relationship where the figure is located within the ground. The participants conceptualized ‘bus’ as a three-dimensional object within which the kids are fully contained and thus described scene #9-KIDS/BUS almost exclusively (95%) with IN.

In her extensively cited work, Herskovits (1986:149) emphasizes that the spatial preposition IN is used when there is “inclusion of a geometric construct in a one-, two-, or three-dimensional construct”. Participants' description of #9-KIDS/BUS with the preposition IN, per Herskovits' (1986) guidelines, would have been conventional. However, in English, it is so conditioned or conventionally practiced that the relationship between an object contained in a large vehicle for transport (example: bus, ship, plane) is considered as a relationship of support and not containment and is thus, described with the preposition ON (Galleguillos, 2013; Munchin and Landau, 2010; Herskovits, 1986). The difficulty on the part of participants in construing this scene as is conventionally described could be due to the three-dimensional nature of the ground (bus) which attracts a preposition with a three-dimensional profile. Munnich and Landau (2010:35) consider such situations where “an abstract conception of a reference object overrides a salient concrete conception of [same] object” as “particularly vexing” (ibid:35) for learners of English as a second language and L2 language users in general.

In Akan, participants exclusively (100%) described scene #9-KIDS/BUS with MU (in).

(1) M-mofra	no	te-te	bus	no	mu
PL- kid	DET	sit-RED	bus	DET	inside

‘The kids are sitting in the bus’

Sentence 1 above shows that by the use of MU (in/inside) participants conceived a mental image where the figure (mmofra) was fully contained in the volume of the ground (bus).

This difference observed between the scope of applicability or construal constraints of the Akan prepositions SO and MU and their English counterparts ON and IN as it pertains to conveyance by large vehicles supports Bowerman’s (1996a) claim that topological notions like ‘containment’ and ‘inclusion’ and ‘support’ and ‘contact’ constitute the semantic meaning of English prepositions ON and IN and several equivalent terms in other languages but what is considered as “support” or “inclusion” may be different across languages.

Talmy (1983) offers a historical reason for the use of ON with large vehicles in English. He points out that in the past, large topless carts were used to transport people from place to place. ON was therefore used to refer to the contact between the passengers and the plane surface of the topless carts that carried the weight of the passengers. The linguistic practice has over the years become conventional and “inflexibly imposed on new [large] objects” despite the change in the structure of vehicles (Talmy, 1983:267).

This culturally motivated abstract conception of a bus in transit is inexistent in Akan. Consequently, it does not lead to the application of a lexical item that encodes support in such a spatial scene. Cienki (1989) emphasizes that culture-specific conceptualization of objects is considered as a cross-linguistic conceptual variation among languages and they manifest syntactically. Such conceptual difference in the construal of identical configurations in a given language is evidence of the complexity there is in the use of spatial prepositions – a situation taken for granted by L1 speakers and a major hurdle for L2 learners and speakers.

Akan-English bilinguals' resort to the English preposition IN to describe scene #9-KIDS/BUS means that they construed the scene with the same lens as they did when describing the scene in Akan with MU (in/inside).

As shown in Table 4.2, there were multiple responses to scenes #14-KNOB/DOOR and #24-SHOE/FOOT. In describing scene #14-KNOB/DOOR in English, some of the participants saw the knob as residing in the general vicinity of the surface of the door (knob at door, 10%), others saw it as partially inserted into the surface of the door (knob in door, 10%), and 10% of participants also thought the knob is in front of the door (knob in front of door, 10%). For other participants, the knob was construed as adhered to the door (stuck to 20%, attached to 30%). That is, 50% of the participants used descriptive language to express the relationship between the located object and the reference object. Four (4) participants (20%) however described the relationship between the 'knob' and the 'door' in scene #14-KNOB/DOOR with the simple basic locative ON which is the spatial gram conventionally used to describe the configuration in the scene.

In English, ON is used to refer to mechanisms that work against gravity in situations where an object (A) in contact with another object (B) will fall if not supported in one way or the other by (B) such that (B) bears the weight of (A) (Kusmanto, 2017; Munnich and Landau, 2010; Feist, 2002; Talmy, 1988).

- (1) The door knob is attached to the door
- (2) The door knob is stuck to the door

The two Sentences above show the structure of responses of the participants who used 'attached to' and 'stuck to' to describe the scenes. By using these phrasal verbs, participants show that their mental image of the scene appreciates the nature of contact between the figure and the ground and the force dynamics at play in the spatial configuration. It suggests that their construal of the scene is, to an extent, the same as it is conventionally construed in English. However, most of the Akan-English bilinguals elected not to use ON to describe the scene.

Participants' performance in the description of scene #14-KNOB/DOOR in Akan is similar to the pattern that evolved in their description of the scene in English. As Table 4.2 shows, scene #14-

KBOB/DOOR drew multiple responses in Akan from participants too. Most of the participants (65%) used the preposition HO (surface, side) which is a reference to the plane vertical surface of the door, to describe the spatial configuration in the scene. The use of HO (surface, side) to describe scene #14-KBOB/DOOR indicates that the participants construed the ground in the picture, ‘epono’ (door) as a vertical two dimensional-planar on which’s plane surface the figure is located.

It was also found however that the preposition HO (surface/side) was aided by verbs which served to show the nature of the contact between the figure and the ground.

(1) Epono nsa no ε-hyε epono no ho
 door hand DET 3SGSUBJ-insert.PRS door DET self

‘The door knob is inserted into the door’

(2) Epono nsa no fam epono no ho
 door hand DET attach.PRS door DET self

‘The door handle is attached to the door’

(3) Epono nsa no tua epono no mu
 door hand DET affix.PRS door DET inside

‘The door handle is in the door’

(4) Epono nsa no tare epono no ano
 door hand DET attach.PRS door DET mouth

‘The door knob is attached to the front of the door’

Sentences 1 to 4 are some of the Akan responses of participants to scene #14-KBOB/DOOR.

As demonstrated in sentences 1 to 4 above, the use of the verbs TARE, HYE, FAM, and TUA which are verbs that indicate ‘clinging’ in Akan along with the prepositions HO (surface, side), as well as MU (in) and ANO (mouth/entrance), which are the other prepositions used to describe the scene in Akan in almost all (95%) their descriptions indicate, in various ways, participants’ acknowledgment of the force-dynamics of the contact between the figure (door knob) and the ground (door).

In Akan, the use of words that indicate contact with clinging along with a preposition is the typical way the spatial setup in scene #14-KBOB/DOOR is described. In English however, the configuration in scene #14-KBOB/DOOR is typically described with ON. That is, though the use of the phrasal verbs ‘attached to’ and ‘stuck to’ by 50% of the Akan-English bilinguals to describe the scene is not wrong per se, the structure of their response as demonstrated in sentences 26 and 27 is devoid of a spatial locative gram even though the question “where is the door knob?” typically attracts the basic locative lexical item ON in English.

It can be argued that participants use of descriptive language or the phrasal verbs ‘attached to’ and ‘stuck to’ in describing scene #14-KNOB/DOOR could be down to discursive style, a choice of a linguistic resource (attached to, stuck to) over another (on). However, reference to participants’ Akan description of the item (where they used words that show clingy attachment) provides insight into why most participants resorted to not-so-typical descriptions of scene #14-KNOB (DOOR HANDLE)/DOOR. As well, though similar contact situations (#16-CLOTHES/LINE and #26-SPIDER/CEILING) involving such force dynamics were almost exclusively described with SO (on) in Akan, the configuration in scene #14-KNOB/DOOR was not. This suggests that the scope of the Akan localizer SO (on) does not apply to the configuration in scene #14-KNOB/DOOR where the figure is in contact with a vertical structure. The participants, therefore, found it unnatural to use SO (on) and used HO (surface, side) even though the mental images in scenes #14-KNOB/DOOR and #26-SPIDER/CEILING are conceptualized with the same force-dynamics attribute.

Most of the participants behaved the same way in English. They used ON almost exclusively to describe scenes #16-CLOTHES/LINE and #26-SPIDER/CEILING, but avoided the spatial gram ON when describing scene #14-KNOB/DOOR. In scenes #16-CLOTHES/LINE and #26-

SPIDER/CEILING, the figure is in contact with the horizontal surface of the ground while in scene #14-KNOB/DOOR the figure is in contact with the vertical surface of the ground.

The parallels in the performance of the participants in Akan and English in the description of scene #14-KNOB (DOOR HANDLE)/DOOR suggest the transfer of LI spatial concepts in the L2 domain. In this particular instance, it's the use of words that show adhesive contact for the description of an object in contact with a vertical entity. It is the restriction on the use of SO (on) in Akan, imposed due to the vertical orientation of the ground that is transferred into the domain of L2 performance such that a similar restriction is imposed on the use of ON even though, as shown in Figure 4.5 below, the English spatial preposition ON is not axis sensitive.

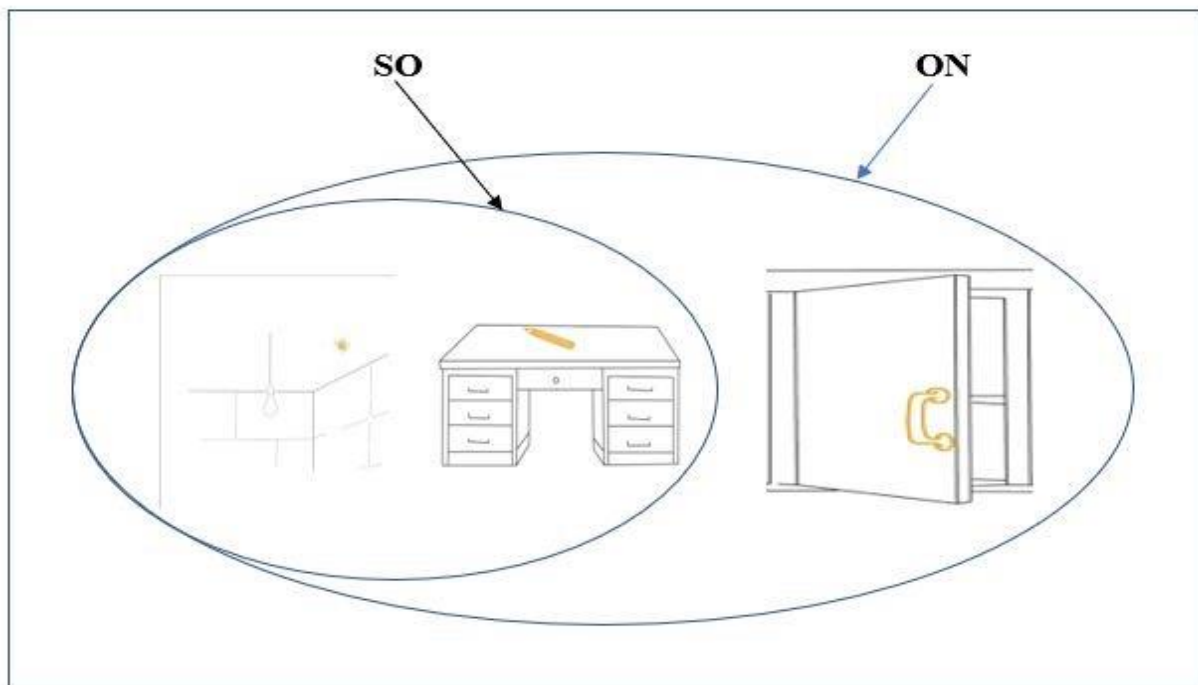


Figure 4.5 Pictorial representation of the scope of axial applicability of the prepositions ON in English and SO in Akan.

Scene #24-SHOE/FOOT was described in three different ways. 45% of the participants described the scene without a topological term. They employed descriptive language to show the relationship between the figure and the ground in English. Another, 45% of participants described scene #24-

SHOE/FOOT with the preposition ON as it is conventionally described in English and 10% of the participants also described the preposition with AT.

In Akan, per the performance of the Akan-English bilinguals, scene #24-SHOE/FOOT, is described only descriptively and not with a spatial preposition.

The responses given in English and Akan by participants were mainly:

Akan	English
(1) Shoe no hɛ ne nan	(2) The shoe is wearing the leg
Shoe DET wear.PRS 3SG foot	
‘The shoe is wearing the leg’	

Essentially, In English, 45% of participants stated that “the shoe is wearing the leg” which is an adoption of L1 perspective in the construal of a scene in L2 as shown in sentences 1 and 2.

Thus, the descriptive expression 45% of participants used to show the relationship in scene #24-SHOE/FOOT in English is the same conceptually, semantically, and syntactically in Akan. The portrayal of the figure ‘shoe’ as indicated in sentence 2 above, as the animate object that is “wearing the leg”, results in an odd sentence. This is because the personification of inanimate objects in determining the location of things in space is a concept that is outrightly foreign in English but a conventional practice in Akan. The use of descriptive language of this kind in the L2 domain by participants is evidence of conceptual transfer from L1 to L2. This perspective of viewing scene #24-SHOE/FOOT by 45% of participants resulting in such odd syntactic arrangement of words in English is explained by Lee (2001:1) who remarks that “linguistic structure is a direct reflex of cognition in the sense that a particular linguistic expression is associated with a particular way of conceptualizing a given situation”. This implies that the Akan-English bilinguals cognitively processed scene #24-SHOE/FOOT in English just as they did in Akan and expressed their thought or cognition to reflect their construal of the scene as “the shoe is wearing the leg”.

In sum, the Akan-English bilinguals' construal of the scenes in Figure 4.4 in English, as manifested in their choices of prepositions, were mostly congruent with the conventions of English. In those scenes, the English preposition ON and the Akan preposition SO (on) appeared to be equivalent in use and reflected the spatial concept of support in both languages. Their performance in the description of scenes #9-KIDS/BUS #14-KNOB/DOOR and #24-SHOE/FOOT in English and Akan, however, show that participants construed the scenes in English with a set of attributes that reflected a transfer of Akan spatial concepts.

4.3 Participants' Description of Scenes Typically Construed in English as Co-location

The scenes in the picture description task that are typically construed as co-location in English are shown in Figure 4.6. Table 4.3 also presents the prepositions or relator terms the participants used to describe these scenes in English and Akan.



Figure 4.6 Spatial scenes conventionally construed as co-location in English

Table 4.3 Participants' English and Akan description of Spatial relationships conventionally construed as a relationship of co-location (or typically described in English with the preposition AT)

SCENE	RESPONSES			
	ENGLISH	%	AKAN	%
#1-KIDS/TABLE	AROUND	25	HO (AROUND)	85

	AT	25	AKYI (BACK/BEHIND)	15
	BESIDE	25		
	ON	5		
	BEHIND	20		
#TRAFFIC/ROUNDAABOUT	AT	90	WO	85
	AROUND	5	MU (IN)	5
	ON	5	HO (AROUND)	10
#12-PEOPLE/CONCERT	AT	90	ASE (UNDER)	80
	UNDER	10	WO	20
#17-PEOPLE/CINEMA	AT	95	WO	45
	UNDER	5	ASE (UNDER)	55
#19-BOY/QUEUE	AT	70	AKYI (BACK/BEHIND)	100
	BEHIND	25		
	IN	5		
#22-MAN/CHECKPOINT	AT	100	GYINA (STAND)	15
			WO (AT, TO BE)	85
#27-PEOPLE/BUS STOP	AT	100	GYINA (STAND)	40
			WO (AT, TO BE)	60

When describing the scenes in Figure 4.6 in English, the Akan-English bilinguals' performance did not differ from the typical way the items are described in conventional English in 6 of the 7

scenes displayed in Figure 4.6. There was a clear preference for the preposition AT in describing scenes #5-TRAFFIC/ROUNDABOUT (90%), #12-PEOPLE/CONCERT (90%), #17-PEOPLE/CINEMA (95%), #19-BOY/QUEUE (70%) and #27-PEOPLE/BUS STOP (100%). Snider (2010), Fonseca (2002), Bennett (1975), and Leech (1970) characterize AT as a locative that prototypically expresses the location of an entity as being at a specific point. Participants' description of the scenes with AT emphasizes that they conceptualized the objects in the scenes as co-located and expressed their conception with the lexical item AT just as the scenes are conventionally described in English.

Despite participants' dominant use of AT in describing 6 of the 7 scenes in this category, they described scene #1-KIDS/TABLE with five different prepositions. None of these spatial prepositions, however, was dominantly used to be considered as the top preference of the participants. As Table 4.3 illustrates, participants used the prepositions AROUND (25%), AT (25%) BESIDE (25%) to describe the scene. Also, ON and BEHIND were used by 5% and 20% of the participants respectively to describe the configuration in scene #1-KIDS/TABLE. The varied responses mean the scene was processed in different ways in the minds of the participants. It could also suggest a possible cognitive struggle on the part of participants in construing the scene and identifying an appropriate preposition to describe it. This claim however would require a different set of tools this study does not have to ascertain.

The resort to non-conventional ways of describing scene #1-KIDS/TABLE by most of the Akan-English bilinguals could be due to the extralinguistic import of the scene. Herskovits (1988) posits that the correct application of spatial lexical items is evidence of a language users' awareness of the extralinguistic knowledge of the spatial scene. In all the scenes dominantly described with AT by the participants (#12-PEOPLE/CONCERT, #17-PEOPLE/CINEMA, #19-BOY/QUEUE, #22-MAN/CHECKPOINT, and #27-PEOPLE/BUS STOP) there is a sense of the figure performing a function while co-located with the ground.

Scene #1-KIDS/TABLE represents a similar situation to the other scenes in that the figure (kids) is co-located with the ground (table) while the figure could be performing an activity (eating). It would be expected that participants would dominantly describe the scene with AT given that other

similar scenes were described as such, but, the majority (75%) of the participants chose differently. While the prepositions AROUND, BEHIND, BESIDE, and ON which are the other prepositions used to describe the scene by the participants can be said to co-locate the figure and the ground at a particular point in space, they lack the sense of function – of performing an activity (eating). The majority of the participants thus failed to use the more conventional preposition (AT) to describe scene #1–KIDS/TABLE. This means that the participants could not conceptualize the figure-ground configuration in scene #1-KIDS/TABLE beyond co-location to include function.

In all, apart from scene #1-KIDS/TABLE participants English construal of the scenes in Figure 4.6 aligned with the conventional description of the scenes in English.

The Akan-English bilinguals also described the scenes in Figure 4.6 in Akan. WO (at/to be) was the top preference of the participants when describing scenes #5-TRAFFIC/ROUNDAABOUT (85%), #22-MAN/CHECKPOINT (85%) and #27-PEOPLE/BUS STOP (60%). In all of these pictures (which were also dominantly described with AT in English by the participants), WO (at/to be) is used to indicate the nearness of the figure to the ground and this shows a correspondence in sense in the application of the Akan preposition WO (at, to be) and the English preposition AT. 40% of the participants also described scene #27-PEOPLE/BUS STOP (60%) with the verb GYINA (standing) which further emphasizes the pervasiveness of the use of verbs in locative expressions in Akan

For scene #1-KIDS/TABLE, however, participants' top preference was HO (self/beside) and was used by 85% of the participants.

(1) M-mofra no tete epono no ho
 PL- kid DET sit-RED.PRS door DET self
 ‘The kids are sitting by the table’

(2) Mmofra no wɔ epono no ho
 PL- kid DET be.PRS door DET self

‘The kids are around the table’

In the sample of responses provided by participants in sentences 1 and 2 above, HO (self/beside) implies the ‘kids’ are in close proximity with the ‘table’ in a manner that is dimensionless and unspecified. This means the figure could be behind, in front of, or adjacent to the ground. AKYI (back/behind) was used by the remaining 15% of the participants to describe the scene.

Typically, as has been discussed earlier, this scene is described with the preposition AT in English to show not just proximity but a sense of function or activity. The Akan prepositions HO (self/beside) and AKYI (back/behind), which were used by the Akan-English bilinguals to describe scene #1-KIDS/TABLE, however, do not have that sense of function in this context.

Participants thus did not construe scene #1-KIDS/TABLE with both the spatial attribute of co-location and the extralinguistic parameter of function in Akan. This indicates that, at least, the Akan prepositions HO (self/surface/side) and AKYI (back/behind) and the English preposition AT share the concept of co-location as a common attribute just like the Akan preposition WO does with AT. The deduction here is that though the prepositions HO (self/surface/side) and AKYI (back/behind) and the English preposition AT are not semantically similar in content, they can be employed to show the spatial concept of co-location which is common to both languages.

Also, as shown in Table 4.3 and as discussed earlier, 75% of the Akan-English bilinguals used prepositions that only co-locate the figure and the ground but do not have the sense of function to describe scene #1-KIDS/TABLE (AROUND, BEHIND, BESIDE, and ON) in English. This suggests that the majority of the participants’ performance reflected the Akan construal of the scene. An interpretation that is rooted in culture can be offered for this. It is not a typical practice in the Akan community to sit together at table for a meal. Though Akans practice commensality, it is not necessarily at a table in such a setting as seen in scene #1-KIDS/TABLE. This indicates that, though such functional sense exists in the use of the Akan preposition HO (self/beside), the concept does not apply in this context and the participants carried such contextual restriction into their L2 performance which led them to use prepositions that only co-locate the figure to the ground without indicating the potential activity the figure could be doing.

Scenes #12-PEOPLE/CONCERT and #17-PEOPLE/CINEMA are also displayed in Figure 4.6 and were described by the participants in Akan. ASE (under) was the top preference for scene #12-PEOPLE/CONCERT (80%) and participants displayed a split preference between ASE (under) (55%) and WƆ (at/to be) in describing scene #17-PEOPLE/CINEMA.

(1) Nkorɔfoɔ no wɔ concert ase
 people DET be.PRS concert under
 ‘The people are under a concert’

(2) Nkorɔfoɔ no wɔ cinema ase
 people DET be.PRS cinema under
 ‘The people are under a concert’

In participants’ responses in sentences 1 and 2 above, ASE is used to describe scenes #12-PEOPLE/CONCERT and #17-PEOPLE/CINEMA respectively. ASE (under) is used in Akan prototypically to locate a figure when it is beneath the ground. The application of this spatial lexical item in describing scenes #12-PEOPLE/CONCERT and #17-PEOPLE/CINEMA in Akan by the participants is however not driven by the need to establish just a simple spatio-geometric relation. The grounds in these scenes are event centers, and or buildings. They thus have no structure with a hollow part beneath where the figure can reside. Thus, the structural or geometric characteristics of the grounds and that of the figures (living human beings) in scenes #12-PEOPLE/CONCERT and #17-PEOPLE/CINEMA do not allow for the application of the lexical item ASE (under) in this scenario, but the description of the scenes with ASE (under) is the conventional practice in Akan in the configurations in scenes PEOPLE/CONCERT and #17-PEOPLE/CINEMA and it is used based on its functional attribute. ASE suggests being at a location and actively participating in the event that is taking place at the location.

This finding is in agreement with Feist’s (2000) observation that the selection and use of spatial terms need not rely on all attributes or factors of the spatial term. Feist (2000) submits that Just one attribute is enough to make the use of a lexical item appropriate in a given context or a given language. This is further supported by Evans (2009) who makes a case for the proper consideration

of function in the discourse on spatial semantics. Evans, (2009:218) contends that to properly grasp the ways language users “employ the core spatial lexical concept of a preposition [researchers] must also allow for non-spatial parameters which form part of the linguistic content encoded by the lexical concept”. The use of AT and ASE (under) by the participants to show both co-location and the potential performance of an activity confirms that “we seldom employ prepositions simply to describe a purely spatio-geometric relationship” (Evans 2009: 220).

Finally, there was the exclusive use of the Akan preposition AKYI (back/behind) for the description of scene #19-BOY/QUEUE.

(1) Abaamuwaa no gyina queue no akyi
 Boy DET stand.PRS queue DET back

‘The boy is standing at the back of the queue’

(2) Abaamuwaa no di queue no akyi
 Boy DET eat.PRS queue DET back

‘The boy is at the back of the queue’

(3) Ɔ-wo queue no akyi
 3SGSUBJ- be.PRS queue DET back

‘He is at the back of the queue’

In all these sentences offered by participants, the Akan preposition used is AKYI (back/behind) which is a nominal that has grammaticalized into a preposition and it depicts the co-location of the figure and the ground.

Scenes #1-KIDS/TABLE and #19-BOY/QUEUE are typically described with AT which translates into WC (at, to be) in Akan. Participants Akan description of the configurations in scenes #1-KIDS/TABLE with HO (surface/side) and #19-BOY/QUEUE with AKYI (back/behind) to show the spatial concept of co-location suggests that common spatial concepts in languages are not always described with spatial lexical items that generally appear to be semantically similar in the languages in question. Ensuing from this observation, as the analysis has shown, is the fact that in Akan and English, the spatial concept of co-location is expressed with many different prepositions. This confirms what Cresswell (1978:16) as cited in Snider (2010), had already observed that in English, many other prepositions are used like AT to express that “same simple locative along with other information”. This further indicates the similarities there are in space construction between English and Akan.

4.4 Summary

The study has followed the cognitive linguistics notion of construal drawn from the theory of cognitive grammar to investigate whether Akan English bilinguals' use of English spatial prepositions reflects spatial concepts in their L1.

The results have shown that the Akan-English bilinguals used multiple prepositions to describe each set of scenes typically described in English with the spatial prepositions IN, ON, and AT.

Table 4.4 Prepositions participants used to describe scenes typically described with IN, ON, and AT in English

TESTED PREPOSITIONS WITH RESPONSES BELOW

IN	ON	AT
ON	ON	AROUND
IN	IN	AT
THROUGH	AT	BESIDE
	STUCK TO	BEHIND
	ATTACHED TO	ON
	IN FRONT OF	UNDER
	WORN	IN
	UNDER	

The scenes typically described with ON attracted the greatest number of prepositions and scenes conventionally described with IN were described with the least number of prepositions.

It was also found that in describing most of the scenes, Akan-English bilinguals' performance showed that the objects involved in the spatial relationships were conceived in ways that portray awareness of the English spatial concepts. The prepositions they used to describe most of the scenes aligned with the conventional description of the scenes in English. For other scenes, participants' chose prepositions that highlighted particular dimensions of the objects in the scenes in ways that are different from the conventions of English.

Again, the study revealed that the Akan spatial grams MU (in/inside), SO (on /on top of), and WC (at/ to be) have close conceptual equivalence with the English prepositions IN, ON, and AT respectively. In some contexts, however, the two sets of prepositions were conceptually incongruent; they differed in sense and scope of application.

Finally, parallels were found in the pattern of responses of the Akan-English bilinguals' descriptions of the scenes. It was observed that their responses to the scenes agreed to the conventions of English when the scenes in question are construed the same in English and Akan. Likewise, the Akan-English bilinguals' performances were contrary to the conventions of English whenever the scenes were construed differently in Akan and English. This pattern suggests that the Akan-English bilinguals operated with the Akan spatial concepts when describing the scenes in English.

In sum, the analysis and discussion have shown that while Akan and English share the spatial concepts of containment, support, and co-location across many different spatial configurations, there are also many differences in the way space is constructed in both languages.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter concludes the entire study. It summarizes the findings of the study and draws conclusions based on the findings. It also discusses possible implications of the findings, reflects on some limitations of the study, and gives recommendations for future research.

5.1 Key Findings and Conclusions

The study sought to find out whether or not the use of English spatial prepositions by Akan-English bilinguals in Ghana reflect Akan spatial concepts. Four research questions guided the study and they are answered below.

Research question 1

Research question 1 asks how Akan-English bilinguals linguistically describe scenes typically described with the English spatial prepositions IN, ON, and AT. The study found that different prepositions were used to describe each of the sets of scenes typically described with IN, ON, and AT. The prepositions *on*, *in*, and *through* were used by participants to describe the scenes typically described in English with IN. *On*, *in*, *at*, *stuck to*, and *attached to* are the prepositions the Akan-English bilinguals used to describe scenes conventionally described with ON and the scenes typically described with the preposition AT were described with *at*, *beside*, *behind on*, *under*, and *in*.

Research Question 2

Research question 2 inquires into how Akan-English bilinguals construe scenes typically described with the English spatial prepositions IN, ON, and AT. The Akan-English bilinguals' L2 performance in the use of the spatial prepositions IN, ON, and AT show that their choices did not always reflect the English conventions of use of the prepositions IN, ON, and AT.

Though their use of the prepositions IN, ON, and AT in the description of the spatial scenes were mostly in agreement with English conventions, there were other instances in which participants performed in ways that were outrightly non-conventional in English. Of particular mention is participants' use of descriptive language instead of the spatial preposition ON to describe scene #24-SHOE/FOOT leading to the use of an odd expression like 'The shoe is wearing the leg' to show the location of the 'shoe' in reference to the 'foot'. Similarly, participants construed scene #9-KIDS/BUS as a relationship of containment though it is conventionally conceptualized as support in English. The conclusion is that they used the prepositions IN, ON, and AT to represent spatial concepts in ways that are not entirely congruent with the conventions of English.

Research Question 3

Research question 3 asks if there are similarities and differences in the use of the English spatial prepositions IN, ON, and AT and their Akan equivalents MU (in/inside), SO (on), and WO (at/to be). The study found that the English prepositions IN, ON, and AT and the Akan prepositions MU (in/inside), SO (on/on top of), and WO (at/to be) have close translation and conceptual equivalence.

IN and MU (in/inside) are used to represent the same types of containment relationships which include configurations like full inclusion, partial insertion, objects in bounded and unbounded space, and negative space. SO (on) is used to show support relationships in ways that are similar to the conventional use of the English preposition ON. The study also revealed that the Akan preposition WO (at, to be) is used to convey the co-location of a figure with a ground in a way that is very similar to the conventional use of the English preposition AT.

On the other hand, the study uncovered that the spatial prepositions IN, ON, and AT and the MU (in/inside), SO (on/on top of) and WƆ (at/to be) have usage-related differences which by extension result in conceptual differences in space construction in English and Akan.

The differences manifested in situations where an abstract concept, deeply rooted in culture, was given prominence in the process of conceptualization over salient geometric features of the objects in the scene. For example, scene #9-KIDS/BUS is construed in English as support and described with ON though the figure in the scene is contained in the ground; historical and cultural reasons are given as the source of such unusual construal in English. In Akan, the scene represents containment and is described with MU (in/inside)

Also, it was found that usage restrictions on prepositions imposed by the conventions of Akan resulted in usage-related differences. A typical example is the construal of space as it pertains to axial orientation. The study revealed that, while English treats contacts with objects in all axial orientations as support and describes them with the preposition ON, Akan does not. In Akan, contacts with vertical surfaces are not conceptualized as support but just adhesive contact. This is despite the fact that contact with the lower surface of a horizontal object is construed as a relationship of contact and support.

Another difference in the use of the prepositions investigated is that in Akan, syntactic structures without prepositions are used as basic locative constructs. In such situations, verbs and nominals function as localizers. This was observed to be particularly the case when showing the location of an adorned object. Such scenarios fall within the semantic profile of ON in English but its Akan equivalent SO (on) is not used to describe such spatial configurations.

The existence of common patterns and areas of divergence between and among languages has been well established in linguistics. Chomsky's (1995) principles and parameters are a common reference for linguistic universals and uniqueness. Kusmanto (2010) comments that everyday experiences of human existence result in physical and conceptual interactions with space which leads to the emergence of spatial concepts – some of which are common across languages and

others that are language relative. The observed findings, therefore, give credence to the narrative on convergence and divergence in spatial constructs among languages.

Research Question 4

The fourth research question addressed whether the participants' prepositional choices in English reflect spatial concepts in Akan. As Alonso et al. (2016:100) opine, the source of cross-linguistic influence is "difficult to isolate, partly because the possible sources are manifold" and could be structural, semantic, and conceptual. Jarvis and Odlin (2000) however assert that the source of cross-linguistic influence can be identified through careful analysis. The analysis of the study found that Akan-English bilinguals' use of English spatial prepositions reflects Akan spatial concepts.

The most convincing evidence of the transfer of Akan spatial concepts in the use of English spatial prepositions is derived from the observation that participants performance in the use of the English spatial prepositions IN, ON, and AT agreed with the conventions of English whenever there was conceptual parity between Akan and English in the construal of the scenes. On the other hand, the scenes in which participants' English responses differed from the conventions of English were also the same scenes where Akan differed from English in concept. In the scenes where there was conceptual non-equivalence between Akan and English, per the prepositional choices of the participants in English, it was observed that the Akan-English bilinguals construed the spatial relationships in English the same way they construed them in Akan. This means that, in their use of English spatial prepositions, whenever they are faced with English spatial concepts that are inexistent in Akan, the Akan-English bilinguals unconsciously rely on their internalized Akan conceptual system to direct their choice of L2 structures. They thus express themselves mainly through the process Danesi (2008) refers to as conceptual translation. It leads to the conclusion that congruity in L1 and L2 spatial concepts leads to competent performance or positive transfer in the use of L2 spatial lexical items whereas lack of parity results in non-conventional linguistic behavior or negative transfer due to reliance on L1 spatial concepts.

The findings of the study give credence to the position of linguists like Fries (1957) who maintains that difficulty in mastering second languages do not arise out of any essential difficulty in the features of the new languages themselves but out of the internalized set of conventions or habits in the primary language. This is because the use of spatial prepositions of a second language requires the acquisition of a new set of spatial concepts. Unfortunately, as the study has shown, the Akan-English bilinguals used for the study have not acquired this new conceptual awareness.

5.2 Other Findings

In addition to the already discussed findings specific to the research questions, a few other observations were made.

In the first place, the study revealed that the spatial concept of co-location is expressed with several prepositions other than the English preposition AT and its Akan equivalent WƆ (at/to be) in both languages. Prepositions like *around*, *by*, *behind*, and *beside* were used to co-locate figures with grounds successfully in English. In Akan, lexical items like *gyina* (standing), *ho* (self/surface), *akyi* (back/behind), have all been shown to perform the basic locative function of co-location.

Also, non-semantically congruent lexical items in English and Akan were found to be capable of expressing the same spatial concepts in both languages. For example, HYE (insert) was used in Akan to show containment in a scenario where IN is used in English and ASE (under) is used to show the concept of co-location with the sense of function in Akan in the same way AT is used in English. That is, spatial grams need not have the same semantic content or have translation equivalence to be able to carry a given spatial sense. These observations suggest that the parallels in the construction of spatial concepts of containment, support, and co-location go beyond the spatial items IN, ON, and AT and their Akan equivalents MU (in/inside), SO (on/on top of), and WƆ (at/ to be) which are usually used to express these concepts in both English and Akan.

In conclusion, the outcome of the study shows that the set of conventions for the construal of spatial relations in Akan and English overlap and diverge at the same time. The results also show

that participants transferred Akan spatial concepts in their use of English spatial prepositions whenever they encountered configurations that are construed differently in English from how they are construed in Akan. There were however a few instances where participants showed conceptual awareness and used English prepositions as they are conventionally employed when construals were different in English and in Akan leading to the conclusion that the Akan-English bilingual's concept of space in L2 English is distinct from the conventions for the construal of space in English and is also different from the conventions of space in Akan. It is unique to them given their particular linguistic and physical environment.

5.3 Implications for the Study

This study makes novel input into research on Akan-English bilingual cognition of space. It also makes original contributions to the study of the use of prepositions from the cognitive perspective by English users in Ghana. Also, the outcome of the study supports the notion of crosslinguistic transfer as it presents a different look at the study of L2 spatial concepts in light of a Ghanaian language. This study may therefore serve as a reference point for researchers around the world who wish to know the similarities and differences in spatial concepts between English and Akan.

The treatment of the semantics of spatial relational terms as dense conceptual representations and not mere lexical items in this thesis is useful for a couple of reasons. First, it invites teachers to adopt cognitive linguistics methods in the delivery of lessons on prepositions. An introduction of spatial prepositions as spatial relational items that represent concepts and not just syntactic relations will help students acquire both the English spatial prepositions and awareness of English spatial concepts. Consequently, this study will be reference material for curriculum developers, teacher training, and textbook writers. A thorough treatment of the set of weighted attributes that inform the use of spatial prepositions will enhance understanding of their use.

Secondly, the findings of the study could trigger the interest of other researchers, especially Ghanaian researchers, who would want to delve further into other aspects of cognitive linguistics and or crosslinguistic studies involving Ghanaian languages.

An almost contradictory implication of the study pertains to the talk of English in Ghana as a distinct variety of English. Studies by researchers like Adika (2012), Huber and Dako (2008), Obeng (1997), Quarcoo (1994), and Sey (1973) have revealed specifics of the English in Ghana as an outer circle phenomenon (Kachru, 1985), that has developed over the years. This study, therefore, presents evidence that the bilingual user of English is a hybrid of two cultures or spatial concepts and their L1 contributes, at the conceptual level, to the delicate expansionist path of innovation that the English language in Ghana is on.

5.4 Recommendations

This study explored the use of English spatial prepositions IN, ON, and AT by Akan-English Bilinguals in Ghana. As a result of its narrow scope, it did not extensively cover a wide range of spatial prepositions. A thorough examination of Akan-English bilinguals' use of English spatial prepositions will reveal a deeper finding and help shed light on the role of conceptual transfer in L2 performance. A future study that investigates a wider range of prepositions through cognitive linguistic approaches is highly recommended.

The study involved only Akan-English bilinguals. The results of the study therefore cannot be generalized or discussed as representative of L2 English users in Ghana. Involving other bilinguals (English + another local language) would reveal the level of the pervasiveness of L1 conceptual transfer in the construction of space in the use of L2 English in Ghana. Specifically, a study that involves local languages belonging to the two language families, Kwa and Gur, would offer clearer, more representative results of the English in Ghana.

Other variables were not held constant as possible sources of transfer in this study. The objectives of the study narrowed the exercise to an investigation into the potential transfer of L1 spatial concepts in the L2 domain. A future study that will employ tools and theories that are capable of

evaluating the extent to which other variables like proficiency levels, area of abode (rural or urban), and gender contribute to L2 English users' non-conventional English spatial construals will reveal exactly the extent to which L1 spatial concepts influence L2 performance.

5.5 Limitations

There was one major limitation to the study. It was not possible to involve native English speakers in the study because native speakers who had agreed to participate in the study had to return to their countries because of COVID-19. A comparative analysis of data from native English speakers and that of the Akan-English bilinguals would have brought a different dimension to the study.

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APPENDICES

APPENDIX 1

Table of Participants Responses to Spatial Scenes in English

NUMBER	TESTED PREPOSITION/ SCENES	PDM1-E	PDM2-E	PDM3-E	PDM4-E	PDF5-E
1	KIDS AT TABLE	AROUND	AROUND	AROUND	AROUND	AT
2	MAN IN BEB	ON	ON	ON	ON	ON
3	CIGARRETE IN MOUTH	IN	IN	IN	IN	IN
4	BOAT ON RIVER	ON	ON	ON	ON	ON
5	TRAFFIC AT ROUNDAABOUT	AT	AT	AT	AT	AT
6	APPLE IN BOWL BULB IN SOCKET	IN	IN	IN	IN	IN
7	(HOLDER)	IN	IN	IN	IN	IN
8	KIDS ON BUS	IN	IN	IN	IN	IN
9	CORK ON BOTTLE	ON	ON	ON	ON	ON
10	PEOPLE AT CONCERT KNOB (HANDLE) ON	AT	AT	UNDER	AT	AT
11	DOOR	OF	STUCK TO	ON	TO	AT
12	CLOTHES ON LINE	ON	ON	ON	ON	ON
13	PEOPLE AT CINEMA HOLE IN NAPKIN	AT	AT	UNDER	AT	AT
14	(TOWEL)	IN	IN	IN	IN	IN
15	BOY AT END OF QUEUE	AT	AT	AT	AT	BEHIND
16	PEOPLE IN A CAR	IN	IN	IN	IN	IN
17	PENCIL ON TABLE	ON	ON	ON	ON	ON
18	MAN AT CHECKPOINT	AT	AT	AT	AT	AT
19	SHOE ON FOOT	ON	WORN	WORN	WORN	WORN
20	BIRD IN SKY	IN	IN	IN	IN	IN
21	SPIDER ON WALL	ON	ON	ON	ON	ON
22	PEOPLE AT BUSTOP	AT	AT	AT	AT	AT
23	PLAYING IN STREET	ON	ON	ON	ON	ON

Table of Participants Responses to Spatial Scenes in English Continued

NUMBER	TESTED PREPOSITION/ SCENES	PDF6-E	PDF7- E	PDM8-E	PDM9-E	PDM10-E
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1	KIDS AT TABLE	AT	AT	AT	BESIDE	AT THE BACK
2	MAN IN BEB CIGARRETE IN MOUTH	ON	ON	ON	IN	ON
3	BOAT ON RIVER	ON	ON	ON	ON	ON
4	TRAFFIC AT ROUNDABOUT	AT	AT	AT	AT	AT
5	APPLE IN BOWL BULB IN SOCKET (HOLDER)	IN	IN	IN	IN	IN
6	KIDS ON BUS	IN	IN	IN	IN	IN
7	CORK ON BOTTLE	ON	ON	ON	ON	ON
8	PEOPLE AT CONCERT KNOB (HANDLE) ON DOOR	AT	AT	AT	AT	AT
9	DOOR	ATTACHED TO	AT	ON	ATTACHED TO	ATTACHED TO
10	CLOTHES ON LINE	ON	ON	ON	ON	ON
11	PEOPLE AT CINEMA HOLE IN NAPKIN (TOWEL)	AT	AT	AT	AT	AT
12	BOY AT END OF QUEUE	IN	IN	IN	IN	IN
13	PEOPLE IN A CAR	AT	AT	BEHIND	BEHIND	AT
14	PENCIL ON TABLE	IN	IN	IN	IN	IN
15	MAN AT CHECKPOINT	ON	ON	ON	ON	ON
16	SHOE ON FOOT	AT	AT	AT	AT	AT
17	BIRD IN SKY	ON	ON	WORN	AT	AT
18	BIRD IN SKY	IN	IN	IN	IN	IN
19	SPIDER ON WALL	AT	ON	ON	AT	UNDER
20	PEOPLE AT BUSTOP	AT	AT	AT	AT	AT
21	PLAYING IN STREET	ON	ON	IN	IN	IN

Table of Participants Responses to Spatial Scenes in English Continued

NUMBER	TESTED PREPOSITION/ SCENES	PDF11-E	PDM12-E	PDM13-E	PDM14-E	PDM16-E
1	KIDS AT TABLE	BESIDE	ON	BESIDE	AT	AT THE BACK
2	MAN IN BEB CIGARRETE IN MOUTH	ON	ON	ON	ON	ON
3	BOAT ON RIVER	ON	ON	ON	ON	ON
4	TRAFFIC AT ROUNDABOUT	AT	AT	AROUND	AT	AT
5	APPLE IN BOWL	IN	IN	IN	IN	IN

7	BULB IN SOCKET (HOLDER)	IN	IN	IN	IN	IN
8	KIDS ON BUS	IN	IN	IN	IN	IN
9	CORK ON BOTTLE	ON	ON	ON	ON	ON
10	PEOPLE AT CONCERT	IN	AT	AT	AT	AT
11	KNOB (HANDLE) ON DOOR	IN	ON	ATTACHED TO	STUCK TO	ATTACHED TO
12	CLOTHES ON LINE	ON	ON	ON	ON	ON
13	PEOPLE AT CINEMA	IN	AT	AT	AT	AT
14	HOLE IN NAPKIN (TOWEL)	IN	IN	IN	IN	IN
15	BOY AT END OF QUEUE	BEHIND	AT	IN	AT	AT
16	PEOPLE IN A CAR	IN	IN	IN	IN	IN
17	PENCIL ON TABLE	ON	ON	ON	ON	ON
18	MAN AT CHECKPOINT	AT	AT	AT	AT	AT
19	SHOE ON FOOT	WORN	ON	WORN	ON	WORN
20	BIRD IN SKY	IN	IN	IN	IN	IN
21	SPIDER ON WALL	ON	ON	ON	ON	ON
22	PEOPLE AT BUSTOP	AT	AT	AT	AT	AT
23	PLAYING IN STREET	IN	ON	IN	ON	ON

Table of Participants Responses to Spatial Scenes in English Continued

NUMBER	TESTED PREPOSITION/ SCENES	PDF17-E	PDF18-E	PDF20-E	PDM21-E	PDF22-E
1	KIDS AT TABLE	AT	AROUND	BEHIND	BEHIND	BY
2	MAN IN BEB	ON	ON	ON	ON	ON
3	CIGARRETE IN MOUTH	IN	IN	IN	IN	IN
4	BOAT ON RIVER	ON	ON	ON	ON	ON
5	TRAFFIC AT ROUNDABOUT	AT	ON	AT	AT	AT
6	APPLE IN BOWL	IN	IN	IN	IN	IN
7	BULB IN SOCKET (HOLDER)	IN	IN	IN	IN	IN
8	KIDS ON BUS	ON	IN	IN	IN	IN
9	CORK ON BOTTLE	ON	ON	ON	AT THE TOP	ON
10	PEOPLE AT CONCERT	AT	AT	AT	AT	UNDER
11	KNOB (HANDLE) ON DOOR	INSIDE	ON	ATTACHED TO	IN FRONT OF	STUCK TO
12	CLOTHES ON LINE	ON	ON	ON	ON	ON

13	PEOPLE AT CINEMA HOLE IN NAPKIN	AT	AT	AT	AT	AT
14	(TOWEL) BOY AT END OF	IN	IN	IN	THROUGH	IN
15	QUEUE	AT	BEHIND	AT	AT	AT
16	PEOPLE IN A CAR	IN	IN	IN	IN	IN
17	PENCIL ON TABLE	ON	ON	ON	ON	ON
18	MAN AT CHECKPOINT	AT	AT	AT	AT	AT
19	SHOE ON FOOT	ON	ON	ON	ON	WORN
20	BIRD IN SKY	IN	IN	IN	IN	ON
21	SPIDER ON WALL	AT	ON	ON	BENEATH	ON
22	PEOPLE AT BUSTOP	AT	AT	AT	AT	AT
23	PLAYING IN STREET	ON	IN	ON	ON	ON

APPENDIX 2

Table of Participants Responses to Spatial scenes in Akan with English

NUMBER	TESTED PREPOSITION/SCENES	PDM1-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	EHYE	NA NUM	FIXED IN
4	BOAT ON RIVER TRAFFIC AT	SI	SO	ON
5	ROUNDAABOUT	ASI	WO	AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	BUA (EBUA)	SO	ON
10	PEOPLE AT CONCERT	WO	ASE	AT UNDER
11	HANDLE ON DOOR	ETUA	ANO	STUCK TO FRONT (MOUTH)
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA	WO	WO (HO)	AT
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	ODI	ODI AKYI	FOLLOWS BEHIND (AT THE BACK)
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		OGYINA HO	STANDING THERE AT CHECKPOINT
19	SHOE ON FOOT	EHYE NE	NAN	WORN ON HER FOOT
20	BIRD IN SKY	WO	WO WIEM	AT SKY
21	SPIDER ON WALL	TARE / OTARE	SO	STUCK ON
22	PEOPLE AT BUSTOP	WO	HO	STANDING THERE
23	PLAYING IN STREET	WO	NFININFINI	MIDDLE

Table of Participants Responses to Spatial scenes in Akan with English Continued

NUMBER	TESTED PREPOSITION/SCENES	PDM2-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	EHYE	NA NUM	FIXED IN

4	BOAT ON RIVER TRAFFIC AT	WƆ	SO	ON
5	ROUNDAABOUT	AKYI	WƆ	AT
6	APPLE IN BOWL	WƆ	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	DA	SO	ON
10	PEOPLE AT CONCERT		WƆ	AT
11	HANDLE ON DOOR	ETARE	HO	STUCK TO IT'S SURFACE
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA		WƆ	AT
14	HOLE IN NAPKIN	WƆ	MU	IN
15	BOY AT END OF QUEUE	OGYINA	AKYI	STANDING AT THE BACK)
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	WƆ	CHECKPOINT	AT
19	SHOE ON FOOT	EHYE NE	NAN	WORN ON HER FOOT
20	BIRD IN SKY	ONAM	WIEM	WALKING IN THE SKY
21	SPIDER ON WALL	ONAM	SO	WALKING ON CEILING STANDING
22	PEOPLE AT BUSTOP		WOM GYINA	THERE
23	PLAYING IN STREET	WƆ	SO	ON

Table of Participants Responses to Spatial scenes in Akan with English

NUMBER	TESTED PREPOSITION/SCENES	PDM3-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	EHYE	NA NUM	FIXED IN
4	BOAT ON RIVER TRAFFIC AT	SI	SO	ON
5	ROUNDAABOUT	ASI WƆ	MU	JAMMED IN
6	APPLE IN BOWL	WƆ	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	KATA	SO	ON
10	PEOPLE AT CONCERT		WƆ	AT
11	HANDLE ON DOOR	ETARE	HO	STUCK TO ITS SURFACE
12	CLOTHES ON LINE	SEN (SENSEN)	SO	ON
13	PEOPLE AT CINEMA		WƆ	AT

14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	Wɔ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	Wɔ	CHECKPOINT HO	THERE AT THE CHECKPOINT
19	SHOE ON FOOT	HYɛ NE	NAN	WORN ON THE FOOT OF THE PERSON
20	BIRD IN SKY	Wɔ TARE /	Wɔ WIEM	AT SKY / IN THE SKY
21	SPIDER ON WALL	ɔTARE	SO	STUCK ON THERE AT THE
22	PEOPLE AT BUSTOP	Wɔ	HO	BUSTOP
23	PLAYING IN STREET	Wɔ	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM4-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE
2	MAN IN BEB	DA	SO	ON FIXED
3	CIGARRETE IN MOUTH	ɛHYɛ	NA NUM	IN
4	BOAT ON RIVER	Wɔ	SO	ON
	TRAFFIC AT		Wɔ Hɔ NO	
5	ROUNDAABOUT	AKYI	MO	AT(THERE)
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYɛ (ɛHYɛ)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	Wɔ	SO	ON AT
10	PEOPLE AT CONCERT	Wɔ	ASE	UNDER
11	HANDLE ON DOOR	TARE	HO	STUCK TO ITS SURFACE
12	CLOTHES ON LINE	SɛN(SɛNSɛN)	SO	ON AT
13	PEOPLE AT CINEMA	Wɔ	ASE	UNDER
14	HOLE IN NAPKIN	Wɔ	MU	IN
15	BOY AT END OF QUEUE	OGYINA	AKYI	STANDING AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		Wɔ	AT
19	SHOE ON FOOT		ɛHYɛ NO	WORN BY THE WOMAN

20	BIRD IN SKY	WƆ ƐTARE /	Wɔ WIEM	IN THE SKY
21	SPIDER ON WALL	ƆTARE	SO	STUCK ON
22	PEOPLE AT BUSTOP		WƆ	AT
23	PLAYING IN STREET	WƆ	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF5-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE
2	MAN IN BEB	DA	SO	ON FIXED
3	CIGARRETE IN MOUTH	HYE	NA NUM	IN
4	BOAT ON RIVER	WƆ	SO	ON
5	TRAFFIC AT ROUNDAABOUT	AKYI	WƆ Hɔ NOM	AT(THERE)
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	WƆ	SO	ON AT
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER STUCK
11	HANDLE ON DOOR	TARE	HO	TO
12	CLOTHES ON LINE	SENSEN	SO	ON AT
13	PEOPLE AT CINEMA	WƆ	ASE	UNDER
14	HOLE IN NAPKIN	WƆ	MU	IN
15	BOY AT END OF QUEUE	OGYINA	AKYI	STANDING AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		WƆ	AT
19	SHOE ON FOOT		EHYE NO	WEARING HER
20	BIRD IN SKY	WƆ ƐTARE /	Wɔ WIEM	IN THE SKY
21	SPIDER ON WALL	ƆTARE	SO	STUCK ON
22	PEOPLE AT BUSTOP		WƆ	AT
23	PLAYING IN STREET	WƆ	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF6-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE / BY
2	MAN IN BEB	DA	SO	ON FIXED
3	CIGARRETE IN MOUTH	HYE	NA NO	IN
4	BOAT ON RIVER	WO	SO	ON
5	TRAFFIC AT ROUNDAABOUT	AKYI	WO	AT
6	APPLE IN BOWL	HYE	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	TUA	SO	ON AT
10	PEOPLE AT CONCERT	WO	ASE	UNDER STUCK TO FRONT OF
11	HANDLE ON DOOR	TUA SEN(SENSEN)	ANO	DOOR
12	CLOTHES ON LINE		SO	ON
13	PEOPLE AT CINEMA		WO	AT
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	WO	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		WO	AT WEARING THE LADIES'
19	SHOE ON FOOT	HYE	NAN Wo	FOOT
20	BIRD IN SKY	WO	WIEM	IN THE SKY
21	SPIDER ON WALL	WO	SO	(AT) ON
22	PEOPLE AT BUSTOP		WO	AT
23	PLAYING IN STREET	WO	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF7-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESID E
2	MAN IN BEB	DA	SO	ON FIXED
3	CIGARRETE IN MOUTH	HYE	NA NO	IN
4	BOAT ON RIVER	SI	SO	ON

5	TRAFFIC AT ROUNDAABOUT	AKYI	Wɔ HO	AT / THERE
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	SO	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	HYE (EHYE)	SO	ON
10	PEOPLE AT CONCERT	Wɔ		AT STUCK TO THE FRONT OF DOOR
11	HANDLE ON DOOR	SI SEN(SENSEN)	ANO SO	OF DOOR ON
12	CLOTHES ON LINE		Wɔ	AT
13	PEOPLE AT CINEMA		MU	IN
14	HOLE IN NAPKIN	DA		STANDING AT THE BACK
15	BOY AT END OF QUEUE	OGYINA	AKYI	BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		Wɔ EHYE	AT
19	SHOE ON FOOT		NO Wɔ	WEARING HER
20	BIRD IN SKY	Wɔ	WIEM	IN THE SKY (AT)
21	SPIDER ON WALL	Wɔ	SO	ON
22	PEOPLE AT BUSTOP		Wɔ	AT
23	PLAYING IN STREET	Wɔ	MU	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM8-T		
1	KIDS AT TABLE	TE(TETE)	HO	BESIDE / BY
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	DA	SO	ON
5	TRAFFIC AT ROUNDAABOUT	AKYI	Wɔ	AT
6	APPLE IN BOWL	Wɔ	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	HYE	SO	ON
10	PEOPLE AT CONCERT	Wɔ	ASE	AT UNDER

11	HANDLE ON DOOR	Wɔ	HO	AT ITS SIDE /surface
12	CLOTHES ON LINE	SEN(SENSEN)	SO	ON AT
13	PEOPLE AT CINEMA		Wɔ	UNDER
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	Wɔ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	Wɔ	SO	ON
18	MAN AT CHECKPOINT		Wɔ	AT
19	SHOE ON FOOT	HYE	NO Wɔ	WEARING THE WOMAN IN THE
20	BIRD IN SKY	Wɔ	WIEM	SKY
21	SPIDER ON WALL	Wɔ	SO	(AT) ON STANDING THERE /AT /
22	PEOPLE AT BUSTOP	GYINA	HO	THERE
23	PLAYING IN STREET	Wɔ	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF9-T		
1	KIDS AT TABLE	Wɔ	NKYEN	BESIDE / BY
2	MAN IN BEB	DA	MU	IN
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	Wɔ	SO	ON
5	TRAFFIC AT ROUNDAABOUT		Wɔ	AT
6	APPLE IN BOWL	Wɔ	MU	IN
7	BULB IN HOLDER	Wɔ	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	HYE	SO	ON
10	PEOPLE AT CONCERT	Wɔ	ASE	AT UNDER
11	HANDLE ON DOOR	FAM	HO	STUCK TO IT
12	CLOTHES ON LINE	Wɔ	SO	ON
13	PEOPLE AT CINEMA		Wɔ	AT UNDER
14	HOLE IN NAPKIN	Wɔ	MU	IN
15	BOY AT END OF QUEUE	Wɔ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	Wɔ	SO	ON
18	MAN AT CHECKPOINT		Wɔ	AT
19	SHOE ON FOOT	HYE	NO	WEARING HER FOOT
20	BIRD IN SKY	Wɔ	Wɔ WIEM	IN THE SKY

21	SPIDER ON WALL	Wɔ	SO	(AT) ON
22	PEOPLE AT BUSTOP	Wɔ		AT / THERE
23	PLAYING IN STREET	Wɔ	NFININFINI	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM10-T		
1	KIDS AT TABLE	TE(TETE)	AKYI	SITTING BEHIND
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	Wɔ	SO	ON
5	TRAFFIC AT ROUNDABOUT		Wɔ	AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	HYE	SO	ON
10	PEOPLE AT CONCERT	Wɔ	ASE	AT UNDER
11	HANDLE ON DOOR	TARE	HO	STUCK TO IT
12	CLOTHES ON LINE	SEN(SENSEN)	SO	ON
13	PEOPLE AT CINEMA		Wɔ	AT / THERE
14	HOLE IN NAPKIN	Wɔ	MU	IN
15	BOY AT END OF QUEUE	Wɔ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		Wɔ	AT WEARING
19	SHOE ON FOOT	HYE	NO	HER
20	BIRD IN SKY	Wɔ	Wɔ WIEM	IN THE SKY
21	SPIDER ON WALL	Wɔ	ASE	(AT) UNDER
22	PEOPLE AT BUSTOP	Wɔ	HO	AT / THERE
23	PLAYING IN STREET	Wɔ	NFININFINI	IN THE MIDDLE

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF11-T		
1	KIDS AT TABLE	TE(TETE)	HO	SITTING BESIDE/ BY

2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	EHYE	NA NUM	FIXED IN
4	BOAT ON RIVER TRAFFIC AT	SI	SO	ON
5	ROUNDAABOUT	AKYI	WO	AT
6	APPLE IN BOWL	DA HYE	MU	IN
7	BULB IN HOLDER	(EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE) TUA	MU	IN
9	CORK ON BOTTLE	TUA	SO	ON
10	PEOPLE AT CONCERT	WO	ASE	AT / UNDER
11	HANDLE ON DOOR	ETUA	MU	STUCK INTO IT
12	CLOTHES ON LINE	SENSEN	SO	HANING ON
13	PEOPLE AT CINEMA	WO	ASE	AT/UNDER
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	OGYINA	AKYI	AT THE BACK)
16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	OGYINA	CHECKPOINT	STANDING THERE AT CHECKPOINT WEARING THE
19	SHOE ON FOOT	HYE ERETU	NO	LADY
20	BIRD IN SKY	WO	WIEM	FLYING IN /AT THE SKY WALKING ON THE
21	SPIDER ON WALL	WO	SO	CEILING
22	PEOPLE AT BUSTOP	WO	HO	AT / THERE
23	PLAYING IN STREET	WO	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM12-T		
1	KIDS AT TABLE	WO	HO	AT/ BESIDE / BY
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA	FIXED IN
4	BOAT ON RIVER	SI	SO	ON

5	TRAFFIC AT ROUNDAABOUT	AKYI	Wɔ	AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	HYE	SO	ON
10	PEOPLE AT CONCERT	Wɔ		AT
11	HANDLE ON DOOR	TUA	HO	STUCK TO THE SURFACE
12	CLOTHES ON LINE	SEN(SENSEN)	SO	ON
13	PEOPLE AT CINEMA	Wɔ	ASE	AT / UNDER
14	HOLE IN NAPKIN	Wɔ	MU	IN
15	BOY AT END OF QUEUE	Wɔ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	Wɔ	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		Wɔ	AT
19	SHOE ON FOOT	HYE	NAN	WEARING HER FOOT
20	BIRD IN SKY	Wɔ /NAM WIEM	SORO	IN THE SKY (AT)
21	SPIDER ON WALL	Wɔ	SO	ON
22	PEOPLE AT BUSTOP		Wɔ	AT
23	PLAYING IN STREET	Wɔ	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM13-T		
1	KIDS AT TABLE	TE(TETE)	HO	SITTING BY / BESIDE
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	SI	SO	ON
5	TRAFFIC AT ROUNDAABOUT		Wɔ	AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	KATA	SO	ON
10	PEOPLE AT CONCERT	Wɔ	ASE	AT UNDER
11	HANDLE ON DOOR	Wɔ	HO	STUCK TO IT
12	CLOTHES ON LINE	SEN(SENSEN)	SO	ON
13	PEOPLE AT CINEMA		Wɔ	AT / THERE

14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	DI	SO	FOLLOWS BEHIND
16	PEOPLE IN A CAR	WƆ	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		WƆ	AT
19	SHOE ON FOOT	HYE	NO	WEARING HER' LEG
20	BIRD IN SKY	WƆ	Wɔ WIEM	IN THE SKY
21	SPIDER ON WALL	WƆ	SO	AT / ON STANDING AT BUS
22	PEOPLE AT BUSTOP	GYINA	BUS STOP	STOP
23	PLAYING IN STREET	WƆ	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM14-T		
1	KIDS AT TABLE	TE(TETE)	HO	SITTING BY / BESIDE
2	MAN IN BEB	DA	SO	ON FIXED
3	CIGARRETE IN MOUTH	HYE	NA NO	IN
4	BOAT ON RIVER	NAM	SO	ON
5	TRAFFIC AT ROUNDAABOUT		WƆ	AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE (EHYE)	MU	IN
8	KIDS ON BUS	TE(TETE)	MU	IN
9	CORK ON BOTTLE	KATA	SO	COVERING IT / ON AT
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER
11	HANDLE ON DOOR	HYE	HO	STUCK TO IT
12	CLOTHES ON LINE	SEN(SENSEN)	SO	ON AT
13	PEOPLE AT CINEMA		WƆ	UNDER
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	WƆ	AKYI	AT THE BACK

16	PEOPLE IN A CAR	TE(TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT		WƆ	AT WEARING HER' LEG
19	SHOE ON FOOT	HYE	NO Wɔ	LEG
20	BIRD IN SKY	WƆ	WIEM	IN THE SKY
21	SPIDER ON WALL	TARE	SO BUS	STUCK ON
22	PEOPLE AT BUSTOP	WƆ	STOP	AT
23	PLAYING IN STREET	WƆ	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM16-T		
1	KIDS AT TABLE	TE (TETE)	AKYI	SITTING BEHIND
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	SI	SO	ON
5	TRAFFIC AT ROUNDABOUT	WƆ	HO	AROUND
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	TE (TETE)	MU	IN
9	CORK ON BOTTLE	SI	SO	ON
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER FIXED INTO ITS SIDE
11	HANDLE ON DOOR	HYE	HO	SIDE
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA	WƆ	ASE	UNDER
14	HOLE IN NAPKIN	DA	MU	IN FOLLOWS
15	BOY AT END OF QUEUE	ODI	AKYI	BEHIND
16	PEOPLE IN A CAR	TE (TETE)	MU	SITTING IN
17	PENCIL ON TABLE	DA	SO	ON STANDING
18	MAN AT CHECKPOINT	OGYINA	HƆ	THERE
19	SHOE ON FOOT	HYE	NO	WEARING HER
20	BIRD IN SKY	WƆ	WIEM	AT SKY / IN SKY
21	SPIDER ON WALL	DA	SO	ON STANDING
22	PEOPLE AT BUSTOP	GYINA	HƆ	THERE
23	PLAYING IN STREET	WƆ	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDF17-T		
1	KIDS AT TABLE	TE	HO	SITTING BY
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	WO	SO	ON
	TRAFFIC AT	AKYI		
5	ROUNDAABOUT	WO	HO	AROUND
6	APPLE IN BOWL	WO	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	WO	MU	IN
9	CORK ON BOTTLE	HYE	ANO	FIXED IN THE MOUTH
10	PEOPLE AT CONCERT	WO	ASE	UNDER
11	HANDLE ON DOOR	HYE	MU	FIXED INTO
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA	WO	ASE	UNDER
14	HOLE IN NAPKIN	WO	MU	IN
15	BOY AT END OF QUEUE	WO	AKYI	BEHIND
16	PEOPLE IN A CAR	WO	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
				THERE AT THE
18	MAN AT CHECKPOINT	WO	HO	CHECKPOINT
			NAN NO	UNDER THE
19	SHOE ON FOOT	EHYE	ASE	LEG/FOOT
				AT SKY / IN
20	BIRD IN SKY	WO	WIEM	SKY
21	SPIDER ON WALL	WO	SO	ON
22	PEOPLE AT BUSTOP	WO		AT
23	PLAYING IN STREET	WO	SO	ON

NUMBE R	TESTED PREPOSITION/SCENES	PDF18-T		
1	KIDS AT TABLE	TE (TETE)	HO	SITTING BY
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	NA NO	FIXED IN
4	BOAT ON RIVER	SI	SO	ON
	TRAFFIC AT			
5	ROUNDAABOUT	AKYI	WO	AT
6	APPLE IN BOWL	WO	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	WO	MU	IN

9	CORK ON BOTTLE	KATA	SO	ON
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER
11	HANDLE ON DOOR	WƆ	HO	AT ITS SIDE
12	CLOTHES ON LINE	SENSEN	SO	ON
13	PEOPLE AT CINEMA	WƆ	ASE	UNDER
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	WƆ	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE (TETE)	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	WƆ	HO	AT (THERE)
19	SHOE ON FOOT	HYE	NO	WEARING HER
20	BIRD IN SKY	WƆ	WIEM	AT SKY / IN SKY
21	SPIDER ON WALL	ƆREFA	SO	ON
22	PEOPLE AT BUSTOP	GYINA		STANDING AT
23	PLAYING IN STREET	WƆ	MU	IN

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES		PDF20-T	
1	KIDS AT TABLE	WƆ	HO	BY/BESIDE
2	MAN IN BEB	DA	SO	ON
3	CIGARRETE IN MOUTH	HYE	MU	IN
4	BOAT ON RIVER	WƆ	SO	ON
5	TRAFFIC AT ROUNDABOUT	AKYI	WƆ	AT
6	APPLE IN BOWL	WƆ	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	WƆ	MU	IN
9	CORK ON BOTTLE	KATA	SO	ON
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER
11	HANDLE ON DOOR	WƆ	SO	ON
12	CLOTHES ON LINE	WƆ	SO	ON
13	PEOPLE AT CINEMA	WƆ	ASE	UNDER
14	HOLE IN NAPKIN	DA	MU	IN
15	BOY AT END OF QUEUE	WƆ	AKYI	BEHIND
16	PEOPLE IN A CAR	WƆ	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
				THERE
18	MAN AT CHECKPOINT	WƆ	HO	AT
19	SHOE ON FOOT	HYE	NO	WEARING HER

20	BIRD IN SKY	WƆ	WIEM	IN SKY / AT SKY
21	SPIDER ON WALL	WƆ	SO	ON
22	PEOPLE AT BUSTOP	GYINA	HƆ	STANDING THERE
23	PLAYING IN STREET	WƆ	SO	ON

Table of Participants Responses in Akan with English translation continued

NUMBER	TESTED PREPOSITION/SCENES	PDM21-T		
1	KIDS AT TABLE	TE	AKYI	SITTING BEHIND
2	MAN IN BEB	DA	SO	ON FIXED INIXED
3	CIGARRETE IN MOUTH	HYE	NA NO	IN
4	BOAT ON RIVER	SI	SO	ON
5	TRAFFIC AT ROUNDABOUT	WƆ	HƆ	THERE AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	TE	MU	IN
9	CORK ON BOTTLE	TUA	ANO	FIXED ON THE MOUTH
10	PEOPLE AT CONCERT	WƆ	ASE	UNDER
11	HANDLE ON DOOR	WƆ	ANO	AT ITS MOUTH
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA	WƆ		AT
14	HOLE IN NAPKIN	DA	MU	IN FOLLOWS
15	BOY AT END OF QUEUE	DI	AKYI	BEHIND
16	PEOPLE IN A CAR	TE	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	WƆ	HƆ	AT, THERE
19	SHOE ON FOOT	HYE	NO NAN	WEARING HER FOOT
20	BIRD IN SKY	WƆ	WIEM	IN / AT SKY
21	SPIDER ON WALL	TARE	ASE	STUCK UNDER STANDING
22	PEOPLE AT BUSTOP	GYINA	HƆ	THERE
23	PLAYING IN STREET	WƆ	SO	ON

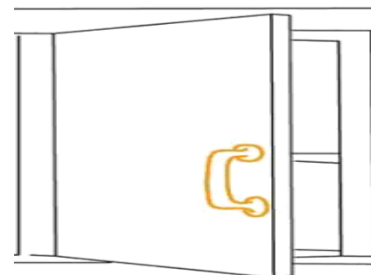
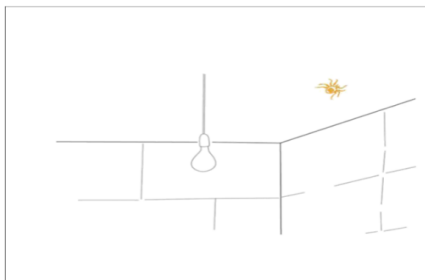
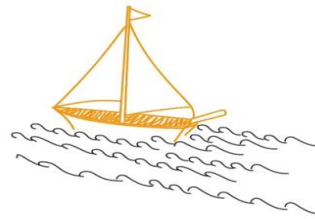
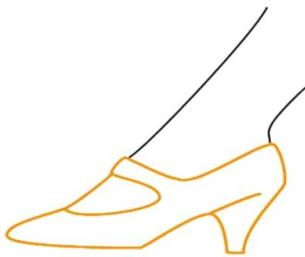
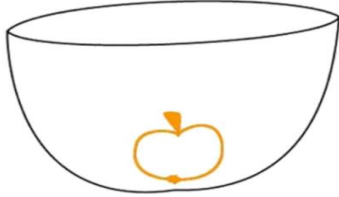
Table of Participants Responses in Akan with English translation continued

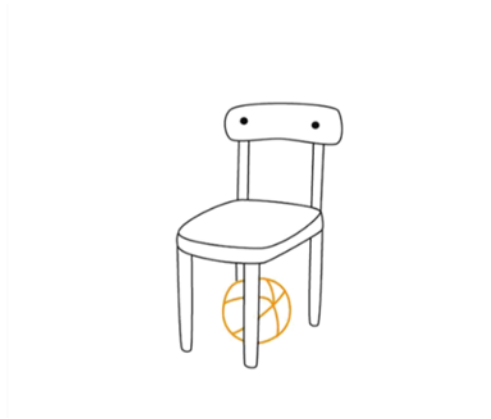
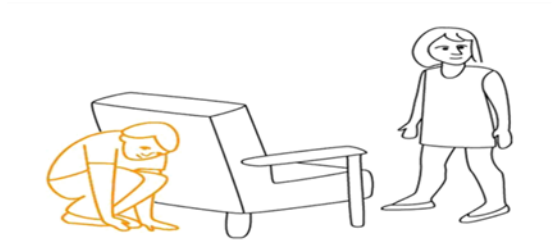
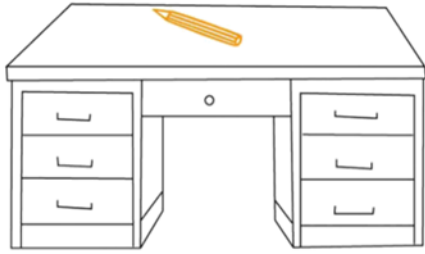
NUMBER	TESTED PREPOSITION/SCENES	PDF22-T		
1	KIDS AT TABLE	TE	HO	SITTING BY
2	MAN IN BEB	DA	SO	ON

3	CIGARRETE IN MOUTH	HYE	NA NO	INSERTED IN MOUTH
4	BOAT ON RIVER TRAFFIC AT	SI	SO	ON
5	ROUNDAABOUT	AKYI WO	HO	THERE AT
6	APPLE IN BOWL	DA	MU	IN
7	BULB IN HOLDER	HYE	MU	IN
8	KIDS ON BUS	TE	MU	IN
9	CORK ON BOTTLE	TUA	SO	ON
10	PEOPLE AT CONCERT	WO	ASE	UNDER FIXED TO ITS
11	HANDLE ON DOOR	TUA	HO	SIDE
12	CLOTHES ON LINE	SEN	SO	ON
13	PEOPLE AT CINEMA	WO		AT
14	HOLE IN NAPKIN	WO	MU	IN
15	BOY AT END OF QUEUE	WO	AKYI	AT THE BACK
16	PEOPLE IN A CAR	TE	MU	IN
17	PENCIL ON TABLE	DA	SO	ON
18	MAN AT CHECKPOINT	WO	HO	THERE AT
19	SHOE ON FOOT	HYE	NE NAN	WEARING HER
20	BIRD IN SKY	WO	WIEM	IN/AT SKY
21	SPIDER ON WALL	WO	SO	ON
22	PEOPLE AT BUSTOP	WO	HO	THERE AT
23	PLAYING IN STREET	WO	MU	IN

APPENDIX 3

Pictures from Bowerman and Pedersen (1992) TRPS used for the Picture Description Task

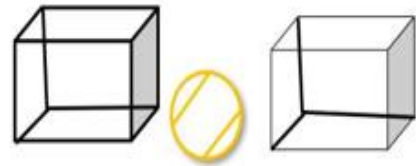
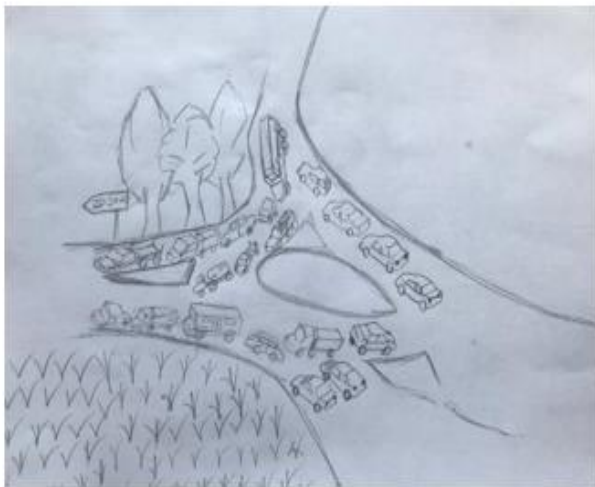
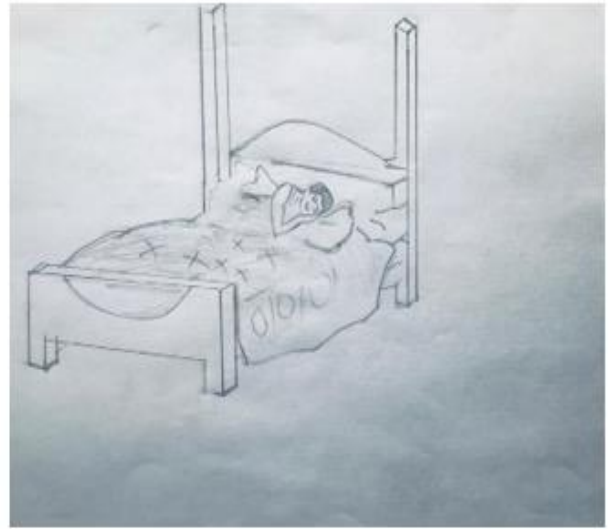




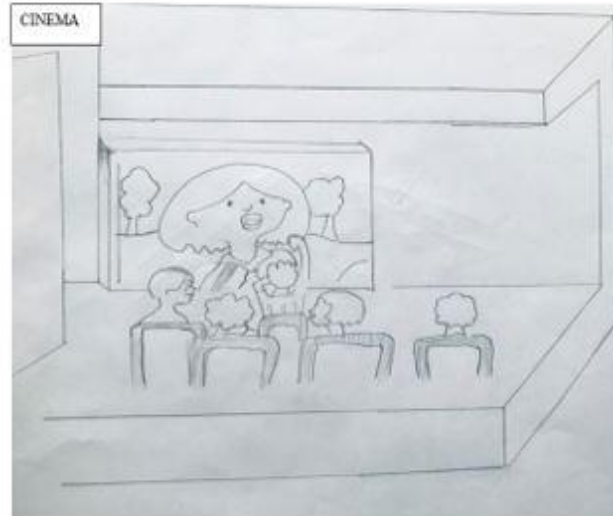
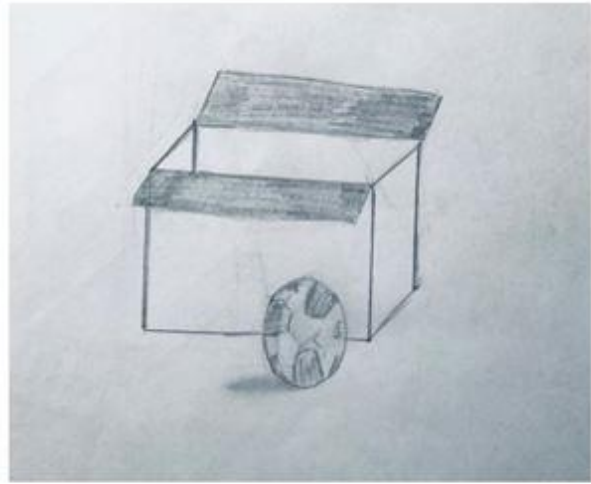
APPENDIX 4

Pictures Developed by Researcher for Picture Description Task









APPENDIX 5

Questionnaire for Collecting Participants' Biodata

**UNIVERSITY OF GHANA
QUESTIONNAIRE FOR COLLECTING BIODATA OF RESEARCH PARTICIPANTS**

Study Title: Spatial Cognition in L2 Learning: A Study of the Use of English Spatial Prepositions by Akan – English Bilinguals in Ghana

Investigator: Eugene Antwi Kwarteng

CODE:

SEX: MALE FEMALE

AGE:

REGION OF ORIGIN:

REGION OF RESIDENCE: FOR..... YEARS

TOWN OF RESIDENCE: FOR..... YEARS

ETHNIC GROUP OF FATHER..... AND MOTHER.....

LANGUAGE BACKGROUND

MOTHER TONGUE.....

FIRST LANGUAGE SPOKEN (L1)

LANGUAGE(S) SPOKEN AT HOME.....

OTHER GHANAIAIAN LANGUAGES SPOKEN.....

NON-GHANAIAIAN LANGUAGES SPOKEN

WHEN DID YOU START LEARNING ENGLISH.....?

WHERE DID YOU START LEARNING ENGLISH.....?

SCHOOLS ATTENDED

PRIMARY SCHOOL INREGION

JUNIOR HIGH SCHOOL.....INREGION

SENIOR HIGH SCHOOL.....IN.....REGION

APPENDIX 6



UNIVERSITY OF GHANA
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)

P. O. Box LG 74, Legon, Accra, Ghana

My Ref. No... ECH 002 /20-21 ...

September 14, 2020

Eugene Antwi Kwarteng
Department of English
University of Ghana
Legon

ETHICAL CLEARANCE
(ECH 002/20-21)

The protocol title below has been reviewed and approved by the ECH Committee.

TITLE OF PROTOCOL: SPATIAL COGNITION IN L2 LEARNING: A STUDY OF THE USE OF ENGLISH SPATIAL PREPOSITIONS BY AKAN-ENGLISH BILINGUALS IN GHANA.

PRINCIPAL INVESTIGATOR: EUGENE ANTWI KWARTENG

Please note that the final review report must be submitted to the Committee at the completion of the study. Your research records may be audited at any time during or after the implementation. Any modification of this research project must be submitted to ECH for review and approval prior to implementation.

Please report all serious adverse events related to this study to ECH within seven (7) days verbally and in writing within fourteen (14) days.

This certificate is valid till September 13, 2021. You are to submit annual reports for continuing review.

Please accept my congratulations.

Yours Sincerely,

Professor C. Charles Mate-Kole
ECH Chair

Cc: Dr. Gladys Nyarko Ansah, Department of English, UG
Dr. George Kodie Frimpong, Department of English, UG

Tel: +233-303933866

Email: ech@ug.edu.gh