

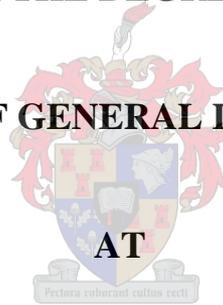
**EFFECTS OF THE SECOND LANGUAGE ON  
THE FIRST: INVESTIGATING THE  
DEVELOPMENT OF 'CONCEPTUAL FLUENCY'  
OF BILINGUALS IN A TERTIARY EDUCATION  
CONTEXT**

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## ABSTRACT

This study investigates the effect of the increased use of a second language (L2) (English) as language of teaching and learning on the bilingual individual in a specific bilingual higher education context. The specific interest is in the development of conceptual fluency, and the role that bilingualism and the increased exposure to an L2 in a teaching and learning context plays in such development. In order to serve the interest of the study, the theoretical framework includes theories developed in language and cognition, bilingualism and cross-linguistic influence. The theoretical stance that is taken in this thesis is one that: recognises that bilingual individuals cannot be expected to exhibit the same kind of linguistic and conceptual knowledge as monolinguals, investigates the possibility that language can affect certain aspects of cognition, acknowledges that bilingual individuals themselves can contribute to the knowledge about the bilingual mind.

The participants in the study are L1 speakers of Afrikaans who finished their secondary schooling in Afrikaans. At university they are increasingly exposed to more English as language of teaching and learning than in previous formal education. The effects of the increased use of English on conceptual fluency, academic achievement and self-perception of language proficiency were investigated. The study used university records, language tests and interviews to collect data. No concrete evidence could be found that English has a significantly positive or negative effect on 'conceptual fluency', academic achievement or self-perception of language proficiency. The study however provided valuable information about how bilinguals use the languages they have in their repertoires. The findings from the study suggest that increased exposure to an L2 leads to a unique form of language competence. This 'multi-competence' enables the participants in the study to use both languages in the understanding and learning of concepts in their respective fields of study. Thus this dissertation provides evidence that bilinguals can transfer knowledge and skills between the languages they know. Theories developed by Cook (1999, 2003) and Jarvis and Pavlenko (2008), that suggest transfer is bidirectional, is partly supported by the findings of the study.

The study has various implications for the field of bilingualism in education. It illustrates how a multilingual context such as the one we have in South Africa complicates the use of certain methodologies and theoretical frameworks. This also means that models of bilingual

education designed elsewhere cannot be implemented in the South African context without considered modification.

## OPSOMMING

Hierdie studie het die effek van die toenemende gebruik van Engels (tweede taal) as medium van onderrig, op die tweetalige individu in 'n spesifieke tweetalige hoër onderwys konteks probeer peil. Die spesifieke belangstelling is in die ontwikkeling van konseptuele vlotheid en die rol wat tweetaligheid en die toenemende blootstelling aan 'n tweede taal (T2) in 'n onderrig en leer konteks speel in sodanige ontwikkeling. Om die belangstelling van die studie te dien, sluit die teoretiese raamwerk teorieë oor taal en kognitiewe vaardighede, tweetaligheid, en kruislinguistiese taal invloed in. Die teoretiese standpunt wat in die tesis geneem word, is een wat: erken dat tweetalige individue nie noodwendig dieselfde talige en konseptuele kennis as eentaliges vertoon nie, die moontlikheid ondersoek dat taal sekere aspekte van kennis kan beïnvloed, en erken dat tweetalige individue kan bydra tot kennis oor die tweetalige denke.

Die deelnemers aan die studie is eerstetaal sprekers van Afrikaans wat hulle sekondêre skoolloopbaan in Afrikaans voltooi het. In hulle universiteitsopleiding word hulle toenemend blootgestel aan meer Engels as taal van leer en onderrig as in hul vorige formele opleiding. Spesifiek is die effek van die gebruik van Engels op die Afrikaanse 'konsepsuele vlotheid', algehele akademiese prestasie en self-persepsie ondersoek. Die studie het universiteitsrekords, taaltoetse en onderhoude gebruik om data in te samel. Geen konkrete bewyse kon gevind word dat die gebruik van Engels, enige van die aspekte beduidend negatief of positief beïnvloed nie. Die studie het egter waardevolle inligting verskaf oor hoe tweetaliges die tale tot hul beskikking gebruik, en het ook bewyse gelewer dat toenemende blootstelling aan die tweede taal, 'n unieke vorm van taalvaardigheid tot gevolg het. Hierdie "multi-vaardigheid" het tot gevolg dat die deelnemers aan die studie toenemend beide tale gebruik in die leer en verstaan van konsepte in hul onderskeie studieverdele. Die studie het ook ondersteuning gebied dat tweetaliges kennis en vaardighede kan oordra tussen die tale wat hulle ken. Teorieë wat deur Cook (1999, 2003) en Jarvis en Pavlenko (2008) ontwikkel is, wat voorstel dat oordrag bi-direksioneel is, word dus gedeeltelik ondersteun deur die studie.

Die studie het verskeie implikasies vir die terrein van tweetaligheid in opvoedkunde. Dit illustreer hoe 'n veeltalige konteks soos ons dit in Suid-Afrika vind, die gebruik van sekere metodologieë en teoretiese raamwerke kompliseer. Dit beteken ook dat huidige modelle van tweetalige onderrig wat elders ontwikkel is nie sonder meer gebruik kan word in die Suid-Afrikaanse konteks sonder om dit aan te pas nie.

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## LIST OF ABBREVIATIONS

A/E option	Afrikaans/English option
AL	Academic Literacy
AO	Age of Onset
BICS	Basic Interpersonal Communication Skills
CA	Contrastive Analysis
CAH	Contrastive Analysis Hypothesis
CAIS	Constantly Available Interacting Systems
CALP	Cognitive Academic Language Proficiency
CDA	Critical Discourse Analysis
CLI	Cross-Linguistic Influence
CUCB	Common Underlying Conceptual Base
C-VPT	Character Viewpoint
DMM	Dynamic Model of Multilingualism
EFL	English as a Foreign Language
ELF	English as Lingua Franca
FL	Foreign Language
FoR	Frames of Reference
GPA	Grade Point Average
L1	First Language
L1WS	First Language Writing Systems
L2	Second Language
L2WS	Second Language Writing Systems
L3	Third Language
L4	Fourth Language
LEQ	Language Experience Questionnaire
LoTL	Language of Teaching and Learning
LPD	Language Processing Device
MCQ	Multiple Choice Question
NNS	Non-Native Speaker
NS	Native Speaker
O-VPT	Observer Viewpoint

PhAB	Phonological Assessment Battery
RS	Reading Comprehension Span
SFL	Systemic Functional Linguistics
SLA	Second Language Acquisition
SU	Stellenbosch University
T (option)	Tweetaligheids Opsie/ Bilingual Option
TAG	Toets vir Akademiese Geletterheidsvlakke
TALL	Test for Academic Literacy Levels
TESOL	Teaching English to speakers of other languages
TLA	Third Language Acquisition
WM	Working Memory

## STATISTICAL ABBREVIATIONS

ANOVA	Analysis of Variance
df	degrees of freedom
F	The ratio of between group variants/within group variants
n	number of participants
p	probability
r	Pearson product moment correlation coefficient
SD	Standard Deviation
t	Student t-test distribution (the higher the t-value, the higher the chances that a statistically significant difference will be obtained)

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# CHAPTER 1

## SETTING THE SCENE: LANGUAGE, COGNITION AND BILINGUALISM IN HIGHER EDUCATION

### 1.1 BACKGROUND TO THE STUDY

This dissertation is interested in topical aspects of two languages in the bilingual mind that draws on recent theoretical work that refers to social and cognitive aspects of bilingualism. It grew from both a personal interest, as well as current theoretical thinking. Concerning my personal interest in the topic, my own language biography is relevant: I am a first language speaker of Afrikaans, grew up in a rural, predominantly Afrikaans community and received all my schooling from age 6 to 18 in Afrikaans. After high school I went to a university where English is the primary medium of instruction. All my higher education was through the medium of English, although Afrikaans was (and still is) the language used in my home, with most of my friends and in the community where I live. Despite the continued use of my first language (L1) in spoken and written form, I sensed that the knowledge and use of my L1 was changing. I believe that many in a similar language environment share these perceptions of personal "language change" related to regular exposure to a second language (L2) in education and the workplace.

From a scholarly perspective, a key concern in bilingualism research has been the effects of bilingualism on the bilingual individual (see Grosjean 1989). Studies before 1960 focussed on the detrimental effects of bilingualism, while more recent work points to the positive linguistic and cognitive effects of bilingualism (see Mitchell 1937 and Macnamara 1966 for reports of negative effects and Peal & Lambert 1962; Ben-Zeev 1977 for reports of positive effects). Other studies give a more balanced account, indicating that bilingualism can have negative as well as positive effects, and that there are areas of cognition where bilingualism appears to have no marked effect (Diaz 1983; Bialystok 2009). In spite of recent findings to the contrary, the perception that bilingual children suffer confusion and delayed cognitive development in comparison to monolingual peers persists. Monolingualism is often still seen as the norm in a

globalising world where bilingualism is rapidly increasing and in fact more prevalent than monolingualism (Grosjean 1988; Aronin & Singleton 2008).

Recently, with increased interest in the linguistic and cognitive effects of bilingualism, bilingual-effects research has also investigated how the regular use of two languages affects bilinguals' perception of self (Kramsch 2005; Pavlenko 2005a, 2006). Research on language transfer has been revisited to consider the effects that the knowledge and use of two (or more) languages have on the linguistic structure of both. Investigation of language transfer has thus shifted to include more than 'contrastive analysis hypothesis' (CAH) and 'error analysis' (Corder 1967; Wardaugh 1970; Selinker 1992). Transfer is consequently no longer viewed as a negative phenomenon to be overcome, but as one with positive and facilitative effects<sup>1</sup>, for example in the language acquisition process (Kecskes & Papp 2000; Cook 2003; Jarvis & Pavlenko 2008). Another development in this line of research is the investigation into the bidirectional nature of language transfer, which confirms that the L1 not only has effects on the L2, but that the L2 can also affect the L1. Language transfer is also increasingly investigated among multilinguals, with publications specifically focussing on third-language acquisition (TLA) appearing (Cenoz 2001). While these language transfer studies continue to investigate traditional areas of linguistic enquiry, such as morphology, phonology, syntax and semantics, they now include research on the effects of emerging bilingualism and multilingualism on sociolinguistic, pragmatic and discourse levels (Jarvis & Pavlenko 2008: 20).

The field of transfer studies, or cross-linguistic influence (CLI), has been enriched by the revival of interest in the once-denounced Whorfian hypothesis. Many scholars consider Lucy's 1992 publication, *Language diversity and thought. A reformulation of the linguistic relativity hypothesis*, in which he attempted to investigate the hypothesis in a systematic manner without proving or dismissing it, as instrumental in the revival of the linguistic relativity theory. A growing area of investigation into this hypothesis is interest in bilingual conceptualisation and cognition, which is where work on the Whorfian hypothesis and transfer studies intersects. Whorfian-inspired studies and other studies on the cognitive effects of bilingualism, such as Bialystok's (2001a, 2001b, 2005, 2007)

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<sup>1</sup> The idea that language transfer can have facilitative effects have been proposed earlier (e.g. Selinker 1969; Ringbom 1981), but have only been more extensively investigated recently (Kecskes and Papp 2000; Cook 2002). Similarly, Weinreich (1953) proposed that language transfer is bi-directional, but only in the last 15 years has this been seriously investigated, with, for example, the appearance of Cook's (2003) volume, and the work of Pavlenko (2005), and Kecskes and Papp (2000).

work on executive control functioning and metalinguistic awareness, have pointed to the fact that bilingualism may also restructure or influence certain cognitive processes. However, these studies situated in an empirical, experimental tradition are not the only type of research into the effects of bilingualism on individuals and communities. Pavlenko (2006, 2007), for example, investigates the influence of developing knowledge and use of two languages on bilinguals' perceptions of self and of living a life in two languages through narrative and autobiographical studies.

These developments in the linguistic fields of bilingualism, second language acquisition, narrative studies and cognitive science have particular implications for multilingual communities. One of the areas in which research into the conceptual effects of language transfer may have an impact is bilingual education. Bi- and multilingualism are common all over the world, and many students are educated in a language that is not their L1 (Grosjean 1982: 67). This phenomenon is not restricted to immigrant communities. African and Asian countries often have former colonial languages as official languages, which means that education is far more widely available in these languages (an L2 to most sections of the community) than in the local languages. Even an officially multilingual country like South Africa is no exception. The constitution, since 1994, provides for eleven official languages to acknowledge the variety of language communities in the country. However, for the majority L1 education is available only in the first three years of primary schooling, and no more than limitedly available at secondary school level. For L1 speakers of languages other than English and Afrikaans an L2 as language of education is the rule. At tertiary level most South African universities have English as language of teaching and learning (LoTL). Afrikaans is currently a LoTL at four (of formerly six) historically Afrikaans-medium universities. Due to the extensive use of English as academic lingua franca worldwide, a fair level of proficiency in English is required. Various South African universities have chosen different options to ensure that students have a level of proficiency in English, which will enable them to engage successfully with academic discourses in the language. Some have set admission criteria, which include a minimum Grade 12 mark in English and/or Afrikaans; others use academic literacy tests as part of a battery of placement tests (Koch & Dornbrack 2008; Van Dyk & Kistner 2008).

This dissertation draws on recent empirical studies on language transfer and the linguistic relativity theory, as well as related work on bilingual education and cognition. It has an interest in bilingualism and cognition in a South African higher-education context, with research conducted in the Western Cape Province, which has Afrikaans, English and Xhosa as the dominant and official regional languages.

The specific research site for this study is Stellenbosch University in the Western Cape, which is the oldest Afrikaans-medium higher-education institution in the country. The University's policy on LoTL is currently the topic of much debate for a variety of reasons. The persistent use of Afrikaans is regarded by some as controversial and as excluding a large section of the population (Mabokela 2001); for others, the introduction of more English as LoTL in the educational offering is regarded as giving in to the hegemony of English in the higher functions of language use in South Africa (Giliomee 2004). The latter group would prefer an Afrikaans-only language policy, at least at undergraduate level.

The ten academic faculties<sup>2</sup> at Stellenbosch University have elected different options regarding media of instruction. The university provides for different possibilities, different modes of teaching in either Afrikaans or English or a combination of both languages in different ways in lectures, tutorials, written assignments, etc. Thus, there is a unique official language policy at this specific university, which contrasts interestingly with the other two universities in the Western Cape where English is the LoTL. Much of the debate on the University's language policy has been informed by sociolinguistic research, drawing on discourses of inclusion and exclusion (Hugo 1998; Van der Walt 2004; Alexander 2006; Brink 2006). It is also related to the debates of the past 16 years, after the introduction of a new democratic and inclusive constitution, which relates to transformation and integration of formerly excluded communities into South African higher-education institutions (Mabokela 2001). What is lacking in the current debate on language policy is reference to research on the effects of a particular LoTL on aspects of individual cognition that influence academic performance. The effect that the LoTL has on the access and use of discourses relevant for success in higher education has also been under-researched (for exceptions see Leibowitz 2005; Lea & Street 2006; Paxton 2009). This dissertation will show that research in this area linked with sociolinguistic studies on

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<sup>2</sup> The ten faculties include Agrisciences, Arts and Social Sciences, Economic and Management Sciences, Education, Engineering, Health Sciences, Law, Military Sciences, Sciences and Theology.

language policy and planning gives a fuller account of the complexities of language-in-education policy-making and its implementation than has previously been available.

On a more general theoretical level, the study is interested in how knowledge of an L2 affects knowledge of the L1 when students develop new skills and knowledge using the L2. Particularly, it is interested in the development of 'conceptual fluency' among Afrikaans/English bilingual students. The students whose experiences inform the study had their schooling (both primary and secondary) in their L1, Afrikaans, and were introduced to a higher-education context where teaching and learning increasingly took place through the medium of two languages, their L1 and L2. The notion of 'conceptual fluency' used here is the one that Kecskes and Papp (2000: 252) propose and define as the extent to which "bilingual speakers are able to understand and use concepts, knowledge and skills acquired through the channel of either language and means the level of free access to vocabulary in both languages." This dissertation investigates conceptual fluency in a bilingual academic learning context, where languages used in formal instruction at university may have an impact on developing concepts, knowledge, skills and vocabulary in general academic development. Cummins' (1979b) concepts of 'Basic Interpersonal Communication Skills' (BICS) and 'Cognitive Academic Language Proficiency' (CALP) are relevant here and will be distinguished from 'conceptual fluency', which will be critically assessed and placed within a framework that considers the cognitive effects of bilingualism.

Finally, this research will also draw on scholarly work done on bilingual narratives (Pavlenko 2002, 2007) and will investigate how bilinguals themselves perceive their language(s) and how they increasingly use a language that is not their L1 for purposes of teaching and learning.

This dissertation stems from an interest in research that relates relevant and meaningful aspects of bilingualism to cognition, bilingual education and cross-linguistic influence in novel and nuanced ways. It will investigate the possible effects of the L2 as LoTL on the L1 in a systematic way. The theoretical framework that informs this dissertation is one that understands language contact in the individual as a complex and dynamic phenomenon.

## 1.2 THEORETICAL POSITION

The theoretical framework of this research links central concepts from a number of different but related fields that deal with bilingualism, higher education and the effects of the L2 on the L1. The theoretical chapters (Chapters 2-4) clarify the position taken on the following: the relationship between language and cognition, bilingualism, cross-linguistic influence in language and cognition; cognitive consequences of bilingualism; language(s) in education; and the use of autobiographical data in investigating the effects of bilingualism.

The theoretical framework challenges popular and received scholarly views that treat a bilingual speaker's knowledge of language as two separate and barely linked systems in the mind. It also questions a position that treats the L1 monolingual speaker as the ideal against which a bilingual speaker's knowledge and use of one language is measured. Instead, language in the mind of the bilingual is seen to differ from language in the mind of the monolingual: bilinguals are not simply individuals who have two monolingual systems in their mind (Grosjean 1989: 6).

Cook (2003: 6) refers to the variety of different ideas on how the bilingual mind works, one of which is that knowledge of more than one language forms two separate, unconnected systems as if each is stored in a watertight compartment. According to such a hypothesis, the bilingual speaker draws on knowledge of either one language or the other, with very limited connections between the different languages in the mind. Forster and Jiang (2001: 72), proponents of this hypothesis, argue that in late learners of an L2 especially the lexicons for the two languages are entirely distinct, independently and separately accessed, and apparently represented in entirely different processing systems. Another hypothesis on the bilingual mind is that the knowledge of one or more languages forms a single system. Cook (2003: 7) cites Caramazza and Brones (1980), who propose that a bilingual has a single lexicon in which words from both languages are stored. Cook (2003: 6) finds that neither of these two models properly reflects the nature of bilingual or multilingual mental capacities. Absolute separation of two language systems is impossible since both languages are located in the same mind; total integration, he holds, is also not possible since L2 users are able to keep the languages separate and choose when to use each one. According to Cook (2003: 6), bilingual knowledge is represented

in a system with different degrees and types of connections so that one can identify neither a single system nor two distinct systems.

An important concept in this dissertation is that of 'multi-competence', which Cook (2003: 2) defines as "knowledge of two or more languages in one mind." He finds that the grammar of an L2 in a multi-competent speaker cannot be the same as the apparently equivalent grammar in a monolingual. He hypothesises that L2 learners/users do not develop the same kind of competence that L1 adult native speakers have. The hypothesis holds that the interaction between the L1 and L2 knowledge is bidirectional so that a unique competence develops that shows both similarities to and differences from the native monolingual competence. This notion of 'multi-competence' will be elaborated later (see Chapter 3, section 3.3.2). Cook, along with other scholars such as Grosjean (1989, 1998) and Pavlenko (2003, 2005, 2006), believes that L2 learners do not develop 'native-like competence' of the second language. This concept of 'multi-competence' gives a new perspective on L2 learning because it does not compare L2 learners to native speakers, but treats them as people developing a unique type of language competence. Cook (1999:191) believes that 'multi-competence' is not the sum of two or more well-developed linguistic systems, but is instead representative of a new system that has its own set of features.

Kecskes and Papp (2000: 38), building on Cook's (1991b, 1992, 1999) concept of 'multi-competence', developed a model of the bi/multilingual mind. This model proposes that the bilingual or multilingual Language Processing Device (LPD) consists of two or more Constantly Available Interacting Systems (CAIS) and has a Common Underlying Conceptual Base (CUCB). They argue that the L2 has an effect on the L1 that results in a unique form of 'multi-competence'. Furthermore, Kecskes and Papp (2000: 39) propose that the primary difference between the monolingual and multilingual LPD is *conceptual* rather than grammatical. For them, as for Cook, the unique multilingual system is neither equivalent to a monolingual system, nor the sum of two or more monolingual systems; rather, it is the result of the conceptual development unique to multilinguals. From this view of the bilingual mind, Kecskes and Papp (2000: 252–253) propose that the effect of the L2 on the L1 in a foreign language environment can be explained as a conceptual phenomenon rather than as a linguistic system phenomenon. Therefore, they hypothesize that possible change to the L1 as a result of the influence of the L2 will mostly be on the

conceptual level. They believe that this influence can be positive and that some L2 users will have improved 'conceptual fluency' in the L1. They find that such a proposed positive effect is not evident in all bi- or multilinguals, and explain this by considering individual variables in the development of individual language competence. Other positive effects of bilingualism have been reported on metalinguistic awareness, the inhibition of conflicting information, and divergent thinking (Kharkhurin 2007; Bialystok 2009). I discuss these positive cognitive consequences of bilingualism more comprehensively in Chapter 4. Bialystok (2009: 3) has demonstrated that the bilingual effect is complex and that it might have a negative impact on certain cognitive processes such as verbal retrieval, while it might not affect other domains at all. An area where the effects of bilingualism have been actively investigated is that of education, specifically with an interest in how bilingualism correlates with academic achievement. In the past, much research focussed on 'poor' scholarly performance (see Macnamara 1966). Recent work on bilingual educational programs, which have bilingualism and not transition into the majority language as the main goal, has shown the positive outcomes of bilingual education (Thomas & Collier 2002). This dissertation also draws on the findings of work that investigates the possible advantages and disadvantages of bilingual education. This research focuses specifically on the more infrequently researched context of higher education, because research on bilingualism in education has largely been directed at primary and secondary schooling.

In addition, the theoretical framework of this dissertation refers to narratives and autobiographical data on bilingualism and second-language acquisition (SLA) (Kramsch 2005; Pavlenko 2006, 2007). Bilingual self-perception and the bilingual voice have become increasingly important in bilingualism research for the insights participants themselves give on how they negotiate their use of two languages and how they experience the effects (cognitive and social) of being bilingual. Such work has alerted us to the fact that bilingual individuals make use of multiple voices, positions and ideologies to construct their own experiences. This work is elaborated on in Chapter 4, section 4.5

### **1.3 STATEMENT OF THE PROBLEM**

This dissertation reports on an investigation of the development of 'conceptual fluency' in Afrikaans/English bilinguals for whom Afrikaans is the dominant of the two languages, and who received 12 years of primary and secondary schooling through the medium of

Afrikaans. At university, they were introduced to a more pervasive use of English as LoTL than they had encountered before. This research problematizes the influence of the L2 on the L1 in a context where higher education introduces increased use of the L2 as an instrument of teaching and learning. The participants in this study were introduced to skills, knowledge and concepts in formal education through the L2, which they might not have come across in the L1. The study set out to determine the extent to which the use of speakers' L2 as medium of instruction<sup>3</sup> affects aspects of 'conceptual fluency' evident in their L1 across their first year at university. I focus on the development of 'conceptual fluency' and cognition in a formal, higher educational context. I work with the notion of 'multi-competence' and tests the hypothesis that a person who knows two languages experiences a bidirectional process of transfer of linguistic and conceptual features between the languages. The study hypothesizes that transfer does not only occur from the L1 to the L2, but also from the L2 to the L1. It assumes that transfer does not only take place on the linguistic level, but also on the conceptual level, and that bilingualism itself might have certain cognitive effects, which are not necessarily negative. This dissertation furthermore investigates how bilinguals themselves perceive the effect of increased use of an L2 in a teaching and learning context on the L1. With a view to improve understanding of the effect of the L2 on the L1, the study also considers how learners negotiate the use of two languages in a teaching and learning context in daily educational activities.

#### **1.4 AIMS OF THE RESEARCH**

The aims of this study are as follows:

1. To clarify, for the purposes of the study, the notion of 'conceptual fluency' as it is used by scholars such as Kecskes and Papp (2000, 2003, 2005) and Danesi (1995), and to place this in a higher-education context;
2. To investigate the influence of the use of an L2 as language of teaching and learning on particular aspects of academic literacy at tertiary level, which can be viewed as components of 'conceptual fluency' manifest in the L1;

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<sup>3</sup> It is acknowledged that even students with their L1 as language of teaching are increasingly exposed to English in learning material (e.g. textbooks and academic articles).

3. To investigate Grade 12 learners' Afrikaans and English marks as a possible determiner of the development of 'conceptual fluency' and 'multi-competence' in higher education;
4. To consider other factors than language of instruction as likely determiners in the development of 'conceptual fluency';
5. To investigate the possible effect of the L2 as medium of instruction on cognitive development, as reflected in academic achievement during the first year at university; and
6. To investigate the influence of increased exposure to the L2 (English) as language of instruction on participants' self-perception of their language proficiency in an academic context.

## **1.5 RESEARCH QUESTIONS**

The aims of the research will be realised in answering the following research questions:

1. How is 'conceptual fluency' instantiated in a higher-education context?
2. What effect does the L2 as language of teaching and learning have on 'conceptual fluency' manifested and measured in the L1 when it is used in a higher-education context?
3. How reliable are Grade 12 marks in Afrikaans and English as determiners in development of 'multi-competence' and 'conceptual fluency' as manifested in the L1?
4. Which factors other than language of instruction are related to the development of 'conceptual fluency' in an academic context?
5. What effect does the L2 as LoTL have on overall academic achievement during participants' first year of study at university?
6. What effect does the increased exposure to an L2 as LoTL have on how participants perceive their language use and abilities in either language in an academic context?

7. Which voices do participants draw on in order to describe their views of their own language abilities and use?

## **1.6 RESEARCH HYPOTHESES AND POINTS OF DEPARTURE**

The hypotheses related to the research questions tested in this research are the following:

1. 'Conceptual fluency' is manifest in higher education in written academic texts in the use of appropriate concepts, text styles, lexical sophistication, etc. as these are used;
2. Exposure to English (L2) as LoTL has a measurable effect on the L1 and more specifically on conceptual fluency of Afrikaans L1 bilinguals;
3. Grade 12 marks for English and Afrikaans are of limited use as determiners of 'conceptual fluency' and 'multi-competence'; and
4. Variation in the development of conceptual fluency will occur due to factors other than language of instruction, such as academic achievement at school and conceptual fluency at point of entry into university.

At the onset, the work will acknowledge that the effect of the L2 as a medium of instruction on overall academic achievement will show considerable variation due to the wide range of variables that can affect such achievement. It will propose that narrative reports on bilingual experiences in formal higher education provide insight into CLI which statistical measures cannot do, thus complementing insights gained through language assessment measures. It will also take as a given that participants draw on a wide variety of discourses to describe their own experiences, which will point to the socially situated nature of their experiences.

## **1.7 METHODOLOGY**

### **1.7.1 General design of the study**

The theoretical framework, in Chapters 2 to 4, forms a substantial part of this dissertation because a comprehensive theoretical discussion is necessary to answer the research questions. First, an extensive theoretical exploration provides a historical perspective of

the development of the respective fields. Second, as this dissertation connects related but different fields with each other, a theoretical discussion of this nature is necessary to make these connections salient.

To add to the theoretical interest, an empirical study was conducted, which compares two groups of individuals registered in their first year of university studies. The first group is one with more exposure to English as language of teaching and learning, and the second had less exposure. It compares the same students' development of 'conceptual fluency', measured by selected academic literacy tests written in the L1, and cognitive development, measured by academic achievement, across their first year at university. Further, it investigates how Grade 12 marks in both the L1 and L2 are used as predictors of the development of 'conceptual fluency'. Using interviews, the study compares students' experiences of how they use, negotiate and perceive the use of two languages in a higher-education context.

### **1.7.2 Participants**

Stellenbosch University students were selected based on having Afrikaans as L1 and having had Afrikaans as LoTL up to Grade 12 level. The aim was to monitor their development of 'conceptual fluency' as exposure to the L2 in the higher-learning context increased. The participants with more exposure to English were selected from degree programmes where classes are conducted in both Afrikaans and English, either through using separate Afrikaans/English streams (parallel medium) or using both languages for teaching in the same class (dual medium). All the participating students, regardless of the kind of language practices and lectures exposed to, reported using their L2 more in a higher-education academic setting than they had in prior education.

Students who continued to have their instruction primarily in Afrikaans were compared to students who were instructed in English more consistently along with Afrikaans. All these students did a credit-bearing course in academic literacy during the first year. The skills and practices taught and assessed in this course are similar and in some cases equivalent to those Kecskes and Papp (2000) refer to in defining 'conceptual fluency'. Prior to registration at the university, these students wrote academic literacy tests for purposes of placement in Afrikaans and English, as was general practice for all students entering Stellenbosch University at the time. The aim here has been to compare the

results of the tests done before entry into university and before the introduction of English as language of instruction with the results of tests done during and towards the end of the first year of studies. One of the tests taken as part of the academic literacy course is an exact replica of the test taken prior to university registration. This test therefore was of particular importance as an investigative instrument.

### **1.7.3 Research instruments and data collection methods**

This research uses both quantitative and qualitative methods of data collection and analysis. Two main research instruments used in this study are, firstly, academic literacy tests designed and used by the Language Centre at Stellenbosch University and, secondly, semi-structured interviews conducted with selected participants.

#### **1.7.3.1 Tests**

The academic literacy test was selected as the main instrument to test 'conceptual fluency' as defined by Kecskes and Papp (2000, 2003). This test was designed and standardised for the South African market; i.e., it is not a translated version of a test from another language or country. According to Kecskes and Papp (2003: 247), in order to demonstrate the effect that the L2 has on the L1, the nature of the phenomenon and the factors that bring about the effect should be described. Special instruments that are able to show that the effect is real and measurable should also be developed. Kecskes and Papp (2000: 253) find that linguistic features can be read as indicators of 'conceptual fluency'; hence, linguistic features are taken to offer insight into the way conceptual fluency develops in the participants. They argue that the L2 influence is often not visible in a direct way. The L2 influence may produce a more sophisticated use of the L1, evident in improved literacy skills, text developing and manipulating skills, sentence construction and the more selective use of vocabulary. They hypothesise that to demonstrate the change in 'conceptual fluency' quantitatively requires investigation of concrete linguistic elements. A number of specific grammatical features are taken to demonstrate the conceptual structure of the influence of the L2 on the L1. Kecskes and Papp (2003) use the indices of structural well-formedness, lexical quality and cognitive functioning as measures of conceptual fluency (see Chapter 4 section 4.2.4 and Chapter 5 section 5.6.2 for more on this). The academic literacy tests used as measuring instruments in this dissertation use similar indices, although they are specifically suited to academic discourse.

In their research, Kecskes and Papp (2003) compare test results on two levels:

- 1) Actual L1 production of respondents is compared to their L1 production of an earlier period when the L2 had not been introduced yet, or exposure to the L2 was less extensive.
- 2) Performance of respondents in exercises testing knowledge and use of the various suggested grammatical indices is compared across the various test items.

In this study, the *Toets vir Akademiese Geletterdheidsvlakke* (TAG) and *Test for Academic Literacy levels* (TALL) use receptive tasks to investigate academic literacy levels. Receptive and productive aspects of language are not completely separable entities, and a fair level of receptive knowledge is required before productive aspects of knowledge are acquired (Lee & Muncie 2006). Furthermore, the performance of the participants in an academic literacy course is also used as a measure of conceptual fluency. This course includes both receptive and productive tasks. TAG and TALL results received before entry to university are compared to results at the end of the first year; the different grammatical indices are compared across the various test items. However, the tests as a whole are used as a measurement of conceptual fluency. The design of the study is thus similar to what Kecskes and Papp (2003) propose. A discussion on how the tests used in this dissertation are believed to measure 'conceptual fluency' follows in Chapter 5, section 5.5.1.

### ***1.7.3.2 Interviews***

I conducted semi-structured interviews with selected participants; I believe that such interviews give a richer account of the multilingual development of these students in an educational context and add to the description of the language environment in which they are being taught. The interviews also offer more insight into factors that might interact with cross-linguistic influence and conceptual fluency in particular. In addition, the self-assessment of the students offers a bilingual voice to this study on bilingualism, an approach that Pavlenko (2005) encourages and believes are largely absent from studies on bilingualism.

#### **1.7.4 Data Analysis**

Descriptive and inferential statistics were used for two purposes. Firstly, to compare the different groups to each other as well as the same groups at different points of time. Secondly, to investigate the nature of the relationship between 'conceptual fluency' and various other variables, such as Grade 12 marks, as well as the relationship between 'academic achievement' and various other variables.

As a first step, the interviews were analysed by means of a thematic analysis. The analysis was taken further by using socio-cultural activity theory and Bakhtin's (1981) theory on the dialogic qualities of texts to ascertain how bilingual students perceive their own 'conceptual fluency' and language use in general in both languages.

### **1.8 STRUCTURE OF THE DISSERTATION**

This dissertation consists of eight chapters. Chapter 2 gives a review of relevant literature on a historical account of developments in the field of language and cognition. The chapter focuses on the Whorfian hypothesis, which has played an important role in the investigation into 'language and thought'. It assesses both criticisms of the hypothesis and studies that have re-interpreted and reformulated it. It also discusses new research into the linguistic relativity debate, as well as other theories on language and thought. The second part of the chapter moves from the broader discussion of language and cognition to the particular cognitive domain of learning. This section explores the relation between formal academic learning and language.

In Chapter 3, developments in bilingualism research are central. This chapter discusses various theoretical standpoints on the bilingual individual, in particular contrasting the view that a bilingual is a deficient monolingual with the multi-competence argument proposed by this dissertation. The discussion traces the historical development of the field of 'cross-linguistic influence' from the early days of contrastive- and error analysis to the current state of the field. It focuses on the view that language transfer is bi-directional and not necessarily negative.

Chapter 4 centres on the cognitive and conceptual effects of living with two languages, and pays particular attention to learning through two languages. The last part of the

chapter discusses the narratives of bilinguals on how they experience living with two languages.

Chapter 5 provides more information on the research site and research methods, and clarifies data collection methods. It explains the complexities of isolating and identifying cross-linguistic influence. The chapter also discusses the factors that interact with CLI and specifically with CLI in terms of 'conceptual fluency', explicating how these factors are accounted for in the design of the study.

In Chapter 6 I present and report on the results and findings of the study. This chapter includes both a general discussion and a more detailed discussion of particularly interesting data. The discussion is given in statistical terms, by using inferential statistics, and in a more discursive form.

Chapter 7 analyses the findings discussed in Chapter 6 in relation to the theoretical framework and insights gained from other literature. I identify points where the findings contradict or agree with the general theoretical framework, with a view to placing this research within current discussions on cross-linguistic influence and its relevance to education in a bilingual higher-education context. These discussions are also positioned within the work on bilingualism and cognitive effects, and specifically provide insight into what bilinguals in a multilingual environment can contribute to the current theoretical discussion.

Chapter 8 concludes the study and identifies gaps and limitations in it. I propose further investigation and recommendations based on the findings. Finally, in this chapter discuss the implications of the research for the wider study of linguistics, education, a multilingual society and the bilingual individual. The practical implications of the research are discussed within the specific context of Stellenbosch University and its approach to language in education.

## **1.9 KEY TERMS**

This section provides an index to the key theoretical terms used in this dissertation. It clarifies the theoretical orientation that the dissertation takes and explains how the key terminology is used throughout the thesis. Terms are given in alphabetical order below.

### **1.9.1 Academic achievement**

"Academic achievement" in this dissertation refers to three specific measures: academic achievement at school is measured by using the average Grade 12 mark, while academic achievement at university is measured by the weighted average of all the subjects enrolled for during the first year of registration. An additional measure of academic achievement is the weighted average of the main programme. This excludes two academic support subjects, which are not directly related to the particular programme for which the students are registered. This term is not used to refer to academic learning in all its complexity. Admittedly, measuring academic achievement by marks obtained for courses is a rather crude indicator, but was found to be necessary as this is how students are assessed by various authorities (see Graham's 1987 arguments against using Grade Point Average as a measure of academic achievement in Chapter 7, section 7.6).

### **1.9.2. Academic literacy**

Following Horarik, Devereux, Trimingham-Jack & Wilson (2006), "academic literacy" refers to literacy at a more advanced level than regular reading and writing at secondary school level. It is taken to refer to knowledge of generic features of academic discourses and assumes an advanced level of reading and writing skills. Academic literacy in this dissertation is measured through the Toets vir Akademiese Geletterheids Vlakke (TAG)/Test for Academic Literacy Levels (TALL) and through an academic literacy course developed for students in the selected faculty. "Academic literacy" is sometimes used interchangeably with "conceptual fluency" in this study, because academic literacy skills are taken to illustrate a particular type of conceptual fluency relevant to this context.

### **1.9.3. Agency**

This study follows Van Lier (2008: 172), who defines "agency" as the ability to control one's behaviour, to engage in behaviour that affects other entities and the self, and to produce actions which can be evaluated. Further, Van Lier (2008: 172) connects agency with issues such as "volition, intentionality, initiative, intrinsic motivation and autonomy."

#### **1.9.4. Bilingualism**

Hamers and Blanc's (2000: 6) widely held position that "bilingualism" is both an individual and societal phenomenon is followed in this dissertation. "Bilingualism" is taken to be a form of 'multi-competence'; speakers are not required to be equally proficient in both languages in order to qualify as bilingual.

#### **1.9.5. Conceptual fluency**

The definition of "conceptual fluency" as presented by Kecskes and Papp (2003: 252) serves as a starting point in this study: "Conceptual fluency refers to the extent that bilingual speakers are able to understand and use concepts, knowledge and skills acquired through the channel of either language and means the level of free access to vocabulary in both languages. It presupposes that the conceptual-semantic interface works properly and, as a result depending on the level of conceptual fluency, the bilingual person has greater or lesser difficulty finding the right words to express his/her ideas through the channel of either language." For this study, an elaboration of the concept is finally used:

*Conceptual fluency refers to the capacity of a speaker in any communicative event to draw on all the linguistic knowledge he/she has in all the languages and language variations that he/she knows. This capacity includes the ability to use concepts, knowledge and skills acquired through the channel of all and/or any of the languages that the person knows (see Chapter 7, section 7.2 for an elaboration).*

Conceptual fluency required in higher education is stipulated to be of a particular kind. In this study, it is measured by means of academic literacy tests, which work with linguistic and conceptual skills that coincide. This is not necessarily the same way in which it will be tested for in other contexts.

#### **1.9.6. Cross-linguistic influence**

This dissertation uses "cross-linguistic influence" in the same way that Jarvis and Pavlenko (2008: 1) use it to refer to "the influence of a person's knowledge of one language on that person's knowledge or use of another language." Similar to Jarvis and Pavlenko (2008), 'cross-linguistic influence' is used interchangeably with 'language transfer' (as older literature refers to the phenomenon); although 'cross-linguistic

influence' is broader in that it encompasses both linguistic and conceptual transfer. Transfer in older literature usually refers only to the influence of the L1 on the L2, while Jarvis and Pavlenko (2008) use the term to refer to bidirectional transfer. Cross-linguistic influence is acknowledged to occur in different directions, not only from L1 to L2 (so called forward transfer), but also from L2 to L1 (backward/reverse transfer), and from L3 to L2 (lateral transfer). The particular focus in this thesis is on *backward/reverse transfer*, which refers to L2 to L1 transfer. For Jarvis and Pavlenko (2008: 22), bidirectional transfer occurs "where two languages that language users know function synchronously as both source and recipient languages."

### **1.9.7. Dialogic qualities of text**

The study follows Bakhtin's (1981: 279) definition of the "dialogic qualities of texts." He finds that any discourse or text is in constant dialogue with other texts produced and circulated: "The dialogic orientation of discourse is a phenomenon that is, of course, a property of any discourse. It is the natural orientation of any living discourse." Texts and discourse here are used in the extended sense to include spoken discourse and broad patterns of speech or ways of talking.

### **1.9.8. Learning**

In this dissertation, "learning" is viewed as a cognitive function, connected to other cognitive functions; it is also taken to be a practice that is tied up with power, agency and other social phenomena. Lave's (1991: 67) view of 'situated cognition' that emphasizes "the relational interdependency of agent and world, activity, meaning, cognition, learning and knowing" is an important one in the context of higher-education learning.

### **1.9.9. Linguistic relativity**

"Linguistic relativity" refers to Sapir and Whorf's introduction of the idea that language reflects cultural values and that different languages will shape the minds of their speakers differently (Whorf 1956: 143). Whorf's classical argument is used; this view holds that certain aspects of the world, experience, knowledge and behaviour are made more salient by the language a person speaks. It does not suggest that speakers of different languages

are limited by their own language and worldview, but rather that they are "pointed" to different aspects of the world by their different grammars (Whorf 1956: 221).

#### **1.9.10. Multi-competence**

"Multi-competence" refers to the "knowledge of two languages in one mind" (Cook 2008: 17). In this dissertation, such knowledge includes not only the formal linguistic knowledge, but also knowledge of concepts encoded in language, and knowledge of how to use knowledge, i.e. communicative competence. 'Multi-competence' is neither a positive nor negative attribute, but simply "different" from the competence of a monolingual (see Cook 1999: 190). Kecskes and Papp (2000) view the development of 'conceptual fluency' as key component in the cognitive make-up of a multi-competent individual. The two terms are thus closely connected.

#### **1.9.11. Social activity**

In the classical Vygotskian tradition, "social activity" is viewed to shape human cognition (Vygotsky 1978). This dissertation takes a bi-directional approach. Thus, more so than Vygotsky, it acknowledges that altered cognition can, in turn, shape further social activity.

#### **1.9.12. Higher education**

"Higher education" in this dissertation refers to formal education after the completion of Grade 12 at either a university, university of technology or college. Specifically, the type of higher education that is illustrated in this dissertation is university education.

## CHAPTER 2

# DEVELOPMENT OF THE FIELD OF 'LANGUAGE AND COGNITION'

### 2.1 INTRODUCTION

This chapter gives an historical overview of the field which explores the connection between language and cognition. It includes an exposition of the various positions in this field, ranging from those arguing that there is no connection between language and cognition to those claiming that language *is* cognition. The broad discussion on language and cognition will inform the more specific exploration of 'learning' as a cognitive function. In particular, this part of the discussion will focus on the connection between language and academic learning, a central concern of this dissertation which aims to investigate the effect that academic learning through an L2 has on 'conceptual fluency' in the L1 and on general academic success at university. An investigation of this nature requires an exploration of research on 'language and thought' because the connection between language and thought is pertinent to the context of learning through an L2. If, for example, it is found that there is no connection between language and the cognitive function of academic learning, and students are sufficiently proficient in the language of instruction, it should not influence learning in any way. However, if the reverse is found to be true and cognitive functions such as learning are indeed affected by language, learning through another language can hamper or benefit students or even alter cognitive structure or functions.

I discuss the Whorfian hypothesis as a central theme in the historical development of the connection between language and cognition. The hypothesis has played an important role in the development of the field, even though there have been counter-arguments to it, as well as different formulations and readings of it. The Whorfian hypothesis *per se* will not be used as an analytical tool in the data analysis of this thesis. It is, however, included in the theoretical framework given in Chapter 3 and 4, which draws on various theoretical orientations and will be used as a tool for analysis. In particular, the notions of 'conceptual fluency' and 'multi-competence', which are key theoretical concepts in this dissertation (see Chapter 1, 3 and 4) originate from a neo-Whorfian orientation to

language contact in the individual. An in-depth discussion of this hypothesis is essential to the explication of the key theoretical notions on which this dissertation rests.

## **2.2 HISTORICAL PERSPECTIVE ON THE FIELD OF 'LANGUAGE AND COGNITION'**

The relation between language and cognition has been investigated within various fields of study, including cognitive science, psychology, anthropology, sociology and linguistics. This dissertation provides an historical background of the field from a linguistic orientation, a field that is interdisciplinary by its very nature. Klein (2008: 2) states that the links between language and thought "have primarily been topics of – sometimes wild, sometimes intriguing – philosophical speculation, rather than of solid, fact based research." In this area of investigation, which was not always studied empirically, the Whorfian hypothesis is an important milestone. Whorf's initial ideas developed from linguistic anthropology's concern with the relations between language, culture and cognition.

### **2.2.1 The Whorfian hypothesis**

Benjamin Lee Whorf and his mentor Edward Sapir are credited with the linguistic relativity hypothesis, giving rise to the labels 'Whorfian hypothesis' or 'Sapir-Whorf hypothesis'. Whorf's study of Native American languages, such as Hopi, led him to believe that the development of thought is not only a psychological process but largely also influenced by culture (Whorf 1956: 65). He stated that thought was a matter of "one especially cohesive aggregate of cultural phenomena that we call language." Whorf's interest in the problem of the relation between habitual thought and behaviour on the one hand and language on the other began in his professional life, working for a fire-insurance company. He believed that linguistic meaning was sometimes a key factor in people's behaviour when they inadvertently started fires. He further explored these assumptions through his study of Hopi culture and grammar.

Comparing Hopi grammar with that of Western languages, he put forward that the grammar of Hopi bore a relation to Hopi culture and the grammar of the European or the Western tongue bore a relation to Western culture (Whorf 1956: 135). In particular, Whorf (1956: 138) argued that Hopi language, and subsequently the Hopi worldview,

was different in terms of space, time, substance and matter when compared to Indo-European languages. He identified that Hopi did not have tenses, but organised time with "aspect, and clause-linkage forms" (Whorf 1956: 143). According to Whorf (1956: 152–158), the different ways of talking about time caused different ways of organising events according to time. For example, Whorf stated that by viewing time as something that begins and ends, Western thinking organised records, diaries, calendars and clocks accordingly. From these and other observations on Hopi culture, he hypothesized what was to become linguistic relativity. His arguments were also developed in line with theories developed by his mentor, Edward Sapir. For example, he began his article entitled "The Relation of Habitual Thought and Behavior to Language" (1956: 143) by using the following quotation from Sapir:

Human beings do not live in the objective world alone nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built up on the language habits of the group ... We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.

However, Whorf's own views of the relation between language and thought were less strictly deterministic than Sapir's were.<sup>4</sup> Whorf's idea was that diverse languages influence rather than determine the patterns of thought of those who speak them. This hypothesis has been on the forefront of many debates in the investigation into language and thought since Whorf (1956: 221) first stated that:

The linguistic relativity principle ... means in informal terms that users of markedly different grammars are pointed by their grammars toward different types of observation 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 (1956: 138) summed up his research on the relation between language and habitual thought in the following two questions:

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<sup>4</sup> Linguistic determinism refers to the idea that thought is constrained (determined) by the language one speaks. It is largely believed to be an after-construction of Whorf's views and not Whorf's original thesis (see Pavlenko 2011).

(1) Are our own concepts of time, space and matter given in substantially the same form by experience to all men, or are they in part conditioned by the structure of particular languages? And (2) Are there traceable affinities between (a) cultural and behavioural norms (b) large-scale linguistic patterns?

He thus never proposed linguistic determinism and questioned a one-to-one correlation between culture and language when he stated, "I should be the last to pretend that there is anything as definite as a correlation between culture and a language" (Whorf 1956: 139).

He further stated, "... there are connections but not correlations or diagnostic correspondences between cultural norms and linguistic patterns" (1956: 158). However, because of Whorf's references to Sapir's work, he was considered determinist as well. Other criticisms against the hypothesis were also raised, which eventually led to the theory falling into disfavour in mainstream linguistic research.

### **2.2.2 Criticisms of the Whorfian hypothesis**

Whorf's postulation on the connection between language and thought was a landmark study, because it did not try to answer the question from a philosophical point of view, but instead conducted it in field of linguistic anthropology. During the 1960s and 1970s, anthropologists were careful not to evoke ideas suggesting that language can alter cognitive structures, as differences in cognition in previous years were often linked to racial differences. Consequently, linguistic relativity was not seriously investigated in this tradition until the 1980s (Lucy 1996:43). A deterministic reading of Whorf was not the only criticism against the hypothesis. Other linguistic traditions were developing and other views of the connection between language and thought were also put forward. With the advent of Chomskian linguistics, the Whorfian hypothesis fell into disfavour. Chomsky (1959) started investigating language as an underlying mental, innately endowed function. Chomsky (1959: 39) criticised Skinner's behaviourist account of language acquisition and proposed that "we recognize a new item as a sentence not because it matches some familiar item in any simple way, but because it is generated by the grammar that each individual has somehow and in some form internalized." Chomsky believed that humans know more about language than they are exposed to, given the impoverished input they receive from the environment. Chomskian linguistics became influential and made a major contribution to the field by showing that knowledge about the mind can be gained by scientific investigation of the products of mental processes,

such as language, which are directly observable (Gopnik 2003: 238). Subsequently, researchers turned to universal accounts of language and language acquisition and did not empirically investigate linguistic relativity.

The linguistic relativity theory was for a long time regarded as "a conventional absurdity" (Pinker 1994: 57), and linguists and cognitive scientists looked elsewhere for accounts of the connection between language and thought, with other theories being put forward and gaining prominence. The nativist or universalist approach was until very recently (early 1990s) regarded as the only mainstream linguistic programme that could provide answers to the debate. According to Fuchs (1999: 4), the goal of Chomsky's minimalist programme is to put forward the rules of universal grammar<sup>5</sup> in a more simplified and coherent way, thus indirectly postulating that there is in effect only one human language, although it might seem to be an extremely diverse system. Fuchs (1994: 4) believes that by putting forward such a strong universalist hypothesis, language diversity can be limited in two ways: firstly, by limiting diversity to syntax only and, secondly by focussing on only a small range of formal variations that are mapped onto universal principals. He (1999: 5) believes that "the purpose of this theory is to show that, outside this extremely limited sort of parametric variation, actually involving only morpho-syntactic features, individual languages would, as Chomsky himself says (1993: 3), use a single computational (syntactic) system and a single lexicon." From this strong universalist perspective, the connection between language and thought would not be a topic worthy of investigation. Since all languages are essentially the same, everybody would think in more or less the same way, and would be pointed by their grammars to view the world in more or less the same way as well. This focus on language universals was perhaps due to the fact that only a few languages had been comprehensively studied and many others with diverse structures had not been studied at all (Fuchs 1999: 5).

Another position connected to the universalist approach and in opposition to the linguistic relativity theory is the view of language as simply a tool for communication, or as a means of transferring thoughts (Carruthers 2002: 658). Carruthers (2002: 558) argues that one of the reasons why this "communicative conception" of language is popular in cognitive science is the view of language as a specific faculty or module in the brain. This

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<sup>5</sup> Universal Grammar refers to a set of universal principles that determine the properties of all natural languages. According to this theory the aspects of syntax which are the same across languages "are attributable to principles of UG", while the aspects of syntax that differ across languages "are described in terms of a set of (binary) parameters" (Radford, Atkinson, Britain, Clahsen & Spencer 2009: 325).

point of view is associated with Fodor (1975, 1983) who claimed that the mind was modular in its make-up and that "roughly modular cognitive systems are domain specific, innately specified, hardwired, autonomous, and not assembled" (1983: 37). The supporters of this theory find it difficult to view language as both a distinct module in the mind and a key component in the performance of other cognitive functions. Hauser, Chomsky and Fitch (2002: 1569–1570) distinguish between a broad sense of the language faculty, which includes "an internal computational system combined with at least two other organism-internal systems, which [they] call 'sensory-motor' and 'conceptual-intentional'", and a narrow sense, which they define as "the abstract linguistic computational system alone, independent of the other systems with which it interacts and interfaces." The broad notion proposed by Hauser et al. (2002) illustrates Carruthers's (2002: 658) argument that the language module cannot be separated from other cognitive functions completely, and that central cognitive functioning employs other modules in certain reasoning and problem solving tasks. Carruthers (2002: 658) posits that the communicative conception of language cannot be the most accurate account of the interaction between language and thought. The modular conception has been replaced with what Fuchs (1999: 13) calls constructivist conceptions of language. Constructivist conceptions reject the idea that language is a specific independent module. Instead, they view language as a property which emerges from general cognitive operations and has numerous connections to other cognitive activities.

During the period when language universals were the central research paradigm for linguistics, hardly any empirical studies on the Whorfian hypothesis were undertaken. Lucy (1992: 3) proposes various reasons for the lack of empirical research on linguistic relativity, despite the interest from cognitive scientists, linguists and anthropologists. One of the problems that he identifies is the tendency to reduce or simplify the research question to such an extent that it is seen as obviously true or obviously false, and not warranting any further empirical investigation. In the case of the linguistic relativity theory, it is simplified to either linguistic determinism – the assertion that diverse languages determine thought patterns, which is obviously false – or, at the opposite end, to the assertion that language influences thought, which is seen as obviously true. According to Dufva (2004: 137), the doctrine of linguistic determinism was inaccurately ascribed to Whorf in order to strengthen the rationale behind Chomskian linguistics, and used as an example of a linguistic hypothesis that had been proven wrong. Dufva (2004:

137) further argues that linguistic determinism is in fact the opposite of what Whorf meant. Firstly, according to Whorf's theory, language could not determine thought, because he did not consider the two as separate faculties, but rather proposed that language was one way of thinking. Secondly, Whorf also never argued that language determines thought; he simply pointed out that by using the conventional linguistic means of a specific speech community, certain things were made more salient, which did not imply that other perspectives were then excluded (Dufva 2004: 137–138).

However, the criticism of Whorf's research methods was not limited to the paradigm within which he worked or to what was seen as linguistic determinism. One particularly harsh criticism was from prominent cognitive scientist Steven Pinker (1994, 2007), who writes on the innate properties of the language faculty and on the internal cognitive operations of the human mind. For example, Pinker (1994: 18) refers to language as "a distinct piece of the biological makeup of our brains", he is thus a proponent of the view that language is innate and that there are universal properties of language. He gives the Whorfian hypothesis an obituary in *Language Instinct*, calling the hypothesis "wrong, all wrong" (1994: 59–67). Casasanto (2008: 64) points out that Pinker's denouncement of the hypothesis is based on a flawed reading of Whorf, in which Pinker criticises the Whorfian hypothesis on the basis that Whorf equated language with thought. Instead, Casasanto (2008: 64) argues that Whorf did not see language and thought as the same thing, but believed that differences among languages cause differences in the thoughts of their speakers.

Applied linguistics methods, such as critical discourse analysis (CDA) and social constructionist theories, also have some of their roots in the Whorfian hypothesis (Stubbs 1997:100). Instead of investigating the influence of different languages on habitual thought, critical discourse analysts investigate how patterns of use in the same language influence thought. CDA forms part of a social constructionist approach, which is built on the idea that the world as we know it is largely constructed through discourses (Burr 1995). CDA has become a popular way of analysing different types of texts in public and private domains, with prominent researchers in the field including Wodak, Van Dijk and Fairclough. Stubbs (1997:100) points out that CDA does not make any clear claims about the connection between different patterns of use and their effects on habitual thought. Stubbs (1997: 106) furthermore argues that both CDA and the Whorfian hypothesis claim

"that languages or uses of language implicitly classify experience, and that these categories influence a person's view of reality." If language is regarded as evidence of differing thought patterns, the hypothesis becomes circular. Instead Stubbs (1997) argues that non-linguistic evidence of different patterns of beliefs and behaviour will be needed. Similarly, Casasanto (2008: 67) views arguments against Whorf's methodology as valid and argues that the hypothesis is made circular when different language patterns are used as the only evidence that people think differently. Casasanto (2008: 67) describes this particular criticism against the hypothesis in the following way: "but some sort of extra-linguistic data are needed to test these hypotheses: Otherwise, the only evidence that people who *talk* differently also *think* differently is that they *talk* differently!"

These are some examples of criticism of the methodological validity of Whorf's findings that coincided with criticism of the theoretical orientation that he followed. However, before the re-discovery of the Whorfian hypothesis by mainstream linguistics, these criticisms did not lead to empirical investigations to address the methodological shortcomings identified. When empirical investigations were conducted, they displayed a number of shortcomings. Studies in the anthropological tradition, for example, very often investigated "a single grammatical form in a single exotic language" (Lucy 1996:43), and subsequently could not provide any adequate account of the hypothesis, as there were no comparisons made to other languages and conclusions were drawn from only a small set of linguistic data (Lucy 1996:43).

According to Lucy (1992), the lack of empirical research into the hypothesis may be the result of its interdisciplinarity because the question of linguistic relativity might be contrary to some of the central assumptions of the relevant disciplines. He (1992) believes that Whorf's empirical studies are still the most comprehensive of its kind. Whorf compared the semantic structure of two languages, and he then investigated how these structures were connected to cultural institutions and beliefs (Lucy 1992: 258), an approach that allowed him to emphasise the significance of language patterns for behaviour. However, other researchers considered this approach a shortcoming because it did not account for individual variants on language influence and did not give evidence for sifting through alternative and competing behavioural systems. Like Stubbs (1997), who sees the lack of comparisons as a shortcoming in CDA, Lucy (1992: 258) considers it a shortcoming of Whorf's research that the comparisons were not adequately and

seriously analysed. Lucy (1992: 258) proposes that further empirical study should analyse such work more thoroughly.

According to Fuchs (1999: 7), cognitive science has overlooked the descriptive tradition in studies of linguistic diversity because of its rejection of universalism and its attention to differences. Similarly, Gopnik (2001: 45) suggests that cognitive science rejected Whorf's work because there were empirical objections to it and his idea was considered to be a relativist ontology, while cognitive science is in essence realist and anti-relativist. According to Gopnik (2001: 45), because cognition refers to "the way that we learn about the world around us in an at least roughly veridical way", cognitive science assumes that there are general procedures that all humans use in order to learn about the world around them.

Recently, there has been a renewed interest in the linguistic relativity debate, with an upsurge of empirical investigations on the hypothesis. This paradigm questions language universals, and Evans and Levinson (2009), for example, point out that, because so many languages in the world have not been studied in a systematic way, any claims of language universals are premature. They argue that the true universal property of language might be the capacity of the human mind to deal with diversity in language.

### **2.2.3 Renewed interest in the Whorfian hypothesis**

Since the beginning of the 1990s, a number of publications have been dedicated to exploring and reformulating the linguistic relativity theory in different contexts (Lucy 1992; Gumperz & Levinson 1996; Han & Cadierno 2010; Cook & Bassetti 2011). Pavlenko (2005b: 433) calls scholars who are actively involved in reviving the linguistic relativity theory "neo-Whorfians". One of the researchers who have played an important role in the reformulation of the Whorfian hypothesis is Lucy, whose *Language diversity and thought. A reformulation of the linguistic relativity hypothesis* is regarded as a seminal work. In particular, Lucy (1992: 3) points out that the real question and area of investigation into linguistic relativity should not be to discount the linguistic determinism position, or to prove the "language influences thought" doctrine, but instead to investigate precisely what the influences are of language on thought, how important these influences are, and how and when they operate.

### 2.2.3.1 *Recent Whorfian studies related to language and cognition*

In her discussion of "neo-Whorfians", Pavlenko (2005b: 435) concedes that all neo-Whorfians do not necessarily share the same views on the hypothesis. She argues that they all share a common interest in the ramifications of it and a desire to abandon the traditional debate about the merits of linguistic determinism versus linguistic relativity. Like Lucy (1992) and Dufva (2004), Pavlenko believes the dichotomy oversimplifies and misinterprets the original arguments made by Whorf. She sees neo-Whorfians as forging new, complex and nuanced approaches to the study of ways in which different aspects of language may influence distinct modes of thought, while acknowledging that some cognitive processes and modes of thought may not be affected by language at all. This renewed interest in the Whorfian hypothesis has also resulted in a greater number of empirical investigations into the connection between language and thought, specifically in the domains of space, motion, event construal, gender, colour, time, personhood and emotions. A new area of investigation into the linguistic relativity hypothesis has also been on the effect that *bilingualism* might have on the connection between language, cognition and reality. This development coincides with the impact of rapid globalisation and what Aronin and Singleton (2008) call the "new linguistic dispensation" of multilingualism.

Lucy's (1992) influential work argues that a new reading of the linguistic relativity hypothesis is crucial to the understanding of language and thought, and that the relation between the two can be investigated across three different levels. The first level is the semiotic level and deals with the question of how speaking any language might influence thinking. The second level concerns the question of whether speaking one or more languages may influence thinking (comparative studies). The third level is concerned with whether using language in a particular way may influence thinking. The third level is especially relevant for CDA and social constructionist approaches to language study. Lucy also makes the point that the levels cannot be separated into neat categories because they are very often linked. Different variations of the linguistic relativity theory also currently exist. According to Lucy (1992: 294), the different variations have three key elements in common: "they all claim that certain properties of a given *language* have consequences for patterns of *thought* about *reality* (original emphasis)." Different hypotheses vary in how strong they believe the connections between the three key

elements to be, with the strongest form of the hypothesis being linguistic determinism, a view that has largely been discredited.

Lucy (1997: 296) offers a review of three broad approaches to the investigation of the linguistic relativity theory, namely, the structure-centred, domain-centred and behaviour-centred approaches. A structure-centred approach seeks to find differences between languages in their structure of meaning; a domain-centred approach begins its investigation with a certain domain of experience and asks how various languages encode or construe these experiences; and a behaviour-centred approach starts off with a pattern of behaviour and seeks to find answers to this behaviour in thought patterns which might arise from different language practices. According to Lucy (1997: 305), further investigation into linguistic relativity needs to find a balance between these different approaches, which will include an adequate representation of language, thought and reality. However, he suggests that one should not lose sight of what he believes to be the core problem: the significance of differences in language structures for thought.

Studies from a neo-Whorfian perspective have been influenced by various advances made in linguistics and cognitive science and by new readings of already existing theories.

### **Thinking for speaking**

The notion of 'thinking for speaking' instead of 'thought and language' was put forward by Slobin (1996: 75), who proposed that there is a special type of thinking, which is related to language, "the thinking that is carried out, on-line, in the process of speaking." According to Slobin (1996: 75), events and situations are not out there, waiting to be construed by language; rather, "experiences are filtered through language into verbalized event." However Pinker (2007: 148) argues that 'thinking for speaking' has no serious implications for the Whorfian hypothesis. He states:

the new studies recruited to support Linguistic Determinism are consistent only with a mundane version of the Whorfian hypothesis in which speakers of different languages tilt in different directions in a woolly task, rather than having differently structured minds. And even those differences may have been caused not by the language but by features of their culture and environment that are reflected in their language.

He (2007: 129) furthermore argues that the effects of thinking for speaking on thinking itself "are small at best."

This proposal of 'thinking for speaking' however has particular implications for child language development. Slobin's (1996: 76) theory is that when acquiring a L1, "the child learns particular ways of thinking for speaking." He (1996) set out to investigate the effects of different languages on thinking for speaking with researchers from a number of countries. The research was conducted by showing pre-school children, school-going children and adults from the English, German, Spanish and Hebrew languages the same set of pictures from a picture book. The participants of the study were then asked to recount the events presented in the pictures. Slobin (1996: 88) interpreted the results to show that the events construed in the picture book were "experienced differently by speakers of different languages – *in the process of making a verbalized story out of them*" (original emphasis) and that they developed different rhetorical styles. Slobin (1996: 90) suggests that the results of his study have implications for SLA and bilingualism, particularly in investigating the linguistic and conceptual structures that L2 speakers have difficulty acquiring.

The 'thinking for speaking' paradigm has also been used in areas other than studies on children and their meaning-making processes. For example, Bylund (2009) investigated this notion in his research on event conceptualisation patterns. His work built on Slobin's by including bilingual participants in his studies, and found that the effect of the L2 on attrition in L1 conceptualisation patterns might bear some relation to the age of onset of acquisition of the L2, thus pointing to an interesting and intriguing further point of investigation in the 'thinking for speaking' hypothesis.

### **Child language development studies**

Various studies on child language development seem to support Slobin's (1996, 2003) view that language can influence verbalized thought. Gopnik (2001: 45) proposes an approach to cognitive development that is analogous to processes of theory formation and change in science, which is called the 'theory theory'. In this approach, it is suggested that there is an interactive relation between language and cognition that is not like the classical Whorfian or anti-Whorfian perspectives. The 'theory theory' entails that the rules and representations of infancy and childhood are similar to the rules and representations that are involved in scientific progress. Some of the characteristics of a theory, on which the principles of the 'theory theory' are based, are as follows: theories have distinctive structural characteristics and distinctive functional features; they support both deductive

and inductive inferences; they have strong interpretive effect; and they change (Gopnik 2001: 46). This, Gopnik believes, offers a middle ground to the nativist and relativist paradigms.

In a number of empirical studies on the relation between linguistic and cognitive development in English and Korean children, Gopnik, Choi and Baumberger (1996) and Gopnik (2001) found that there was a close relation between semantic and cognitive development. In a study where differences in the acquisitional route of certain concepts and linguistic features by Korean and English children were observed by Gopnik (2001: 58), it was found that the different patterns of linguistic input in the two languages (Korean-speaking children are exposed more to verbs, while nouns are more frequently used with English-speaking children) provided children with different patterns of evidence, which were relevant to the cognitive problems the children attempted to solve. Gopnik (2001: 62) also found that children pay attention to the particularities of the adult language and that these particularities affect the child's conception of the world. Attention to the particularities of language is possible because they feed into universal mechanisms for understanding the world, particularly mechanisms for theory formation and change. Gopnik et al. (1996: 197) found that Korean children were advanced in "means end abilities" and delayed in terms of categorization abilities compared to English children.

From these findings, Gopnik et al. (1996: 197–199) argue that "differences in linguistic input may affect cognitive development" and that a possible connection between language and cognitive development would be that there is a "bidirectional interaction between language and cognition." Watson-Gegeo (2004: 334) cites Nelson (1996: 12) whose research indicates that children's development shows that "Human minds are equipped to construct complicated mental models that represent ... the complexities of the social and cultural world." Watson-Gegeo (2004: 337) also points to the active role that children play in their own development, which relates to Gopnik's (2001) 'theory theory'.

### **Criticism of 'Universal Grammar'**

Findings from studies on language and cognitive development in children have led many researchers to re-examine the nativism paradigm, which has dominated mainstream linguistics up until recently. Levinson (2003: 26) states that the notion of simple nativism

rests on two main tenets, namely, (1) the idea that the syntax of language is fundamentally universal, a view often associated with Chomskian linguistics, and (2) the idea that the semantics of language is given by an innate language of thought, a view that is associated with Fodor (1975, 1983). The nativist position on the connection between language and cognition is that language is fundamentally structured in the same way in all languages and that there is a universal mental apparatus which controls language. Levinson (2003: 26) criticizes simple nativism for the following reasons: (1) the variation found across languages cannot be explained within the paradigm of nativism; (2) nativism does not account for the fact that there is no biological mechanism which can control the meanings of all possible words in all possible languages; and (3) a nativist paradigm misses the most important specification to human kind, the co-evolution with culture. According to Levinson (2003: 27), the contents and form of language are in the first place constrained by culture, but these cultural elements are in turn constrained by the biological nature of the organism. He (2003: 28) argues that there are many more instances where languages vary than cases where languages exhibit universals, and that the universals are usually trivial at best, such as the assertion that all languages have vowels. Whereas Pinker (2007) dismisses the effects of thinking for speaking on thinking as trivial, Levinson (2003, 2010) dismisses language universals with a similar argument.

Evans and Levinson (2009) argue that not enough languages have adequate descriptions to make claims about universality, and that those that do so do not display absolute universals either. Klein's (2008: 3) position is that if a criterion is used where an adequate description of a language entails at least three grammars and three dictionaries, then at most only 3% of languages in the world contain adequate descriptions of their grammars. Everett (2005), for example, discusses the Piraha language, which he believes lacks number and colour terms, has a simple pronoun structure and has no embedded clauses. He posits that this language, as an example, questions the universality of Hockett's design features.<sup>6</sup> The Piraha language also brings to the fore the differences between languages as just as important as the universals (Everett 2005: 633). Although Everett (2005) is criticised for methodological shortcomings, misinterpretations and inadequate discussion of the pertinent issues, he is part of a growing number of scholars who question language

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<sup>6</sup> Hockett (1960) proposed that there are certain features (e.g. duality of patterning, open-endedness, displacement etc.) that make language a unique communication system. He originally proposed 13 design features, some of which were shared by other communication systems. He argued however, that language was the only communication system that possessed all 13 features. He later added 3 more design features (Hockett & Altmann 1968).

universals. Levinson (2003: 41), for example, argues that languages vary in their semantics as well as in their form, that semantic differences also give rise to cognitive differences, and that this correlation between cognitive and semantic differences can be found in many empirical investigations. Based on this, he believes that the semantic version of the view of Simple Nativism should not hold true. Levinson argues that words are not simply mapped onto pre-existing concepts, but that these concepts are built according to the way it is needed.

Tomasello (1995: 134), in his review of Pinker's *The Language Instinct*, argues that when generative grammar<sup>7</sup> was first applied to language, it was applied to English. This, he believes, has led to a focus on ordering of constituent parts and transformation rules that are not exhibited in many of the world's languages. Subsequently, variation in other languages was described in terms of constraining principles and parameters (Tomasello 1995: 135). Tomassello (1995: 144) also argues against the modularity claim by saying, "modularity is very often the result of developmental processes, not their cause." Increasingly, the focus in linguistic study is moving away from universals to the investigation into diversity; this renewed interest in diversity has been influential in the return of the investigation of linguistic relativity to mainstream linguistics.

### **Cognitive linguistics**

Another development in linguistic and cognitive science which has turned the attention back to the Whorfian hypothesis is the development of the field of cognitive linguistics. According to Evans (2011: 69), cognitive linguistics was developed in the 1970s and grew out of dissatisfaction with formal linguistics. Evans (2011: 71) furthermore proposes that the enterprise of cognitive linguistics rests on two core tenets, which are (1) the so-called "cognitive commitment", an attempt to model language in light of research from cognitive and brain sciences, and (2) a rejection of a modular conception of language, but rather viewing language as "an outcome of general cognitive abilities."

Of particular importance in this field is Lakoff and Johnson's (1980, 1987, 1992) work on conceptual metaphor. Lakoff (1992) finds that metaphors are not an extraordinary or poetic form of language use, but are commonly used to convey meaning in everyday

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<sup>7</sup> According to Carnie (2006), the main tenet of generative grammar is a proposal that sentences are generated by an underlying set of abstract, mental procedures. These abstract mental procedures which make the generation of sentences possible are usually referred to collectively as Universal Grammar (UG).

conversations. According to Lakoff and Johnson (1980: 3), our conceptual systems are metaphorical in nature. In order to find evidence of how our conceptual systems work, they turn to language, because "language is an important source of evidence for what that system is like" (1980: 3). Lakoff (1992) finds that metaphor is primarily the locus of thought, not language, and that metaphor is the main way in which abstract concepts are understood. He argues that metaphor is grounded in the body, and in everyday experience and knowledge. Lakoff and Johnson (1980: 22) also point to a link between metaphor and culture, and claim that "the most fundamental values in a culture will be coherent with the metaphorical structure of the most fundamental concepts in the culture." Furthermore, they propose that our conceptual system structures our experiences of the world, and with other people. They draw on an extensive number of English examples to illustrate how ordinary language is used to build up conceptual systems, for example, the now classic and often-quoted example of the metaphor "Argument is war" (Lakoff & Johnson 1980: 4). They show how arguments are verbally constructed as an act of war, evident in formulations like, "He attacked every weak point in my argument" and "I demolished his argument." etc., They also show that this metaphor influences how speakers of English, belonging to this specific (Western) culture, perform arguments. Lakoff and Johnson (1980: 5) explain this metaphoric construction in the following way:

Arguments and wars are different kinds of things – verbal discourse and armed conflict – and the actions performed are different kinds of actions. But ARGUMENT is partially structured, understood, performed, and talked about in terms of WAR. The concept is metaphorically structured, the activity is metaphorically structured, and, consequently the language is metaphorically structured.

Their concept of 'metaphor' has pointed to a connection between language and conceptualisation. This theoretical view of metaphor contributed to renewed interest in the Whorfian hypothesis.

### **Eastern European studies in language and cognition**

The discovery of the work of scholars from the Eastern European tradition, in particular Vygotsky (1978) and Bakhtin (1981), by Western scholars also contributed to the reformulation of the linguistic relativity theory. The foregrounding of sociocultural theory in studies of language acquisition and cognitive development, the integration of Bakhtin's work on the dialogic qualities of texts and the view of conceptual metaphor as primarily

conceptual and not linguistic in nature have led to the reinterpretation of linguistic relativity (Kramsch 2004: 240). According to Lantolf (2000: 1), the most important concept of sociocultural theory is the mediated nature of the human mind. In the classic Vygotskian notion of the mediated mind, humans use tools, including symbolic tools or signs, to mediate and change relationships with others, with the world and with themselves. These tools can be passed on to a following generation, who can reshape, alter or modify them before passing them on to the next generation. These symbolic tools include "numbers and arithmetic systems, music, art, and above all language" (Lantolf 2000: 1). In the language and cognition debate, sociocultural theory rejects both simple nativism and linguistic determinism, and is closer to the 'thinking for speaking' formulation of linguistic relativity. Although it rejects the communicative view of language, it also does not consider thinking and speaking to be the same thing. Instead, Lantolf (2000: 7) explains,

Sociocultural theory argues that while separate, thinking and speaking are tightly interrelated in a dialectic unity in which publicly derived speech completes privately initiated thought. Thus, thought cannot be explained without taking account of how it is made manifest through linguistic means, and linguistic activities, in turn, cannot be understood fully without 'seeing them as manifestations of thought' (Barkhurst 1991: 60). To break the dialectic unity between speech and thought is to forego any possibility of understanding human mental capacities ....

Bakhtin also theorised the relation between language and the conceptual system. His work, which was originally interested in the dialogic qualities of the novel, has been reinterpreted for different sub-fields in linguistics and literary theory. Bakhtin (1981: 282) claims that,

In the actual life of speech, every concrete act of understanding is active: it assimilates the word to be understood into its own conceptual system filled with specific objects and emotional expressions, and is indissolubly merged with the response, with a motivated agreement or disagreement.

Dufva (2004: 140–141) emphasises that Bakhtin's work is not identical to Whorf's, but that there are many commonalities. Bakhtin, like Whorf, stresses the importance of variation, but does not deny the similarities and continuity in language and cognition. He sees cognitive universals not necessarily as innate mental structures, but believes that repeatability or regeneration which occurs in everyday experiences gives rise to universal

processes as well as to changes (Dufva 2004: 140). Bakhtin's (1981: 411) emphasis on the diversity of language and concepts is illustrated in the following quotation:

A language is revealed in all its distinctiveness only when it is brought into relationship with other languages, entering with them into one single heteroglot unity of societal becoming. Every language in the novel is a point of view, a socio-ideological conceptual system of real social groups in their embodied representatives.

For Bakhtin, then, language is not simply an abstract system, but an embodied experience which influences conceptual systems.

The different traditions and influences discussed above have all contributed to the return of the Whorfian hypothesis in linguistic consciousness, leading to more empirical studies on many facets of the linguistic relativity theory, thus ending an era of scholarly neglect of this area.

### **2.2.3.2 *Recent empirical Whorfian studies***

In recent years, empirical studies on the Whorfian hypothesis have led to findings that provide support for the hypothesis, as well as findings that refute it. In reviewing empirical evidence, Bloom and Keil (2001) conclude that language does not have a profound influence on thought. They further propose that experiments and research on domains such as colour terminology and spatial representation, for example, show that language is a lot like vision: it is a tool for the expression and storage of ideas, but it does not give rise to the capacity to generate and appreciate these ideas in the first place. Bloom and Keil (2001: 365) argue "that this impression [that language influences thought] is more seductive than it is instructive." However, other empirical work has pointed to the influence of language on aspects of thought, and certain conceptual domains have been extensively investigated. Jarvis and Pavlenko (2008: 122), for example, identify eight conceptual domains "shown to lead to systematic differences in the verbal and nonverbal behaviours of members of different speech communities." These include objects, emotions, personhood, gender, number, time, space and motion. Extensive research on the domain of colour has also been done (Jameson & Hurvich 1978; Davidoff, Davies & Robertson 1999; Athanasopoulos 2009).

A particularly rich research field in neo-Whorfian investigation is the study of space. Levinson and associates (2002, 2004) have argued that they find evidence of the influence of language on the conceptual domain of space. Levinson, Kita, Haun and Rasch (2002: 157) argue that "there is a demonstrable correlation between the frames of reference used in language and those used in non-linguistic conceptual coding, and the most plausible interpretation is that speaking a specific language can induce specific patterns of non-linguistic conceptualization." In other words, the non-verbal conceptualisation of space seems to be related to the linguistic conceptualisation of space. Levinson et al. (2002) base their arguments on a number of empirical studies which investigated cross-linguistic differences in terms of frames of reference and correlate these differences to non-linguistic coding.

Other studies conducted on the relationship between language and the conceptualisation of space have, however, not yielded such conclusive results in favour of the Whorfian hypothesis. Munnich, Landua and Doshier (2001:176) explore the possibility that spatial language shapes non-linguistic spatial representations. Munnich et al. (2001:176) propose that, if this possibility holds true, "cross-linguistic differences in the spatial lexicon should lead to corresponding differences in memory for location." They argue that, if this hypothesis were confirmed, it would be evidence for the profound effect of language on non-linguistic cognition, and thus evidence supporting the linguistic relativity theory, not only in the 'thinking for speaking' paradigm, but in showing that language restructures cognition.

In their experiments, Munnich et al. (2001:178) focussed on two aspects of spatial organisation: axial structure and the role of contact and support provided by the reference object for figures adjacent to it. The experiment looked at cross-linguistic comparisons between adult native speakers of English and of Japanese or Korean. These languages are similar in encoding some spatial properties such as *below*, *left*, *right* and *above*. However, they are also quite different in other respects, such as the spatial property of contact with the reference object. English, for example, differs from the other two languages in the experiment because, in English, support in all cases can be expressed by the preposition *on*, but as soon as the contact object moves slightly upward or to the left or right, in other words losing contact, the words *above*, *left* and *right* or *below* are used instead of *on*. In Japanese or Korean, on the other hand, the distinction between immediate support and

non-support is not necessarily linguistically encoded; the same term can be used for locations that are in direct or loose contact relationships. Terms do however exist to describe this distinction; in fact, a number of verbs exist which can express different kinds of support, but these are used only where the context specifically demands it.

The participants were asked to perform a naming task (naming spatial location, for example, stating whether an object was below or on a reference object) and a memory task (for the same locations as in the naming task). The memory task involved participants watching two scenes and judging how similar or different the two scenes were in terms of spatial location. The results from the experiments show that although similarities and differences exist in spatial language, they seem not to affect spatial memory, which appear to indicate that spatial memory and language draw on the same kinds of spatial properties. However, the same kind of spatial properties are not invoked in mandatory fashion by all languages in all memory tasks, which also seems to suggest that the relationship between spatial language and spatial memory is not a simple one (Munnich et al. 2001:198). Spatial language does not appear to affect spatial memory, which, according to Munnich et al. (2001:201), suggests that "memory, as measured in [their] task, is not susceptible to long term exposure to a particular spatial lexicon." Munnich et al. (2001:202), in discussing apparently contradictory findings in similar types of experiments, argue that one of the reasons for contradictory findings is the different types of tasks used, and they point out that the task types in their specific experiments were basic enough to resist the effects of language variation.

Another domain which is increasingly investigated from a Whorfian perspective is the domain of time. According to Klein (2008: 8), "[t]ime is a fundamental concept of human cognition and action" and all known languages have developed rich means to express it. He (2008: 9) identifies six devices that encode time in natural language, which include tense, grammatical aspect, event types/lexical aspect, temporal adverbials, temporal particles and discourse principles. In Casasanto's (2008: 69) view, people across languages use spatial metaphors to talk about time, and Lakoff (1992), for example discusses how time in English is conceptualised in terms of space. Time is conceptualised as motion, with events that occur in future conceptualised as in front of the observer and past times as behind the observer. The specific conceptualisation of time as motion

differs from language to language; future can thus also be described as below us, as is the case in Mandarin Chinese (Casasanto 2008: 69).

Casasanto (2008: 70) was specifically interested in investigating whether speakers of different languages that use different spatial metaphors also think about time differently when they are not using language. His study was an attempt to investigate the influence of language differences on non-verbal thought, and he first identified a specific difference in spatial metaphor used for time in English and Greek. By means of using multilingual text corpora, it was established that English speakers preferred the 'time as distance' (long time) metaphor, while Greek speakers preferred the 'time as amount' (much time) metaphor. The question posed was whether speakers of Greek and English think differently in terms of distance and amount metaphors, even in non-linguistic tasks. Greek and English speakers were asked to estimate the duration of an event. These events were either represented as lines growing across a computer screen or as a container filling up. The length of the lines and the amount of filling in the container was not related to the time of the event. The hypothesis was that English speakers would be influenced by the lines growing across a screen, and would judge that longer lines took more time to grow (distance distractor), while Greek speakers would be more influenced by the container filling up (amount distractor) and would judge containers with more filling as an event that took longer to complete.

The hypothesis was confirmed in that English speakers were more distracted by 'distance' distractors, while Greek speakers were distracted by the 'amount' distractors. According to Casasanto (2008: 72), this shows that "at a basic level, the way we mentally represent time co-varies with the way we talk about it in our native languages." The next step was to investigate whether by using these different metaphors speakers also thought differently about time. English speakers were thus 'trained' by a fill-in-the-blank task to make use of 'amount' metaphors. After a 30-minute training session, English speakers redid the 'amount' distracter task and their performance was indistinguishable from that of the Greek speakers. Casasanto (2008: 75) describes the significance of this result in the following way:

In summary, people who talk differently about time also think about it differently, in ways that correspond to the preferred metaphors in their native languages. Language not only reflects the structure of our temporal representation, but it can also shape those representations. Beyond

influencing how people think when they are required to speak or understand language, language can also shape our basic, non-linguistic perceptuomotor representations of time. It may be universal that people conceptualize time according to spatial metaphors, but because these metaphors vary across languages, members of different language communities develop distinctive conceptual repertoires.

For Casasanto (2008: 75), this does not prove that language and thought is the same thing, but that conceptual mappings from space to time may be given in a form that is essentially the same and that it is also conditioned by the languages we speak. Boroditsky's (2001) research into time conceptualisation yielded results similar to those of Casasanto (2008). Boroditsky's study (2001) used the implicit measure of reaction time to check the effect of L1 thinking on L2 understanding. It investigated whether speakers of English and Mandarin Chinese think differently about the domain of time even when both groups are 'thinking for English'. The study was conducted to investigate how spatial metaphors are used to talk about time, and differences were identified between English and Mandarin Chinese. In English, time is typically referred to in terms of asymmetric horizontal spatial relations, such as *ahead* or *behind* schedule. In Mandarin Chinese, front back spatial metaphors are also common, but users also use vertical spatial relations more commonly and systematically than in English. Boroditsky (2001: 6) used this difference to explore the questions of how the differences between the English and Mandarin way of talking about time lead to differences in how their speakers think about time. She was also interested in whether these have short-term or long-term implications. The results of the experiment showed that English and Mandarin speakers were affected differently by the spatial primes. Both English and Mandarin speakers answered spatiotemporal questions faster after horizontal primes than after vertical primes. English speakers answered purely temporal questions faster after horizontal primes than after vertical primes, while Mandarin speakers were faster after vertical primes than after horizontal primes.

When extending the experiment to bilinguals, the results showed that the bias to think about time vertically was greater for Mandarin speakers who started learning English later in life, compared to Mandarin speakers who learned English earlier. Boroditsky (2001: 14) however thought that other factors may have influenced the results and she therefore designed another experiment to minimize difference in non-linguistic cultural factors, while preserving the interesting difference in language. Native English speakers

learned to use vertical spatial terms to talk about time, and their results looked more like those of Mandarin speakers than those of untrained English speakers. While this result, like Casasanto's (2008), also falsifies linguistic determinism, it does show that 'training' in a specific language does change the way that people think about time metaphors.

The role of language in the conceptualization of domains other than space and time, such as motion, objects and substances, colour and emotions, is currently being explored under the premise of linguistic relativity (Davidoff, Davies & Robertson 1999; Besmeres 2004; Cardini 2010). An exhaustive account of these studies can however not be given here (see Cook & Bassetti 2011 for a good overview). In brief, these studies indicate that the principle of linguistic relativity is tied up with various other factors such as levels of proficiency in language(s) known, the types of exposure to a language and the types of tasks participants are asked to perform. The neo-Whorfian studies have increasingly pointed to the fact that the Whorfian hypothesis raises many interesting questions on the language and cognition debate, specifically if one moves beyond the linguistic determinism dichotomy. As the Boroditsky (2001) study shows, these questions have various implications for bilingual contexts and bilingual individuals.

#### **2.2.4 Implications of neo-Whorfian studies for bilingualism**

Pavlenko (2005b: 433) argues that "an in-depth understanding of the relationship between language and thought is impossible without close attention to ways in which multiple languages and forms of thought interact in the minds of bi- and multilingual individuals." However, she finds that psycholinguistic knowledge of bilingualism rarely entered into debates about language and thought (Pavlenko 2005b: 436). Pavlenko (2005b) also finds that Whorf's work was misinterpreted as being primarily an argument for linguistic determinism, while he in fact put more emphasis on the benefits of multilingualism.

Bilingualism and translation were also used to refute linguistic relativity (see House 2011 for an argument on how translation and linguistic relativity can be reconciled). Macnamara cited in Pavlenko (2005b: 436) argues that if the conservative construction of the Whorfian hypothesis were valid, bilinguals would be doomed to one of the following three patterns: they would (1) think in Language A when speaking either A or B, using the semantic framework appropriate to Language A; (2) think in a hybrid manner appropriate to neither language; or (3) have two semantic systems, one for each of the

two languages. Those who disagree with Macnamara argue that all three possible assumptions about bilinguals could hold, depending on various contexts: (1), L1 transfer to the L2 is possible, (2), bilinguals can communicate in a hybrid manner as they might exhibit new linguistic repertoires, and, (3), bilinguals do adjust their linguistic and conceptual repertoires depending on the interlocutor. According to Pavlenko (2005: 437), it is quite possible that bilinguals are the only ones to experience directly the effects of linguistic relativity. However, many researchers see bilinguals as a challenge for the Whorfian hypothesis, because they are considered undesirable and 'messy' subjects. Pavlenko (2005: 438) suggests that bilinguals should be seen as a test case rather than as an argument against the Whorfian hypothesis, and she offers the following seven possible relationships between language and thought in individual bi- and multilinguals:

1. Coexistence of L1 and L2 conceptual domains. This relationship entails that bicultural bilinguals who are using different languages may draw on distinct conceptual representations and index distinct discursive identities.
2. L1 based conceptual transfer. In this relationship between language and thought the L1 based conceptual system is guiding L2 language learning and use at least in the beginning and intermediate stages of L2 acquisition.
3. Internalization of new concepts. Here immigrant bilinguals and learners in language contact situations adopt L2 words and L2 concepts into the L1. This happens specifically when L2 users refer to objects, distinctions between concepts and notions which are not present in the L1, but exists in the L2.
4. Shift from L1 to L2 conceptual domain. In this relationship, a shift of category prototypes or boundaries in the process of L2 socialization takes place.
5. Convergence of L1 and L2 conceptual domains. This entails the creation of a unitary concept domain or system distinct from both the L1 and L2 based which may occur in simultaneous bilingualism or arise as a result of language contact.
6. Restructuring of a conceptual domain. This may occur when certain elements are deleted from or incorporated in a concept or a conceptual domain.

7. Attrition of previously learned concepts. This may occur when there is a loss of previously learned concepts, classification schemas, categorical distinctions or narrative conventions which were present in the L1.

The number of studies which interpret and investigate the Whorfian hypothesis from a bilingual perspective has been increasing rapidly. These include, amongst others, Boroditsky (2001, discussed earlier), Athanasopoulos (2006, 2007, 2008, 2009), Ameel, Malt, Storms and Van Assche (2009), Pavlenko (2006), Bylund (2009) as well as recent edited volumes by Cook and Bassetti (2011), Pavlenko (2011) and Han and Cadierno (2010). These studies include an array of languages, such as Russian, Greek, Mandarin Chinese, Spanish and Swedish, as well as an array of conceptual domains, including space and motion events, objects and substances, colour and emotions. More details on some of these studies are provided in Chapter 4 in an effort to explore how studies on the effects of one language on another in different conceptual domains can contribute toward the understanding of language and cognition in bilinguals.

### **2.3 A LINGUISTIC PERSPECTIVE ON LANGUAGE, LEARNING AND COGNITION**

This dissertation specifically investigates the effect that the L2 has on the L1 in a teaching and learning context, and on the type of conceptual fluency required in a higher-education context. An exploration of the relation between language and the specific cognitive function of learning is crucial. Cognitive functions are usually divided into higher and lower functions (Frith & Dolan 1998). According to Frith and Dolan (1998: 175), higher functions require "thinking about what we are doing." The type of learning focussed on in this study – academic learning – is thus classified as a higher cognitive function. I firstly discuss learning in general terms, with an emphasis on theories that propose a relation between language and learning, after which I explore the relation between language and academic learning specifically. I address aspects of this discussion more comprehensively in Chapters 3 and 4, namely, the use of more than one language in teaching and learning and the effect it might have on (1) academic learning, (2) various aspects of cognition and (3) conceptual fluency. The discussion in the current section precedes the more specific theoretical framework and gives an overview of the different approaches in the study of the relation between language and learning.

Some researchers argue that there are areas of separation and of connection between language and cognition, while others argue that language plays a central role in the conceptual and cognitive development of humans and in all learning (Carruthers 2002). Saffran, Pollak and Seibel (2006) indicate, for example, that infants can generalize the same type of patterning rules they use in language when elements consist of pictures, an indication that various types of learning might be interconnected. Vygotsky (1978: 29) discusses three major theoretical positions on the relationship between language and cognitive development<sup>8</sup> in children. The first position is that child development occurs independently of language, a position that is associated with Piaget. This theoretical position views development as occurring before learning. The second position is that learning equals development, thus learning and development occur at the same time and at the same rate, and coincides at the same points. The third position combines positions one and two, accepting that learning and development are different but related, even if not in a direct one-to-one relationship (Vygotsky 1978: 29–32). Carruthers (2002: 660) identifies two weaker claims about the relation between language and other cognitive functions, which are (1) that language is a necessary condition for certain kinds of cognitive processes and thought in children, and (2) that language sculpts cognition.

These different positions also determine the way that learning is defined. According to Shuell (1986: 412), learning refers to "the way in which people acquire new knowledge and skills and the way in which existing knowledge and skills are modified." Furthermore, he identifies the following three criteria which are essential in defining learning: (1) a change in behaviour or ability to do something in the individual; (2) the change results from practice or experience; and (3) the change is a lasting one. His view of learning is one that is informed by cognitive psychology, and distinctly breaks away from behaviourist accounts of learning. Shuell (1986: 415) believes that cognitive psychology contributed to learning theory and research by viewing learning as "active, constructive and goal oriented."

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<sup>8</sup> Cognitive development of children is believed to be grounded in cognitive processes such as perceiving and remembering. In fact, Samuelson and Smith (2000: 105) argue that cognitive development "may not exist separately from these processes, but proceed only through them." It is thus relevant to discuss cognitive development in relation to cognitive processes (such as remembering) which make learning possible.

Lave (1991: 64), who works in situated activities theory,<sup>9</sup> defines learning as

a social phenomenon constituted in the experienced, lived-in world, through legitimate peripheral participation in on-going social practice, the process of changing knowledgeable skill is subsumed in processes of changing identity in and through membership in a community of practitioners; and mastery is an organizational, relational characteristic of communities of practice.

He identifies three broad forms of situated activity theory (1991: 66), namely, the cognition plus view, the interpretive view and the situated social practice view. According to the cognition plus view, studies of cognition should be extended beyond the individual to include social interaction and everyday activity. The interpretive view locates situatedness in the use of language and social activity, "meanings are situated in interested, intersubjectively negotiated social interaction." The third view shares commonalities with the second one, but claims that "learning, thinking and knowing are relations among people engaged in activity, and arising from the socially and culturally structured world."

Vygotskian (1978) sociocultural theory also foregrounds social activity and the mediating role of language in learning. Vygotsky (1978: 29) calls the relationship between language and learning, a "fundamental relationship." According to Lantolf (2000: 2), Vygotsky saw cultural artefacts such as language as central to higher cognitive functions. These higher cognitive functions include "voluntary attention, intentional memory, planning, logical thought and problem solving, learning and evaluation of the effectiveness of these processes." Vygotsky proposed four genetic domains to study higher mental functions properly (Lantolf 2000: 3). These are the phylogenetic domain, sociocultural domain, ontogenetic domain and microgenetic domain. The phylogenetic domain investigates how human mental processes came to be distinguished from non-human life forms through the integration of different mediational means during the course of evolution. The sociocultural domain investigates how different symbolic tools influenced human thinking and gave prominence to certain kinds of thinking, while the ontogenetic domain investigates how children integrate mediational means as part of their thinking in their development. The microgenetic domain refers to an investigation into the reorganization

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<sup>9</sup> According to Lave (1991: 66), situated activity theory is a "general theoretical perspective that generates interconnected theories of perception, cognition, language, learning, agency, the social world, and their interrelations."

and development of mediation over a relatively short span of time, such as learning a word or grammatical feature of a language (Lantolf 2000: 3).

Vygotsky (1978: 33) also developed the theory of the zone of proximal development. He defined it as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers." He thus emphasized the collaborative nature of learning and development. A task that can be performed independently is evidence of the end product of a particular aspect that was developed or learned. The zone of proximal development is the learning potential of the cognitive development that can prospectively take place. Vygotsky (1978: 34) argued that this allows learning to be viewed as social, because "human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them."

Halliday (1993: 93) has argued that language should be considered central in learning, because "all human learning is semiotic in nature." Drawing from studies on child language development, he argues that when children learn languages they are not simply engaging in one kind of learning (that of learning language), but that they learn the foundations of learning itself. According to Halliday (1993: 94), "language is not a domain of human knowledge"; it "is the essential condition of knowing, the process by which experience becomes knowledge."

Although social activity theory and theories emphasizing the semiotic nature of learning agree on the connection between language and learning, these accounts differ on the position that they give to the importance of language. This dissertation's investigation of academic learning is informed by theories on general learning and development, and it explores the relation between language and academic learning.

### **2.3.1 Literacy in learning**

In academic learning, language, and in particular written language, plays an important role. A large part of schooling involves becoming literate and using literacy to understand and interpret knowledge (Bialystok 2007b: 393). According to Biber (1986: 384), written language is often characterised as more complex, explicit, elaborate, more decontextualized and less personally involved than spoken language. Written language is

also believed to have a higher concentration of new information and to be more highly organised than spoken language. Based on a body of research on speech and writing, Biber (1986: 384) noted that hardly any absolute differences exist between written and spoken language. He (1986: 386) explained the contradictory findings by pointing out the restrictions of studies investigating written language. Some of the restrictions include assigning undue weight to just a few particular linguistic features and individual texts, as well as not controlling for different communicative purposes of texts (for example, academic texts were compared to conversations). Biber's (1986: 387) corpus study uses multivariate statistical methods of analysis and includes a number of different text types. He analyses both syntactic and lexical features, and he concludes that it is not that easy to distinguish between writing and speech. He identifies the following three textual dimensions underlying variation in written and spoken texts in English: "interactive vs. edited text; abstract vs. situated content and reported vs. immediate style."

The differences between written and spoken language are believed to hold important consequences for academic learning. According to Halliday (1993: 109), an essential condition in becoming literate is for children to recognise the abstract quality of language. He argues that until children learn to exchange abstract meanings they cannot become literate and cannot gain entry into education. Halliday (1993: 109) explains that in order to become literate a move from spoken language to written language involves a "reconstituting" of language and thus a "reconstitution of reality." This reconstitution is not only getting to grips with a new medium, but also the mastering of a new form of knowledge, and moving to a "grammatical metaphor" which is more abstract. This reconstitution of reality involves children interpreting their reality and experiences in written mode. In addition, the new "grammatical metaphor" that Halliday (1993: 111) refers to involves children getting used to experiences being nominalized and seen as "things" rather than actions or experiences. This grammatical metaphor is especially important as it is seen as the "key for entering into the next level, that of secondary education, and of knowledge that is discipline-based and technical" (Halliday 1993: 111).

Most of the published research on literacy and academic learning has been conducted on English. Kramsch (2004: 253) points out that linguistic relativity should be investigated in the context of education because the English language may encourage its speakers to attend to the world in a specific way. This is particularly interesting in cases where

learners have an L1 other than English, but are educated in English. A linguistic relativity approach, however, can also lead to stereotyping when differences in perception and cognition are ascribed to linguistic or culture differences between the home language and language of schooling. Kramsch (2004: 254) also points out that a mismatch between the language of schooling and that of home is not only because a different language is spoken, but because the language of schooling constitutes a particular culture in itself, even when the learner's home language is the LoTL (see Halliday's argument in the paragraph above). For Kramsch (2004: 255), the acquisition of language entails "the situated, spatially and temporally anchored, co-construction of meaning between teachers and learners who each carry with them their own history of experience with language and communication."

According to Morgan (2006: 219), "the turn to language" is evident in educational research and it has given rise to theories that use Halliday's notion of systemic functional linguistics (SFL) as a central premise in theories about learning (Martin 2009), and in theories on the use of language in the exercise of power in teaching and learning institutions (Fairclough 2004). In Halliday's framework, the context of culture, which includes broader goals, values, history and organising concepts, is important. This notion of a context of culture emphasizes that "the thinking and meaning-making of individuals is not simply set within a social context but actually arises through social involvement in exchanging meaning" (Morgan 2006: 221). Thus, Halliday's work in sociocultural theories and linguistic relativity has not only foregrounded the semiotic nature of learning, but also the impact of context and culture.

### **2.3.2 Context in learning**

According to Bereiter (1990: 603), educational science has evolved to such an extent that theories of learning developed in cognitive science need not be applied and adjusted to educational learning; instead, it is possible to create learning theories specifically for education. Various arguments are put forward about either including or excluding the outer world from cognitive theories of educational learning. Piaget (1980), cited by Bereiter (1990: 605), argues that it would be naïve not to consider the role of culture. However, it is not enough simply to consider culture; theories that incorporate culture must explain how cultural influences came to be represented in the mind of the individual.

Context and its role in understanding language and aspects of learning have been defined in various ways. Sperber and Wilson (1986:15) define context from a cognitive perspective as "the set premises used in interpreting an utterance." They further add that this cognitive construct is a "subset of the hearer's assumptions about the world." In other traditions, context has been described not as a set of assumptions that pre-exist, but rather as something that is produced in interaction (Gutierrez 1994: 346). According to Gutierrez (1994: 346), context shapes "the nature of literacy opportunities and practices." House (2006: 342) describes context as a construct defined differently in different traditions. In approaches where context is seen as dynamic and not static, "context is taken to be more than a set of pre-fixed discrete variables that impact on language, and context and language are considered to be in a mutually reflexive relationship, such that language shapes context as much as context shapes language" (House 2006: 342).

Theories developed in academic literacy are struggling with the same type of concerns as theories around academic learning. Issues such as the role that language plays in academic literacy and how language, context and cognition interact are central concerns.

### **2.3.3 Academic literacy**

Cummins (1979), working from the perspective of bilingual education, specifically involving minority children, distinguishes between the kinds of language needed for everyday conversations and the language needed for an academic environment. He termed language needed in an academic environment Cognitive Academic Language Proficiency (CALP) while he referred to language used in everyday interactions as Basic Interpersonal Communication Skills (BICS), and uses as support for his position research done in the area of corpus linguistics, which indicates that CALP is distinct from BICS (Cummins 2000).

For the purposes of this dissertation, a discussion on academic literacy in higher education is particularly important. It is increasingly argued that students at tertiary institutions require academic literacy in order to cope with the cognitive demands of higher education (Leibowitz 2005). Leibowitz (2005: 662), for example, points out that "acquisition of the conventions associated with academic discourse is crucial for academic success." Many researchers have adopted Cummins's model and adapted it to higher education (Coetzee-Van Rooy 2010). However, this model is under contention,

and problematized because of the different definitions of academic literacy skills. Lillis and Scott (2008: 6–7) state that the term 'academic literacy' is specifically used in applied settings to refer to courses that assist students to meet the writing demands at university. However, the term is broadly used to refer to a plethora of focus points, some of the key ones being "a broad descriptor of the writing activities, or textual conventions, associated with academic study", "a descriptor of the range of the rhetorical practices, discourse and genres in academia bound up with specific disciplines" and "as qualified in some way". According to Lillis and Scott (2008: 9), academic literacy has been geared mostly toward improving student writing. Written texts produced by students still constitute the dominant assessment method; if students have problems with writing or fail to adhere to academic conventions in writing, they are more likely to fail. It is exactly this notion of academic writing that is deemed problematic. Questions remain regarding what the nature of academic literacy is in different contexts and sites, and to what extent existing practices constrain or enable meaning.

Horarik, Devereux, Trimmingham-Jack and Wilson (2006: 243) argue that it is essential to move the research on academic literacy away from student writing deficiencies, and to see it as the relationship between writing and access to academic discourse, a view that they share with Halliday (1993). Horarik et al. (2006: 244) draw the distinction between everyday discourse, workplace discourse and academic discourse, and views academic discourse as different from both everyday and workplace discourse. According to Horarik et al. (2006: 244), the knowledge required for academic discourse is "specialized, related to research and accessed primarily through written texts based on theoretical argument." They argue that new meaning is created at the intersection of competing discourses and associated ways of knowing (2006: 255). In addition, a more explicit focus on generic conventions in academic discourse will benefit students. In their work they seem to reiterate Vygotskian notions of the mediated mind. Academic literacy in higher education constitutes a different symbolic tool from everyday language and thus scaffolds the human mind differently; meaning gained at a specific point is just the beginning, and meaning is created in the "zone of proximal development." In Halliday's (1993: 109) terminology, a "reconstituting" of language and thus a "reconstitution of reality" takes place.

Academic literacy theories that view literacy as a social practice have also developed. Following the New London Group's (1996) research on new literacies and Street's (1995) work on literacy as social practice, Lea and Street (2006) like Horarik et al. (2006) argue that theories should move away from the deficit view of academic literacy. Lea and Street (2006) identify the following three models of academic literacy: (1) a study skills model, which views academic literacy as an individual and cognitive skill; (2) a model that views academic literacy as a process of socialization and acculturation; and (3) the academic literacies model, which emphasizes meaning making, identity, power and authority. This last view sees academic literacy as "complex, dynamic, situated and involving both epistemological issues and social processes, including power relations among people, institutions and social identities" (Lea & Street 2006: 369). The academic literacies model foregrounds "power, identity and agency in the role of language in the learning process" (Lea & Street 2006: 370).

A theory that places language in a central position in learning raises particular questions for bilinguals and for students learning through an L2. Much of the research on the relationship between language and academic learning has focussed on evaluating different models of bilingual education, and focus specifically on the challenges, problems, possible benefits and effects of being educated partially or completely in an L2. However, not much work has been done on bilingual education or education through the L2 in a higher-education environment. One exception is Canagarajah's (2002, 2006a, 2006b) studies, which have not been conducted from a cognitive or psycholinguistic perspective, but offer accounts of how multilingual writers and students use the resources of their different languages to engage with academic discourse. From an African perspective, Banda (2007) has done work on the use of study groups and the fact that all the languages that students know play a role in facilitating understanding. Coetzee-Van Rooy (2010) and Leibowitz (2005) have an interest in the development of academic literacy in multilinguals in multilingual universities. However, few studies in the South African context however have attempted to investigate the cognitive effects of learning through an L2.

## **2.4 SUMMARY**

Theories that investigate the relation between language and cognition have implications for theories of learning, in particular for educational learning. Language is seen as an

important tool in the cognitive processes used in academic learning. For the current study, this relation between language and learning is contextualised in bilingual higher education. The effect that bilingualism has on the function of academic learning in education, particularly in higher education, will be discussed in more detail in Chapters 3 and 4, which serve as the main theoretical framework of the study. The history and the development of the field of language and cognition raise questions about the interplay between languages in the bilingual mind, and the effects it might have on cognition in general. The discussion on the relation between language and learning also provides valuable background information to understand the theoretical notions and assumptions that underlie the theories used to discuss and describe the effects of cross-linguistic influence and bilingualism on conceptual fluency, learning and academic achievement. It also provides broad theoretical notions of the complex interplay between the individual and the social worlds they inhabit, the activities they engage in, their agency and their abilities to transfer knowledge.

## **CHAPTER 3**

# **DEVELOPMENTS IN THE FIELD OF BILINGUALISM: THE BILINGUAL MIND**

### **3.1 INTRODUCTION**

In Chapter 2, I discussed language and cognition primarily from a monolingual perspective. The interest of the field of language and cognition has recently shifted to consider the implications of the various formulations of the language and thought debate for bilingualism (Cook & Bassetti 2011; Pavlenko 2011). The phenomenon of 'bilingualism' has been studied from various theoretical positions, for example language proficiency and the effects of bilingualism on the individual. There is, however, no unitary definition of bilingualism because there are various critical questions relating to it. This chapter presents some of the relevant views on bilingualism, and discusses theories developed in second language acquisition that have contributed to our understanding of bilingualism research.

One particular area of investigation in SLA, 'language transfer' (see a definition of language transfer in Chapter 1, section 1.9), was developed to account for a subset of errors by L2 learners and to develop L2 teaching methods that address such errors. Language transfer, and its relation to bilingualism, is an important theoretical consideration in this dissertation. All the participants in the present study were bilinguals who used their L2 in formal teaching and learning contexts. This chapter gives an exposition of research on the conceptualisation of 'bilingualism' and on the nature and effects of 'language transfer'. This gives important background to Chapter 4, which introduces work on the influence of bilingualism on conceptual development, cognition and the individuals' perception of self.

### **3.2 CONFOUNDING DEFINITIONS OF BILINGUALISM AND THE BILINGUAL SPEAKER**

Similar to language and cognition, as discussed in Chapter 2, bilingualism is an area of investigation that has sparked debate not only among linguists but also among educators, language practitioners and in popular discourses. Grosjean (1994) finds that the field of bilingualism is one of the most contested ones within linguistics. For example, he refers to the view that bilingualism is a rare phenomenon, and views that "bilinguals have equal speaking and writing fluency in their languages, have accentless speech and can interpret and translate without prior training" (Grosjean 1994: 1656). The reality, he finds, is quite different. It has been estimated that half the world's population is bilingual, and that they acquire their L2 at various stages of their lives, might not be equally proficient in all the language skills of each language they know, use their languages for different purposes and are not necessarily good translators or interpreters. Many disputes in bilingualism can be ascribed to conflicting definitions of what constitutes a bilingual person.

Bialystok (2001a: 4) cites a variety of authors who have defined bilingualism, ranging from Bloomfield's (1933:55–56) view that a bilingual person should have "native-like" control in both languages to the more pragmatic definition of Grosjean (1989) that a bilingual is someone who can function in each language according to given needs. Hoffman (1991: 21) refers to Bloomfield's definition as a maximalist view of bilingualism, or as "perfect" or "true" bilingualism, and the bilingual individuals defined as "ambilingual speakers". On the other end of the continuum are those definitions which can be termed minimalist, i.e. those that view the onset of bilingualism as the point where a person can barely produce more than a few meaningful utterances in the other language (Hoffman 1991: 22).

Grosjean (1982: 2) points out that there is no general definition of 'bilingualism' that is appropriate in all contexts. The term is often paired with modifiers such as "early, late, receptive and productive, fluent, non-fluent, balanced, functional" and so on. Hoffman (1991: 22) proposes an understanding of bilingualism as a continuum on which various levels of L1 and L2 proficiency are represented. A balanced bilingual for Hoffman (1991: 22) would be a person with roughly equal proficiency in two languages. This is not seen as the equivalent of two monolinguals. Hoffman (1991: 22) concedes that this notion is to

a certain extent idealistic, because most bilinguals are more proficient in one language than in the other, and use their two languages for different functions.

Bialystok (2001a: 4) argues that one of the main problems of defining bilingualism lies in determining proficiency. The difficulty arises not only in assessing what would count as enough knowledge to identify someone as bilingual, but also in judging where competence in one language ends and competence in another begins. Another problem associated with proficiency in definitions of bilingualism is the influence that a particular theoretical framework has on the conceptualisation of what it means to be bilingual. Each theoretical orientation emphasizes different aspects of importance in its definition. In their discussion of bilingualism, Hamers and Blanc (2000: 7) point out many of the same issues as Bialystok (2001a) and Grosjean (1994). These include the contested nature of notions such as "native-like competence" and the level of proficiency that would qualify a bilingual. Hamers and Blanc (2000: 7) have complained that bilingualism is largely defined from one single dimension, such as the level of proficiency in both languages. They distinguish between bilingualism and bilinguality, and articulate the distinction between the two in the following way: Bilingualism is defined as "the state of a linguistic community in which two languages are in contact with the result that two codes can be used in the same interaction and that a number of individuals are bilingual." Bilinguality, on the other hand, is defined as "the psychological state of an individual who has access to more than one linguistic code as a means of social communication" (Hamers & Blanc 2000: 6). The extent to which an individual has access to the different languages will be constrained by psychological, cognitive, social psychological, social, sociological, sociolinguistic, sociocultural and linguistic factors. They argue that multidimensional phenomena such as bilinguality should then be investigated in a multidimensional manner.

According to Hoffman (1991: 17), another problem in defining bilingualism is its interdisciplinary nature, and the fact that each discipline brings different methods and theoretical frameworks to the area. The discussion on bilingualism is further confounded by a number of factors, like age, context, competence, attitude, function and use, among others (Hoffman 1991: 18).

From the discussion above, it is clear that defining bilingualism is complex; in fact, Bassetti and Cook (2011: 145) state that it might be "impossible ever to provide a

satisfactory definition of bilingualism." The circumstances that prompt bilingualism are just as diverse. According to Grosjean (1982: 30), groups of people may become bilingual because of a range of factors, which might include the movement of the group for political, social or economic reasons, political federalism and nationalism, and cultural and educational factors. Educational factors in particular play an important role, as Grosjean (1982) points out; many students are educated in a language that is not their L1. This educational bilingualism is enhanced by the fact that books and written and audio-visual materials are produced in a limited number of world languages.

Recently, attempts have been made to move away from dichotomies that judge bilinguals against native speakers. Theories have been developed that try to capture the complex nature of bilingualism (Firth & Wagner 1997; Rampton 1997; Cook 1999).

### **3.3 PROBLEMATIZING NATIVENESS AS A CONCEPT IN BILINGUALISM**

Employing the 'native speaker' as the standard against which to measure bilinguals has proven problematic, because it is considered unfair and limiting, especially since little research has been conducted on how bilinguals actually use language in their daily lives (Grosjean 1989; Cook 1999).

#### **3.3.1 Reconceptualising the bilingual speaker**

Recent developments problematize the 'native speaker' as a norm for bilinguals who have acquired their L2 earlier in life and for L2 learners who acquire their L2 later through formal language instruction. Firth and Wagner (1997: 197) criticise SLA research in which L2 learners are constructed as deficient communicators. They complain that the terms native speaker (NS) and non-native speaker (NNS) assume that these groups are homogenous (p. 291).

Firth and Wagner (1997) form part of a more recent movement in bilingualism and SLA research, which questions traditional theoretical constructs of the bilingual, as well as research methods used to measure the proficiency of bilinguals. Grosjean (1989, 1998) and Cook (1999, 2003) illustrate the unfairness of judging L2 users against NS standards. Grosjean (1989: 4) calls this view the "monolingual view" of bilingualism. It holds that bilinguals have two language competencies which are separate and isolatable, and that the

two language competencies should be the same as that of corresponding monolinguals, which implies that the bilinguals should be "two monolinguals in one person" (p.4). Grosjean (1989: 4–6) lists the problematic consequences of such a view for the study of bilingualism. First, the only "true bilingual" is a balanced bilingual, which constructs the majority of people who are bilingual as "less bilingual." Second, bilingual language skills are assessed in terms of monolingual norms. Third, bilingualism research has given precedence to the effects of bilingualism on individual learning. Fourth, the contact between a bilingual's two languages is seen as accidental and simply as interference. Bilinguals have been investigated in terms of their individual languages and not on their combined language competencies. Grosjean (1989: 5) believes that speech therapists and neurolinguists often evaluate bilinguals by using tests devised for monolinguals, and that the reliance on a monolingual view of bilingualism has led to bilinguals perceiving their own language abilities as inadequate.

Cook (2003: 5) agrees with Grosjean's view that L2 users<sup>10</sup> are unique and not the same as monolinguals. He sets out certain characteristics of bilinguals using an L2, namely:

1. The L2 user has other uses for language than the monolingual.
2. The L2 user's knowledge of the second language is typically not identical to that of a native speaker.
3. The L2 user's knowledge of his or her first language is in some respects not the same as that of a monolingual.
4. L2 users have minds differently organised to those of monolinguals.

These characteristics are particularly interesting, as Cook (2003: 5) proposes that not only the L2 knowledge of the bilingual is different from that of a monolingual, but also that the L1 of a bilingual is different from that of a monolingual with the same L1.

In opposition to the monolingual view of bilingualism, Grosjean's (1989: 6) has introduced the "bilingual (or holistic) view of bilingualism." This particular view of bilingualism proposes that

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<sup>10</sup> Cook (2003) prefers to use the term L2 user instead of L2 learner.

The bilingual is an integrated whole which cannot easily be decomposed into two separate parts. The bilingual is NOT the sum of two complete or incomplete monolinguals; rather, he or she has a unique and specific linguistic configuration. The coexistence and constant interaction of the two languages in the bilingual has produced a different but complete linguistic entity.

Grosjean's (1989: 7) view of bilingualism has implications for many areas of study of bilingualism. He believes that a holistic view will lead to a number of advances in bilingualism studies, such as (1) a fairer and more accurate comparison between bilinguals and monolinguals; (2) more research into how bilinguals use their languages and choose appropriate types of communication for the context; (3) investigation into the effect of the bilingual's speech mode on communication; and (4) a better understanding of bilinguals based on observations from neurolinguists.

### **3.3.2 'Multi-competence' of the bilingual speaker**

Cook (1999: 185), following Grosjean (1989) and Firth and Wagner (1997), believes that the prominence of the NS as norm in language teaching has set an unattainable goal for L2 learners and has obscured the uniqueness of the successful L2 user. According to Cook (1999: 187), the most essential component in most definitions of a NS is reference to the language learned first. An L2 user can never be a native speaker if that definition is used. This implies that an L2 learner can never become a NS. Another common assumption of the NS norm is that the NS is monolingual. Cook's belief that the L1 of a bilingual is differently organised from the L1 of a monolingual further brings into question the notion of the NS. According to Cook (1999: 188), the NS model is still entrenched in SLA research and language teaching; any second-language learner is still compared to the NS.

Cook (2003: 6) considers different ideas about how the bilingual mind works. One possibility is that languages are stored in watertight compartments. This hypothesis holds that the bilingual speaker draws on knowledge of either one language or the other, with very limited connections between the different languages in the mind. Forster and Jiang (2001: 72) support this hypothesis when they suggest that the lexicon for each language is entirely distinct, and independently and separately accessed in late learners. The languages appear to be represented in entirely different processing systems. Forster and Jiang (2001: 72) argue that the L1 lexicon is represented within the language module of

the mind while the L2 lexicon is not. Another hypothesis on the bilingual mind is that the knowledge of one or more languages forms a single system. Ameel et al. (2009: 271) investigate the possibility that for bilinguals who were exposed to two languages from birth the two language systems might interact and form language patterns which converge in certain areas. According to Cook (2003), neither of these two hypotheses (different languages located in distinct systems or different languages located in a single system) properly reflects the nature of bilingual or multilingual capacities. He finds that absolute separation is impossible since both languages are located in the same mind. Total integration is also not possible since L2 users are able to keep the languages apart and choose when to use which language. Cook sees bilingual knowledge as a system with different degrees and types of interconnections. His work suggests that the integration of knowledge of various languages does not necessarily apply to the whole system and that not all individuals deal with the differences and connections in the same way; that it may vary according to context and circumstances.

### ***3.3.2.1 Multi-competence as alternative to interlanguage***

In addition to the NS, Cook (1999: 90) finds the concept of 'interlanguage' in SLA research problematic. For Cook (1999: 90), it refers to the knowledge of the L2 in the bilingual or second-language learner's mind. However, this interlanguage co-exists with the L1 in the same mind. The concept of 'interlanguage' fails to describe the knowledge of both the L1 and L2. This perceived shortcoming in the conceptualisation of the language knowledge of a person acquiring an L2 led Cook to coin the concept of 'multi-competence'. Originally, Cook (1999) used multi-competence to refer to the compound state of a mind with two grammars; it covers the total language knowledge of a person who knows more than one language, including both L1 competence and the L2 interlanguage. Kecskes (2010: 93) criticises Cook for the emphasis on language competence in his use of multi-competence. He argues that conceptual knowledge is intertwined with linguistic knowledge and has to be included in the use of the concept 'multi-competence'. However, Cook's initial use of grammar in the definition of 'multi-competence' was later replaced and he now refers to multi-competence as "knowledge of two languages in one mind" (2008: 17). This updated definition makes it clearer that 'multi-competence' is not only relevant to syntax, but all aspects of the linguistic system, and is broad enough to include conceptual knowledge.

Multi-competence, according to Cook (1999: 190), is a concept which is free from evaluation. Furthermore, it acknowledges that L2 users have different language knowledge from a monolingual L1 speaker and that multi-competent minds are different from the minds of monolinguals. This notion of 'multi-competence' makes it possible to view the L2 in a different light, and Cook (1999: 191) argues that the L2 user's knowledge should not be judged against that of the NS. He believes that there is no reason why the L2 competence of multi-competence should be identical to the monolingual L1, if only because multi-competence is intrinsically more complex than monolingualism. Multi-competent L2 users do not have the same knowledge of the L1 as monolinguals do. Cook (1999: 195) hypothesises that there is a bidirectional influence (see Chapter 1, section 1.9. for a definition of bidirectional influence) between the knowledge of the two languages that will result in a unique competence that shows both similarities to and differences from the native monolingual competence. Thus, L2 users cannot be compared to L1 speakers and should be treated as language users in their own right and not as deficient native speakers (Cook 1999: 195).

This notion of multi-competence proposed by Cook (2008: 19) has repercussions not only for the view of the NS in SLA and bilingualism, but also for the kinds of research techniques that are employed in SLA. Techniques such as error analysis, obligatory occurrence, grammaticality judgement and elicited imitation all use the NS as the norm. Although Cook concedes that comparison might provide some insight, he points out that these comparative studies fail to capture the unique nature of L2 knowledge. If researching the complexity of the multi-competence of the L2 user is the main goal of L2 research, then, Cook (2008: 19) argues, the starting point should be the mind of the L2 user and not the NS. It would then be possible to use multi-competence to re-interpret past and current SLA research. According to Mack (1997), studies that compare monolinguals to bilinguals still have a place in SLA research. Without a comparison between monolinguals and bilinguals, investigation into areas such as the structure of the bilingual language system, the sensitive period hypothesis and the consequences of bilingualism (cognitive, linguistic and metalinguistic) will not be possible (Mack 1997: 113). The focus, Mack (1997: 113) points out, will not be on judging or evaluating bilinguals against monolinguals, but on the comparison, which will provide more insight into how language operates in the human mind. However, as Cook (1999: 194) notes, because bilinguals' differences from monolinguals have in the past been seen as

inherently bad or deviant, comparative studies are inadvertently used as a measure to judge bilinguals.

Jessner (2003: 234) adopts Cook's notion of multi-competence, but adds a dynamic component, which he believes is essential to having a holistic view of bilingualism. Thus, multilingualism as a whole is investigated and not only its constituent parts. A holistic approach further presupposes that the acquisition of another language does not only influence the development of the language that is being acquired, but of the entire multilingual language system. Jessner (2008: 5) defines a multilingual system as "an adaptive complex system which possesses the property of *elasticity*, the ability to adapt to temporary changes in the systems environment, and *plasticity*, the ability to develop new systems properties in response to altered conditions (original emphasis)." In this model, change is not seen as linear, but as specific to the current context and time. Instead of multi-competence, the dynamic model of multilingualism (DMM) uses the concept of 'multilingual proficiency', which Jessner (2008: 5) defines as follows:

A cumulative measure of psycholinguistic systems in contact. These systems are not identical to language systems as a result of their cross-linguistic interaction which also integrates synergic and inferential effects, and the influence that the development of multilingual system exerts on the learner and the learning process such as greater expertise in learning skills and qualities distinguishing the experienced from the inexperienced learner.

Multilingual proficiency includes phenomena such as codeswitching, borrowings, attrition, and various types of 'language transfer'. The state of this multilingual proficiency at a given time is dependent on the previous as well as subsequent state of the psycholinguistic system, as well as on various cognitive processes (Jessner 2003: 243).

### **3.3.2.2 Criticism of multi-competence**

Alptekin (2010) also takes a multi-competent approach, but like Kecskes (2010), is critical of Cook's approach because of its lack of attention to culture. His view is that cultural knowledge plays an important part in the bilingual repertoire, especially where bilingualism coincides with biculturalism. He calls for a reformulation of multi-competence, which includes English as lingua franca (ELF) and the complexities that it poses. According to Alptekin (2010: 101), ELF has "no native speakers and no proper culture of its own to speak of. In this sense, it is everyone's property." It therefore

presents a case of bilingualism without biculturalism. The acquisition of ELF fosters a multicultural identity, because it facilitates interaction with people of different cultures and an opportunity to become familiar with multiple cultures, which might not be the case if the only L2 known is a local language (Alptekin 2010: 103). Alptekin (2010: 106) formulates a perspective of the bilingual individual from a usage-based framework of multi-competence in the following way:

A bilingual individual can be considered as a specific speaker-hearer with different levels of evolving knowledge in two languages, with different degrees of expanding knowledge in the social and pragmatic aspects of those languages, and with different types of culture-specific conceptualizations of reality. In short, bilinguals are both bilingual and bicultural, with varying levels of communicative competence and cultural knowledge of the two languages and cultures merged in their system. Therefore, an adequate definition of multi-competence ought to accommodate these properties.

Whereas Cook's (1999, 2003, 2008) conceptualisation of multi-competence focuses mainly on linguistic knowledge, Alptekin (2010) wishes to integrate cultural and contextual knowledge. Although Kecskes (2010: 104) agrees with Alptekin (2010) in integrating conceptual and cultural knowledge in multi-competence, he argues against a usage-based approach. Kecskes (2010: 104) believes that an appropriate model is one that pays equal attention to the social cultural environment and the linguistic system, while a usage-based approach exaggerates "the role of the sociocultural environment and den[ies] the active role of the linguistic system in reflecting the sociocultural environment."

Criticism against the notion of multi-competence is also offered from the arena of language attrition research. According to Wong-Jing Lowe (2006), Cook's model of multi-competence offers an alternative view of the influence of knowledge of the L2 on the L1, which earlier research might have interpreted as language attrition. This alternative form of interpretation opens up questions about where 'multi-competence' ends and attrition starts, and how much knowledge of each language a speaker needs in order to be considered multi-competent. These are issues which Cook (1999) does not address. However, even before the introduction of multi-competence, questions around when attrition starts and what is lost during the process complicated attrition research (Jessner 2003: 238). Aneel et al. (2009: 271) distinguish between attrition and convergence. Attrition is defined as the influence of the L2 on the L1 that leads to language decline or loss in a particular language, and hence implies a negative change.

On the other hand, convergence is defined as "the enhancement of inherent structural similarities in the two linguistic systems," which "makes a bilingual's two languages different from both [linguistic systems] as spoken by monolinguals, but [...] leaves the bilingual no less expressive or proficient a language user" (Ameel et al. 2009: 271). Cook's theory of multi-competence (1999, 2003) also sees bilingual competence as different from the monolingual and not inherently better or worse. The complexities of language attrition in bi- and multilinguals are not yet fully explored. Bylund (2009), for example, shows that age plays an important role in L1 attrition of event conceptualisation patterns, and points to the importance of age in attrition research. Pavlenko (2005b) identifies seven kinds of relationships of language and thought in bilinguals, ranging from no influence at all to attrition of L1 concepts (see Chapter 2, section 2.2.4 for the complete list). This shows that the notion of multi-competence provides more alternatives and variety in the way that the competence of bilinguals may be viewed. The multi-competent approach to bilingualism also offers opportunities to reconceptualise the effects of bilingualism, bilingual education, education through an L2 and cross-linguistic influence.

### **3.4 CROSS-LINGUISTIC INFLUENCE IN THE BILINGUAL SPEAKER**

Researchers in bilingualism have been preoccupied with the effects of bilingualism on linguistic and cognitive levels (Grosjean 1989). Mostly, the concerns have been that in the acquisition of the L2 the L1 will interfere with the acquisitional process, or that bilingualism itself will lead to confusion and delayed linguistic and cognitive development, specifically in bilingual children. Although earlier research seemed to indicate that bilingualism was detrimental to children's development, recent reports identify the positive effects of bilingualism. This section (3.4) traces the development of language transfer/cross-linguistic<sup>11</sup> influence and provides an historical perspective of this field of study, leading up to a discussion of the current state of the investigation into this phenomenon.

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<sup>11</sup> As in other current literature in the field, language transfer and cross-linguistic influence are used interchangeably in this dissertation.

### 3.4.1 Historical perspective on the study of cross-linguistic influence

Selinker (1992: 6) traces the historical roots of 'language transfer', 'interlanguage' and 'contrastive analysis' (CA), and concludes that these concepts were developed from Fries' (1945: 9) argument that: "The most efficient materials are those that are based upon a scientific description of the language to be learned carefully compared with a parallel description of the native language of the learner." This view led to studies that tried to find errors in the speech and writing of L2 speakers believed to result from interference from their native languages. Transfer or interference from the L1 was seen as one of the biggest reasons why L2 learners could not acquire 'native-like' proficiency in their L2.

According to Ringbom (1987: 1), this perceived reliance on the L1 for the FL or L2 learner was most often referred to as "transfer", although it has also been referred to as "interference", "mother tongue influence" or "effects". Ringbom (1987: 1) cites Sharwood-Smith and Kellerman (1986: 1), who point out that 'transfer' is not a term broad enough to cover all aspects of L1 influence on L2 learning. They suggest the alternative term 'cross-linguistic influence' (CLI), "which subsumes under one heading such phenomena as transfer, interference, avoidance, borrowing and L2 related aspects of language loss." Jarvis and Pavlenko also use the term in their recent *Cross Linguistic Influence in Language and Cognition* to refer to "the influence of a person's knowledge of one language on that person's knowledge or use of another language" (Pavlenko & Jarvis 2008: 1).

#### 3.4.1.1 CLI as negative phenomenon

Originally, the phenomenon of language transfer was studied through structuralist linguistic approaches (Ringbom 1987: 46). In this paradigm, the mother tongue was regarded either implicitly or explicitly as an obstacle not an aid to L2 learning, and linguists did not consider transfer or related topics to be important. Ringbom (1987: 46) traces the roots of the broader use of 'transfer' back to behaviouristic psychology, where it referred to the influence of material that was previously learned on the way that learning a new task occurred. One approach in transfer research discussed by Ringbom (1987: 47) is contrastive analysis (CA), seen to derive from applied linguistics and the practical problems of language teaching. This approach views the differences between the L1 and L2/FL as leading to learning difficulties, and uses contrastive comparisons and contrasts

to predict the types of learning difficulties that a learner would face. This strong version of the contrastive analysis hypothesis (CAH) has been denounced as unrealistic and impracticable. Scholars such as Wardaugh (1970), cited in Ringbom (1987: 47), describe the weaker version as an attempt to use the best linguistic knowledge available in order to account for observed difficulties in L2 learning.

Ringbom (1987: 48) identifies the following shortcomings in the traditional view of transfer and the CAH: (1) the emphasis on the negative aspects of transfer; (2) a lack of research on the L1 as a variable in facilitating L2 learning; and (3) the domination of syntax. The negative view of transfer – seen as a sign of "sloppiness, narrow-mindedness, and lack of mental clarity and sound thinking" – persisted well into the twentieth century (Jarvis & Pavlenko 2008: 2). It was especially prevalent when increased global migration fuelled the fear of foreigners and their influence on languages spoken in the country to which they immigrated. According to Jarvis and Pavlenko (2008: 2), these views resulted from an absence of in-depth investigation into language transfer phenomena. Similarly, Ringbom (1987: 58) also attributes the negative view of transfer to a lack of in-depth understanding of how the learner's L1 facilitates L2 comprehension and/or L2 production. The negative view of transfer was further reinforced by existing data from language transfer studies which emphasized the negative effects of L1 influence, without saying much about the facilitating effects. This skewed representation of transfer research (Ringbom 1987: 69) resulted from difficulties in obtaining concrete data on exactly how the learner's L1 knowledge was useful to his/her L2 learning. According to Ringbom (1987: 69), the concentration on errors is also a one-sided and incomplete approach to learner language. L1 influence does not manifest itself exclusively in errors, just as not all errors made by L2 learners are due to transfer and not all instances of transfer lead to errors. However, he does point out that error analysis is not useless as an approach to language transfer research, because it may provide a good starting point for investigating the processes of L2 learning, but on its own it is not sufficient.

Ringbom (1987: 51) subsequently distinguishes between covert and overt CLI. Covert CLI is theorised as an instance or instances where L1-based procedures are used to compensate for gaps in L2 knowledge, while overt CLI refers to instances where perceived similarities between the L1 and L2 lead to transfer and borrowing. Corder (1992: 18) points out that the empirical research conducted on language transfer has made

it evident that formerly held beliefs about the role of the mother tongue and other known languages in L2 or FL acquisition must be re-considered. Corder (1992: 18), like Ringbom (1987), acknowledges that the terms "transfer" and "interference" carry negative connotations, and he therefore prefers to use "the role of the mother tongue." Interference, according to Corder (1992: 20), generally refers to "no more than the presence in the learner's performance in the target language of mother tongue-like features which are incorrect according to the rules of the target language." If interference is used in this way, it does not carry the sense of an "inhibiting process" at work, which is how Corder believes it should be used. Therefore, he views "interference" as an inappropriate use of the term, which should be abandoned. Another reason for Corder's (1992) preference for the term "role of the mother tongue" is that a particular L1 might influence acquisition of the L2 in particular ways. The theory of transfer did not recognise the roles that particular mother tongues play, a possible example being the avoidance of the use of the target language by speakers of certain mother tongues, which cannot be as a result of transfer. Because the role of the mother tongue in SLA is more complex than transfer theory allows, Corder argues that the use of the terminology surrounding transfer research causes confusion in formulation of theoretical positions in the field of SLA (Corder 1992: 20).

#### **3.4.1.2 *CLI as neutral phenomenon***

Developments in the field of SLA and bilingualism have led to new perceptions of transfer, which attempt to address the shortcomings pointed out by Ringbom (1987) and Corder (1992). Silva (2000: 162), for example, develops her view of transfer from Grosjean's (1989) holistic view of bilingualism. She takes a compound view of transfer "as a process occurring within the same system, a system neutral to the L1/L2, in which transfer can be an enriching resource." What is generally regarded as fossilization might in some cases be attempts by L2 users to express meanings that might be crucial to establishing cultural identities. The distinction between positive and negative transfer was already made in the 1970s, when positive transfer meant that the L1 had a facilitating effect on L2 learning, whereas negative transfer or interference caused errors in the L2 production or comprehension of the learner (Ringbom 1987: 58).

In the past, the majority of studies in the area of CLI were located in formal SLA contexts, but studies on the natural acquisition of the L2 and studies involving transfer in

bilingual children who acquire two languages simultaneously have recently increased (Müller 1998, Nicoladis 2003). Most research into CLI focused on the linguistic system, and did not address the conceptual system (Gass & Selinker 1983; Odlin 1989; Alonso 2002). Jarvis and Pavlenko (2008: 61) cite Odlin's proposal that "transfer can occur in all linguistic subsystems," and they point out that CLI is not equally visible in all areas of language use. Marian and Kaushanskaya (2006: 369) consider both transfer and borrowings as instances of CLI. They consider borrowing to be "an overt verbal behavior consisting of the speaker 'switching' into the other language and actively using single words or entire phrases from that language." This is seen as distinct from transfer. Marian and Kaushanskaya (2006: 369) use Odlin's (1989) definition of transfer, which is "a covert behaviour consisting of the speaker using the target language in a way that is semantically or syntactically appropriate for the other language (but not for the target language), without overtly switching languages." There is a wealth of literature on CLI in SLA of which an elaborate overview cannot be given here. Such literature refers to language transfer in a range of areas such as:

Phonology (Flege & Eefting 1987; Bohn 1995; Flege, Bohn & Jang 1997; Escudero & Boersma 2004)

Lexicon and semantics (Richards 1976; Ringbom 1987; Ringbom 2001; Pavlenko & Jarvis 2002)

Morphology (Jarvis & Odlin 2000; De Angelis & Selinker 2001; De Angelis 2005)

Sentence structure (Gass 1983; White 1985, 1989; Zobl 1992; Jarvis 2003)

Discourse, pragmatics and sociolinguistics (Kaplan 1966; Kellerman 1999; Kecskes & Papp 2000; Jarvis 2002; Al-Issa 2003)

Orthographic transfer (Muljani, Koda & Moates 1998; Wade-Woolley 1999; Cook & Bassetti 2005).

Since the work of Jarvis and Pavlenko (2008) informs this dissertation, I will base my exposition of linguistic transfer largely on their discussion. For them, linguistic transfer means investigation the areas of language knowledge/use (2008: 61). They divide linguistic transfer into the following sub-categories: phonological; orthographic; lexical; semantic; morphological; syntactic; discursive; pragmatic; and sociolinguistic.

## **Phonological transfer**

Jarvis and Pavlenko (2008: 62) use phonological transfer in a very general sense to refer to "the way in which a person's knowledge of the sound system of one language can affect that person's perception and production of speech sounds in another language". They use phonological transfer to refer to various CLI phenomena, from actual sounds that L2 users perceive and produce to the ways that they categorize, structure and organise these sounds. Jarvis and Pavlenko (2008: 64) report on a study by Curtin, Goad and Pater (1998), who found that English and French L1 speakers, when learning Thai, were more successful in distinguishing between voicing contrasts than aspiration contrasts in a task that required them to listen to words in Thai that they know and judging what the meaning of these words were. The researchers drew the conclusion that this was a result of L1 influence, since in their L1 "only voicing is phonemically contrastive, and only voicing is represented in underlying lexical representations."

The effect of the phonological rules of one language on the effect of reading in another language has also been investigated. Gomez and Reason (2002) investigated the phonological reading performance in English of Malaysian children who have Bahasa Malaysia as L1 and acquire English as L2 in school. In particular, they investigated the influence that L2 phonological rules have on the acquisition of the L1. Although the two languages have many structural similarities, they also differ in some respects. Bahasa Malaysia has only six pure vowels compared to twelve in English, nineteen consonants compared to twenty-four in English, and is less reliant on tense and stress in distinction in meaning between sounds. The phonological assessment battery (PhAB) was used to assess a number of phonological abilities in English (Gomez & Reason 2002: 27). This included the ability to segment sounds in monosyllabic words, identify rhyme, analyse monosyllabic words into segments, synthesize segments to provide new words or word combinations, decoding, speed of phonological production and retrieval of phonological information from long-term memory. The results of the tests were comparable to UK standards and in some instances even better. The previous acquisition of Bahasa Malaysia seemed to have a facilitative effect on these phonological abilities as measured through the test (Gomez & Reason 2002: 31).

### **Morphological and lexical transfer**

Jarvis and Pavlenko (2008: 72) refer to lexical transfer as "the influence of word knowledge in one language on a person's knowledge or use of words in another language." Errors in lexical choice of words are often believed to be the result of morphological or semantic influence. However, there has been a view that the morphological system is largely immune to transfer (Jarvis & Pavlenko 2008: 92). Some recent studies indicate that morphological transfer can occur. Jarvis and Odlin (2000), for example, investigated morphological transfer in spatial reference in Finnish and Swedish L1 speakers acquiring English. They found that transfer in both groups was constrained by the type of morphological system, but that the difference in structure and semantics in the two languages led to different patterns of spatial reference in English. This finding lends support to Corder's (1992) assertion that many types of L1-L2 transfer are not caused by the presence of an L1 *per se*, but by a specific mother tongue. De Angelis (2005: 380) investigated the role that previous languages learned plays on the acquisition of function words in the target language in written production. The participants in this study were learning Italian as L3 or L4. De Angelis (2005: 397) found that the participants used function words from their L1 as well as their L2 (L3) if the source and target language was typologically close to each other, and that the participants were selective about the types of function words that they transferred. Participants with the same L1 but different L2s developed some different structures in the target language. This further supports Corder's (1992) view, but in this case it is the presence of a specific L2 that causes specific transfer phenomena in individuals.

### **Syntactic transfer**

Similar to views on morphological transfer, it was also believed that syntactic transfer rarely occurs (Jarvis & Pavlenko 2008: 96). However, a number of studies have shown that the influence of one language on another can effect grammaticality judgement, word order and well-formedness constraints in both reception and production (Gass 1983; White 1985, 1987; Zobl 1992). Marian and Kaushanskaya (2006: 373) investigated the effect of language environment and language architecture on transfer and borrowing in Russian/English bilinguals, who have Russian as L1 but at the time of the study lived in the United States. The approach used was narrative study, specifically interviews, which is increasingly popular in bilingual research (see Chapter 4, section 4.5). This approach

allows for the use of naturalistic data. Marian and Kaushanskaya (2006: 381) were interested in both semantic and syntactic borrowing and transfer. The participants conducted part of their interview in English and one part in Russian, with explicit instructions not to switch into the other language. Transfer was found to be linked to more than proficiency, for example, to language environment and accessibility. Some of the key findings were that nouns were borrowed more often, while verbs were transferred more often. Concrete nouns were found to be transferred to a more significant extent than abstract nouns were, while action nouns were transferred more often than state or function verbs were. More borrowing took place in the L1, while more transfer took place in the L2. The result was linked to recent use, immediate linguistic environment and the language in which the recounted event took place (Marian & Kaushanskaya 2006: 382). They conclude that "the lexicon is the more likely locus of borrowing, whereas the conceptual storage is the more likely locus of transfer." However, the distinction between the lexical and conceptual was anything but clear cut, and various parts overlapped and interacted (see Chapter 4, section 4.2.1 for a comprehensive discussion on the debate about the semantic and conceptual levels). Participants also seemed to have more control over borrowing than transfer, and more control in English than in Russian, which might be linked to the fact that most of their recent interactions with Russian were with bilingual speakers of Russian/English, but their interactions with English were with English monolinguals. Marian and Kaushanskaya's (2006: 387) study contribute to bilingual studies by showing that the "bilingual language system is highly interactive, with processing in one language influenced by knowledge of another language at all levels of the system, including lexical access and semantic representation."

### **Sociolinguistic, discursive and pragmatic transfer**

Jarvis and Pavlenko (2008: 102) also consider transfer beyond the sentence level as linguistic transfer, which includes discursive, pragmatic and sociolinguistic transfer. In other words, it is the type of transfer that influences "discourse, rhetoric, communicative interaction, and illocutionary function" (Jarvis & Pavlenko 2008: 102). Within this framework, Kaplan's (1966) work on contrastive rhetoric has been influential. According to Jarvis & Pavlenko (2008: 103), contrastive rhetoric primarily focussed on "the way writers organise the information they present, the degree to which they contextualise it, and how and where they present their main aims." Recent work includes that of Kecskes

and Papp (2000), who argue that the L2 can have positive effects on L1 academic writing. However, they argue that these effects are on the conceptual rather than linguistic level (see Chapter 4 for a more detailed discussion on their work).

Al- Issa (2003: 581) examined the transfer of speech act refusal from L1 Arabic to L2 English and used discourse completion tasks as a data collection instrument. He found that the participants in his study transferred pragmatic rules from the L1 to the L2. The transfer was found to be motivated by a number of factors, which included love of native language, religion and political reasons.

### **Orthographic transfer**

The seminal work on orthographic or writing system transfer is that of Cook and Bassetti (2005: 2), who view writing systems in two distinct ways. Firstly, like Coulmas (1999: 560), they consider it as "a set of visible or tactile signs used to represent units of language in a systematic way", which is related to the terms 'script' and 'orthography'. In this case, Coulmas's (2003: 35) definition for 'script' is "the graphic form of the units of a writing system." The second sense in which Cook and Bassetti (2005: 3) use 'writing system' is in its overlap with orthography, by referring to "the set of rules employed in a particular language for spelling, [and] punctuation." Some of the main findings reported by Cook and Bassetti (2005: 36) include the following: second language writing systems (L2WS) users differ from first language writing systems (L1WS) users; and L1 reading experience appears to facilitate L2 reading where the L1 and L2 systems encode the same linguistic units. Cook's notion of 'multi-competence' can also be extended to writing systems. This would mean that L2WS users with unique 'multi-competence' would then have different uses for their L2WS compared with L1 users of their L2WS and for their L1WS compared to L1WS users of their L1WS. This would also mean that multi-competent users of L2WS would have different knowledge of their L2WS compared with L1WS users of their L1WS. Lastly, L2WS users would also have an integrated system in which both writing systems co-exist (Cook & Bassetti 2005: 45). Cook (2005: 46) views the multi-competent L2WS user as

not just a monocompetent user reading and writing another writing system as if it were their first one but with lesser proficiency, but a new type of reader-writer, who consciously or unconsciously adapts the processes and strategies developed for using one writing system to the particular cognitive needs for

using another. An L2 user can use his/her specific strategies to perform tasks more efficiently than monocompetent L1WS readers.

Cook furthermore believes that L2WS users also perform differently in their L1WS from mono-competent users of the same L1WS. He argues that "the presence of an L2WS in the mind affects the use and knowledge of the L1WS and all the writing systems of the L2 user are present and interact during reading and writing" (Cook 2005: 49).

This overview of transfer on the linguistic level does not offer a complete account of the phenomenon of linguistic transfer, but rather showcases the diverse approaches taken to study it (for more complete overviews consult Gass & Selinker 1983; Odlin 1989 and Jarvis & Pavlenko 2008).

### **3.4.1.3 *CLI in L3 acquisition***

Transfer studies have been expanded to not only focus on bilinguals but also on multilinguals. Ahukanna, Lund and Gentile (1981) report on a study conducted in Nigeria to investigate "interference" from two previously acquired languages, Igbo and English, on the acquisition of a third language (French). In the study, a grammar test was used that contained one structure that had a parallel but differently executed structure in Igbo and English. In the findings, Ahukanna et al. (1981: 286) reported a potential for interference from semantically related items. It was also found that the more skills students developed in the target language, the more resistant they became to all of the sources of interference. Ahukanna et al. (1981: 285) put forward a number of factors that might influence susceptibility to interference from the L2; these include amount of experience with the target language, similarity between target language and L1, and the skills acquired in the target language.

Subsequently, the area of research on CLI in L3 acquisition has expanded (Cenoz, Hufeisen & Jessner 2001). Cenoz (2001: 8) argues that the study of CLI in TLA is

potentially more complex than the study of cross-linguistic influence in second language (L2) acquisition because it implicates all the processes associated with second language acquisition as well as unique and potentially more complex relationships that can take place among the languages known or being acquired by the learner.

According to Cenoz (2001), an investigation into CLI in L3 investigation is relevant not only for L3 acquisition, but also for the study of bilingual and monolingual production. Proficiency in the target language, which has proven an important factor in CLI in bilinguals, is believed to be important in L3 acquisition as well, although, in this case, it is not only proficiency in the L3 that might be influential, but also proficiency in the other two languages that the person acquiring the L3 knows (Cenoz 2001: 9). Other factors identified by Cenoz as influencing SLA, such as the context in which the language is acquired and the age of the learner, are also important in investigating L3 acquisition. According to Cenoz (2001: 9), CLI research has attended to the age factor in L3 acquisition in a very limited fashion. In a study where CLI in L3 acquisition was investigated with Basque/Spanish bilinguals acquiring English, Cenoz (2001: 12) found that the older learners exhibited CLI to a greater extent than younger learners did. There were also individual differences in CLI, with Spanish the preferred source language for CLI and students showing an awareness of linguistic distance.

#### **3.4.1.4 A ten-dimensional scheme of transfer**

Jarvis and Pavlenko (2008: 20–26) attempted to give a more thorough and detailed account of CLI and developed a scheme to characterise CLI across ten dimensions, which demonstrates its complexity. The ten-dimensional scheme includes the following:

##### **1. Area of Language Knowledge/ Use**

This dimension of transfer is the most common topic in scholarly publications on transfer and cross-linguistic influence. The main areas of transfer investigated include transfer on phonological, orthographic, lexical, semantic, morphological, syntactic, discursive, pragmatic and sociolinguistic levels. The discussion above (3.4.2) refers to this type of CLI, specifically from the L1 to the L2.

##### **2. Directionality**

This dimension refers to the various directions transfer can take place in, from L1 to L2, L2 to L1, L2 to L3 and so on. The categories identified by Jarvis and Pavlenko (2008:20) include forward, reverse, lateral and bidirectional transfer. The discussion so far in this dissertation has centred on transfer from the L1 to the L2. Reverse transfer (L2 to L1)

will be discussed in section 3.4.3 below and is the type of transfer investigated in this dissertation.

### **3. Cognitive level**

This dimension refers to the cognitive levels on which languages exert an influence on each other. The difference between the semantic and conceptual levels is of particular interest. Transfer on the conceptual level will be discussed in Chapter 4.

### **4. Type of knowledge**

This dimension explores the type of knowledge involved in transfer, with a specific focus on whether the knowledge is implicit or explicit.

### **5. Intentionality**

This dimension looks at the difference between intentional and unintentional transfer.

### **6. Mode**

This dimension looks at the different modes that language is in, whether it is productive or receptive. Although the analysis of CLI should not only be restricted to these two dimensions, it is still identified as a necessary distinction.

### **7. Channel**

This dimension focuses on transfer exhibited in different channels, the oral/aural channel of the spoken mode and the visual and written channel of writing, or non-verbal gestures. Both channels will provide valuable information on CLI.

### **8. Form**

This dimension refers to the distinction between verbal and non-verbal performance. Studies about gestures and both verbal and non-verbal communication can offer insights into L2 development, and the way that CLI can perhaps also influence non-verbal communication.

### **9. Manifestation**

This dimension refers to the distinction between overt and covert types of CLI. Visible influence of the language as well as influence that is not directly visible such as avoidance strategies can give useful information about CLI.

## **10. Outcome**

This dimension refers to whether the outcome of CLI is positive, negative or neutral.

This dissertation pays specific attention to the dimension of directionality because of its centrality to the research questions it poses. The other dimensions relevant to this study are cognitive level and outcome, discussed in Chapter 4.

### **3.4.2 Directionality of CLI: Effects of the L2 on the L1**

A more recent research question in CLI is whether the L2 might have effects on the L1. Kecskes and Papp (2000: 251) define transfer as "any kind of movement and/or influence of concepts, knowledge, skills or linguistic elements (structures, forms), in either direction, between the L1 and the subsequent language(s)." They also see transfer as dynamic and a constant presence in the language development of the bi- or multilingual person. According to them, "it is more or less intensive, either positive or negative, its direction changes from L1 to L2 or vice versa, and it either occurs between the language channels or affects conceptual fields" (Kecskes & Papp 2000: 251). In the development of the field of CLI, Jarvis and Pavlenko (2008: 8) discuss what they call the ignorance hypothesis, which proposes that transfer is simply the falling back on a language previously acquired when lacking knowledge in the one that is currently being acquired. Many studies point to the contrary and, as Jarvis and Pavlenko (2008: 10) point out, the final blow to the ignorance hypothesis is the fact that CLI is not only manifested from L1 to L2 (so-called forward transfer), but also from L2 to L3 (lateral transfer) and from L2 to L1 (reverse transfer).

Studies on transfer other than forward transfer have been underrepresented. Cenoz and Jessner's (2001) book on CLI in TLA addresses both forward and lateral transfer. Recent volumes by Kecskes and Papp (2000) and Cook (2003) are exclusively dedicated to reverse or backward transfer and address the topic on both the linguistic and conceptual level. Cook (2003: 1) starts his volume with Weinreich's (1953) view of transfer as "those instances of deviation from the norms of either language which occur in the speech of

bilinguals as a result of their familiarity with more than one language." He furthermore states that, while much research has been done on the influence of the L1 on the L2, the other part of Weinreich's assertion has been neglected.

Studies on the influence of the L2 on the L1 have been undertaken from various positions. Cook's (2003: 2) interest in reverse transfer developed out of his research on 'multi-competence', which raised questions about the relationship between different languages in use, cognition and acquisition. He also argues that the L2-L1 influence can have positive, negative or neutral effects (2003: 11). In referring to positive effects, he refers to Kecskes and Papp's (2000) work, the work of Bialystok (2002) on metalinguistic awareness and executive control functioning, and others that have reported on the positive consequences of the L2 influence on the L1. Negative consequences include language attrition, while neutral consequences include instances where 'multi-competence' caused an L1 to be different from the L1 of a monolingual, without being better or worse.

Kecskes and Papp (2000) find that the L2 can have a positive influence on the L1 in terms of conceptual fluency, which is one of the key theoretical concepts in this dissertation (see Chapter 4 for a comprehensive discussion). In a study of the influence of foreign language (FL) instruction on L1 writing in Hungarian high schools, Kecskes and Papp (2000: 29) found that "intensive and successful FL learning can facilitate L1 development significantly." This, they believe, can be partly attributed to the fact that intensive FL instruction can trigger the use of passive knowledge, and a more conscious use of the L1 (2000: 30). Another tentatively proposed reason is that "the effect of FL is especially beneficial if the L1 and FL differ in configurationality". Configurational languages are defined as languages with bound word order, governed by grammatical rules (Kecskes & Papp 2000: 31). In other words, Kecskes and Papp (2000: 31) argue that if the L1 and FL differ with regards to word order (one language with bound word order and one without), the effect of the FL on the L1 will be beneficial.

Cook's (2003) volume includes contributions on lexical transfer, transfer in narrative style, syntactic processing and conceptual transfer, to name a few. Pavlenko (2003: 54) finds that the L2 has an effect on the L1 narrative structure of Russian speakers acquiring English. Balcom (2003: 168) investigates the influence of the L2 on the L1 in French/English bilinguals on the level of lexico-syntactic rules. She focuses on the

grammatical intuition of the bilinguals compared to French monolinguals on middle constructions in French (2003: 170). The results show that the bilinguals judged more sentences to be ungrammatical than the monolinguals did to a statistically significant extent. The types of sentences that were judged ungrammatical in French by the bilinguals were also sentences found to be ungrammatical in English. Balcom (2003: 187) finds that, "in a contact situation with English, the L1 grammars of individuals are stirred in a certain direction (more use of passives) under the influence of the L2." However, a further finding is that this is not an instance of attrition, because, as Balcom (2003: 187) points out, "their mentally represented grammars are different, but they are not deficient."

Moving beyond the formal linguistic levels of language, Brown (2008) and Brown and Gullberg (2008) investigate the influence of the L2 on gesturing in the L1. Brown (2008: 257) holds that the L2 can have an influence on L1 gesturing even when the L2 is still at a relatively low level of proficiency. Brown (2008: 266) found differences in the gesture viewpoint in Japanese and English: Japanese monolingual speakers used more character viewpoint (C-VPT) gestures than English monolinguals and Japanese L1 speakers with some knowledge of English did. C-VPT gestures are done from a first-person perspective, while observer viewpoint (O-VPT) is done from a third-person perspective. It was found that the Japanese group with knowledge of English behaved more like the English monolingual group in their L1 and L2, than the Japanese monolingual group. The results cannot be attributed to cultural knowledge since the effect was found in both Japanese groups living in the USA and in Japan. Brown (2008: 272) believes that the results of the study indicate that there is a bidirectional influence between the two languages, and that this influence can be regarded as a normal consequence of SLA and not necessarily as loss or attrition. She also believes that it raises questions for the NS model, because, "if an L2 can affect an L1 even at relatively low proficiency levels, there is reason to suspect that 'native speaker' performance may actually be rather variable depending on the language experience of each individual."

Studies on the influence of the L2 on the L1 have also raised questions on attrition research (see section 3.3. 2 for some discussion on 'multi-competence' and attrition). Pavlenko (2010: 61) shows in the investigation of verbs of motion in late Russian/English bilinguals that there is reasonable stability in the lexicon of these bilinguals for motion verbs. She believes that this poses interesting questions as to the factors that interact to

make a specific part of the linguistic system or, more specifically, one set of motion verbs more susceptible to influence than another (2010: 61). De Leeuw, Schmid and Mennen (2010: 38) investigated the effect of the L2 on L1 pronunciation in German L1 speakers who live abroad (the Netherlands and Canada) and acquired their L2 after adolescence. A control group of monolingual German speakers with minimal exposure to an L2 or FL were used as comparative group. The bilingual group was rated significantly higher than the monolingual group in terms of foreign accent rating (FAR). According to De Leeuw et al. (2010: 38), this indicates that certain aspects of the L1 system can be affected by the L2, even if the L2 is acquired only later in life. The Pavlenko and the De Leeuw et al. studies indicate that the L2-L1 effect is complex, and that one needs to consider various other factors (biological, for example, age, specific linguistic feature under investigation and social factors) in order to provide an account of how the languages in the bilingual mind interact.<sup>12</sup>

### 3.5 SUMMARY

From the early investigation of errors in L2 speech, transfer studies have evolved to such an extent that they now investigate transfer in different directions, positive and negative effects of transfer, and transfer on different levels of linguistic and conceptual knowledge. The application of transfer studies is also not limited to linguistics or education (specifically SLA) research. With the growth of studies that investigate the effects of the L2 on the conceptual system, and on cognitive functions in the L1, transfer studies are also important for cognitive science and neurolinguistics. The studies presented in Chapter 4 investigate conceptual transfer and the cognitive effects of bilingualism. This discussion is framed around learning in and living with two languages.

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<sup>12</sup> Both the Pavlenko and De Leeuw et al. studies appeared in a special issue on New Perspectives on language attrition in *Bilingualism: Language and Cognition* in 2010.

## CHAPTER 4

# DEVELOPMENTS IN THE FIELD OF BILINGUALISM: COGNITIVE AND CONCEPTUAL EFFECTS

### 4.1 INTRODUCTION

Continuing an investigation of theoretical concepts relevant to the overall aims of the dissertation, this chapter covers three areas of study. The first part of this chapter will focus on cross-linguistic influence (CLI) and conceptual development, while the second part will focus on the cognitive effects of bilingualism. I distinguish between conceptual and cognitive effects, although some literature might treat them as the same phenomenon. The conceptual effects of bilingualism are viewed in the tradition of Whorfian studies. In these types of studies the differences between the linguistic structures of languages are investigated to determine if the differences cause a change in conceptual representation. Conceptual effects are seen as a manifestation of cross-linguistic influence. Some Whorfian studies argue that what is being altered or changed by a particular language is not only the conceptual system but cognitive structures themselves (see for example Athanasopoulos 2011). In the second part of this chapter an exposition of cognitive effects will be given, where *bilingualism* is seen as the variable effecting changes in cognitive processes such as metalinguistic awareness, intelligence, executive control functioning, creativity etc.; and not the influence of the differences between the two languages.

The third part of the chapter will discuss learning through an L2 or through two languages. This will be related to questions of language and academic learning (see Chapter 2), and to relevant aspects of language and bilingualism (see Chapter 3). Claims have been made that learning through an L2 has certain cognitive consequences, such claims will be investigated.

Lastly, the chapter will give information on narrative or autobiographical studies in accounting for how bilinguals use the two languages. The effects of bilingualism on how

speakers view themselves and others in terms of their own language abilities will be topicalised as background to the data collected for this study.

## **4.2 CONCEPTUAL TRANSFER**

### **4.2.1 Definitions of concepts**

Jarvis and Pavlenko (2008: 113) refer to 'concepts' as they are understood in a tradition that refers to concepts as "the mental representation of classes of things" then categories refer to "the classes themselves." Earlier Pavlenko (2000: 2) followed Paradis (1997) in distinguishing between lexicalized and grammaticized concepts, where lexicalized concepts are encoded in the vocabulary while grammaticized concepts are encoded in the morpho-syntactic structure or in non-verbal pragmatic behaviour. According to Pavlenko (2000: 2) a lexicalised concept consists of three components. Firstly, she identifies a lexical component, which represents the phonological and morpho-syntactic entry in the lexicon, located in the language areas of the brain. Secondly, there is a semantic component which includes associations with other words and idioms, located in the explicit and declarative memory in the brain. Lastly, it includes the conceptual component which carries multimodal and non-linguistic information, which includes imagery, schemas, tactile representation, etc. This component is based on knowledge of the world and is located in the area of the brain where implicit and non-declarative knowledge is stored. Pavlenko (2000) clearly distinguishes between the word and the concept and between linguistic and conceptual levels in the mind. This she believes to be an important distinction which has not always been sufficiently maintained.

Kecskes' (2007: 35) definition of 'concept' is similar to Pavlenko's (2000) in some respects, but it differs on some important points. He points out that there is no one-to-one relationship between concepts and words, as does Pavlenko (2000). Kecskes (2007: 35) understands the word-concept relationship in the following way:

A word (label) is a symbol that pulls together all knowledge and information that has been connected with the use of that label. It encodes the history of the use of that label in various situational contexts. The amount of this knowledge and information with its fuzzy boundaries creates what we call a concept.

Further a concept is defined by Kecskes (2007: 35) as

a construct that blends knowledge gained from actual situational contexts in an individual centred way. The reason why concepts convey relatively similar information for a particular speech community is that community members have had relatively similar experiences with the given label in language.

Pavlenko (2000) and Jarvis and Pavlenko (2008) use "concepts" in the tradition of cognitive psychology and emphasize the mental representation of these concepts. Kecskes (2007: 36) on the other hand, focusses on the interplay between the mental construct and its application in the physical world.

Jarvis and Pavlenko (2008: 113) also acknowledge the influence of experience in conceptual development. Conceptual development is seen by them (p. 115) as "an experience-based developmental process that results in two types of conceptual representation: language-independent and language mediated", which is following a weaker version of the Whorfian hypothesis (see Chapter 2 for a full discussion on this hypothesis). They believe that there are some universal concepts, but also other concepts that differ cross-linguistically. The two types of conceptual representations can be distinguished from each other in that language independent concepts develop experientially and have no predetermined means of linguistic expression, while language mediated concepts, develop in the process of language socialization where word learning and category acquisition influence each other over an extended period of time. They believe that the notion of language mediated concepts is different from the linguistic relativity theory, in the sense that the linguistic relativity theory starts with language and ends with cognition, while their notion of language mediated concepts starts with language and via cognition ends with language. Their discussion of conceptual transfer thus includes: "the influence of the language mediated conceptual categories of one language on verbal performance in another language" (Jarvis & Pavlenko 2008: 115).

Jarvis and Pavlenko (2008: 118) differentiate between the semantic and conceptual levels of representation, and also between explicit and implicit representation. They believe that conceptual representations involve implicit knowledge of a) properties and/or scripts associated with a particular category, b) category prototypes and borderline or peripheral members and c) the internal structure of the category and its links to other categories. Semantic representations they believe include knowledge of a) mappings between words and concepts determining how many concepts and which particular concepts are expressed by a particular word and b) connections between words which account for the

phenomena. In similar vein Kecskes (2007: 30) takes a "two level approach" to semantics, which includes an intra-linguistic level of abstract semantic representations and a distinct extralinguistic level of conceptual representation which is constrained by the semantic representation of the expression. Thus Kecskes (2007) makes a distinction between two types of representation, but still classifies it under semantics, and emphasizes how conceptual representations are constrained by the semantic representations. De Groot (2000: 7) argues that in many types of research which investigate the effect of language on conceptual representation, the data does not warrant a distinction between the semantic and conceptual level. The distinction is also contentious, because ultimately experience with the world may "underlie both conceptual and semantic representations" (p. 8). Two pertinent questions can be asked about the debate on the distinction between semantic and conceptual representation. First, whether there are two separate levels of representation and, second, if a distinction between the two levels is made, what the nature is of the relation between these two levels. Although there is no consensus yet on the answers to these questions, recent research acknowledges the phenomenon of 'conceptual transfer' (Jarvis 2000; Odlin 2005; Jarvis & Pavlenko 2008).

According to Jarvis (2000: 19) the notion of 'conceptual transfer' is a fairly new one. It was introduced by Kellerman's (1995: 143) statement "that the first language can influence the second at a level where cognition and language touch." According to Jarvis and Pavlenko (2008: 120) conceptual transfer might occur in cases where concepts mediated by the L1 and L2 are distinct, and there might be a reliance on L1 mediated concepts. Kecskes (2007: 29) proposes a notion of 'synergic concepts', which refers to a bilingual individual getting information about the same or similar concepts through two language channels, this concept is not equivalent in content to the concept in either language. Kecskes (2007: 33) believes that "concepts in the L1 are not learned rather they grow" and that conceptual content changes as the environment and input changes as people have different experiences with concepts. Jarvis and Pavlenko (2008: 154) distinguish between conceptual transfer and conceptual change, and see conceptual change as "a modification or transformation", which must occur in at least one of the domains of conceptual representation. Specifically, conceptual change is viewed as

involving one or more of the following processes: (a) the internalization of L2 (L3- etc.) based concepts that are fully distinct from L1 based concepts; (b)

restructuring, whereby new elements are incorporated into previously existing concepts or conceptual domains; (c) convergence, whereby a unitary concept or conceptual domain is created, distinct from both L1- and L2 based concepts; (d) shift from L1 to L2- based conceptualization within a particular domain; and (e) the attrition of previously learned concepts that are not relevant for one's daily interaction, often accompanied by a substitution of the previous concepts with the new ones.

Kecskes and Papp (2000, 2003) offer their own proposal of how concepts in the bilingual mind interact. Central to this proposal is the 'common underlying conceptual base' and the role that it plays in conceptual development.

#### **4.2.2 The 'common underlying conceptual base'**

Kecskes and colleagues (2000, 2003, and 2007) see a 'common underlying conceptual base' (CUCB) as central to multilingual conceptual development. Their work has theoretical roots in Cummins' (1980: 179) notion of a 'common underlying proficiency'. Cummins (1979: 185) was particularly interested in academic language proficiency and hypothesized that "the same dimension underlies cognitive academic proficiency in both L1 and L2, i.e. L1 and L2 CALP are interdependent." Kecskes and Papp (2000: 39) believe that the bilingual or multilingual 'language processing device' (LPD) consists of two or more 'constantly available interacting systems' (CAIS) and has a CUCB. According to Kecskes and Papp (2000: 39) the effect of a FL on the L1 results in a unique form of 'multi-competence' and the primary difference between the monolingual and multilingual LPD is on a conceptual rather than a grammatical level. This LPD is not the sum of two monolingual systems but is the essential consequence of the conceptual development of multilinguals.

According to Kecskes and Papp (2000: 40) the most controversial issue of modelling a bilingual/multilingual LPD is the nature of the CUCB where they believe declarative knowledge, images and concepts are situated and preverbal thought is shaped. Kecskes and Papp (2000: 41) argue that language and culture specificity is already present at the conceptual level not only in the process of conceptualization but also in the blueprints of most concepts. They see the CUCB as a container of mental representations; it contains knowledge and concepts that are either independent of language and culture or language- and culture-specific. Similar to Jarvis and Pavlenko's (2008) understanding of the conceptual development of bilinguals, their view of the CUCB also supports a version of

the Sapir-Whorf theory, which proposes that cognition is shaped through language. They argue that language has some kind of a limited role in shaping cognition and that the real question is not whether thinking/cognition is dependent on language but the degree of dependence, which is an area of investigation that many others (Lucy 1992; Pavlenko 2005b etc.), see as the real question of interest in the investigation of linguistic relativity.

In their discussion of multilingual processing, they believe that bilinguals have to make decisions at each point in the LPD, at each level. Their approach also does not view the two languages organised in separate compartments in the brain; instead they believe that in the bilingual/ multilingual LPD both language channels are constantly available regardless of the language which is actually used for production (Kecskes & Papp 2000: 48). They conceptualise the CUCB as the "container" of universal but mainly language dependent knowledge as "the basis of all bilingual linguistic actions, a container that includes everything but the language system itself." This is also where socio-cultural heritage and previous knowledge acquired through either language interact. For their purposes, Kecskes and Papp (2000: 52-53) modify the 'multi-competence' theory, by stating that "multi-competence develops when the bi-directional interaction and interdependence between the L1 and Lx results in a CUCB as well as an integrated language system with two channels, neither of which is exactly the same as the monolingual system."

In later publications Kecskes (2007, 2010) develops his theoretical framework around linguistic and conceptual representation and processing in bilinguals further. Kecskes (2007: 31) introduces dual language as an alternative to interlanguage. He conceptualises the dual language approach as "an intake rather than input approach." It tracks changes in the conceptual system and investigates what happens to the knowledge that enters the CUCB through two or more language channels and how this knowledge is put to work in the respective languages. The way in which the knowledge is put to work is different for monolinguals compared to bilinguals, simply because they have an additional language at their disposal. According to Kecskes (2010: 100), "whereas monolinguals rely on style switching and voicing, bilinguals employ these strategies in addition to their bilingual resources." The dual language approach does not focus on the target language features, but points to the process of language system construction as a result of conceptual

changes, bi-directional influence between languages and movements not only up, but also down the developmental continuum.

The theories developed in Kecskes' (2000, 2007, 2010) work, as well as in Pavlenko (2000) and Jarvis and Pavlenko (2008) all acknowledge the influence of the Whorfian hypothesis. This hypothesis has not only played a role in current theories on bilingual language processing and conceptual development, but has also led to empirical investigations, specifically targeting bilingual cognition and bilingual conceptual development which investigate CLI on the conceptual level in a number of conceptual domains.

### **4.2.3 Empirical studies on CLI on the conceptual level**

The discussion here will focus only on the investigation of CLI in two conceptual domains. These two domains, emotions and grammatical number, have a rapidly increasing body of research and are presented to illustrate the growth of the field, and of the types of questions investigated in research around CLI on the conceptual level. These two domains will however, only be briefly discussed.

#### *4.2.3.1 Emotions*

Jarvis and Pavlenko (2008: 125) acknowledge the current debate about the universality of basic emotions and states that there is agreement that "there exists cross-linguistic differences in emotion encoding". They also acknowledge the neurobiological and physiological bases of emotional experiences, but assume that "in the process of language socialization, speakers learn to discriminate, elaborate, and suppress bodily feelings in accordance with the local conventions of how one should feel in a particular socially defined situation." They acknowledge that certain emotions and their encoding seem to be universal, but cross-linguistic differences exist not only in the way that emotions are encoded and understood, but also in the way in which speakers of different languages physically react to different emotions.

Jarvis and Pavlenko (2008: 127) identify four distinct areas of research on bilingualism and emotions. The first is in the way that emotions are conceptualised. In so-called Western culture emotions are viewed as an individual phenomenon and distinct from thought, while in many other cultures and languages, they are viewed as social, public

and relational. This difference is also manifested in the emotions lexicon of individual languages. In English emotions are dominantly encoded as adjectives and pseudo-participles, which encode emotions as inner states. The second area of interest in CLI is the fact that some languages make more linguistic distinctions than others for the expressing of a particular emotion. Jarvis and Pavlenko (2008: 127) believe that "learning a language that makes more fine-grained conceptual distinctions will require the learners to develop new conceptual categories and to restructure existing ones." The third area of interest is that of the differences in conceptual categories that correspond to presumed translation equivalents across any two particular languages. Conceptual transfer in this case can be manifested where a language mediated concept acquired in one language guides the speaker's use of the equivalent in the other language. The last area identified by Jarvis and Pavlenko (2008: 128) is where language encodes an emotion concept that might not occur in the other language. Borrowing is a strategy that is often used when speakers lack the language to express this kind of emotion.

In the area of translation equivalents of emotions, Sachs and Coley (2006) completed a study which investigated cross-linguistic variability of emotion terms and the extent to which it is a reflection of the differences in the conceptual structure of emotions. The participants were speakers of American English and Russian. The emotion words which were focussed on were *jealousy* and *envy* and the Russian equivalents *revnuet* and *zaviduet*. The way, in which these terms are used by speakers of American English and Russian, respectively, differs in that the word *jealous* is used to refer to both jealousy and envy, while *revnuet* refers to jealousy and *zaviduet* is used specifically to talk about envy (Sachs & Coley 2006: 211). *Revnuet* is also habitually used by Russian speakers to refer to romantic jealousy. Sachs and Coley (2006: 211) were interested in whether this linguistic difference in the use of these two terms also evoked different conceptions of situations that evoke jealousy or envy. This issue was investigated by first determining whether there is a systematic linguistic difference in the way the Russian and English speakers use the above mentioned concepts. Secondly by investigating the way that situations where these emotions are experienced are categorised is investigated. This was done by not only examining monolingual speakers of American English and Russian, but also bilingual speakers of L1 Russian who are fluent in English.

In the first experiment of the empirical study, 22 monolingual speakers of Russian, 22 monolingual speakers of English and 22 bilingual Russian/ English speakers were used, 11 bilingual speakers were tested in English and 11 in Russian. The participants were presented with 5 pre-tested stories that would typically be described as a jealousy or envy arising story, and were asked to assign the stories to one of three categories: jealousy, envy or an emotion that does not correspond to either jealousy or envy. The categories were however not referred to as jealousy or envy, rather the definitions of jealousy or envy were given. The participants were tested individually; monolingual speakers of English and Russian were given instructions in English and Russian respectively, while the bilingual speakers were assigned randomly to English and Russian. The experiment was conducted by a Russian native speaker, who was also fluent in English. The participants were asked to assign each of these stories to a particular emotion, they could choose between 10 words which included *jealous* and *envious*. Participants had to rate the stories on a scale from 1 to 7, which ranged from not appropriate to very appropriate. In envy stories Russian speakers made more of a distinction between *envy* and *jealousy* than did English speakers. Russian speakers judged *zaviduet* as more appropriate than *revnuet*, English speakers on the other hand rated the words *jealousy* and *envy* as equally important in envy stories. Bilinguals tested in Russian showed results similar to the Russian monolingual speakers, while those tested in English did not show that kind of distinction. In jealousy stories all groups of participants rated *jealousy* as a more appropriate word than *envy* although the differentiation in the English monolingual group was less pronounced than that in the Russian monolingual group. In the bilingual group it seems as if language mode played a role, those tested in English showed results more similar to monolingual speakers of English, while those tested in Russian showed results more similar to monolingual speakers of Russian. The bilinguals tested in Russian did show some deviation from the monolingual Russian group in the envy story where the monolingual group showed a bigger distinction between jealousy and envy.

Sachs and Coley (2006: 217) believe that results of experiment 1 "provide clear evidence for linguistic differences in how emotion terms map onto emotion-laden situations in English and Russian, and allow us to build a schematic representation of how the Russian words *zaviduet* and *revnuet* and the English words *envious* and *jealous* apply to emotions." In experiment 2 the same participants, as in experiment 1 were used. Twenty-seven one-sentence long, pre-tested situations which either evoked feelings of jealousy,

envy or general negative feelings were presented to participants in a triad sorting and a free sorting task. In the triad sorting task participants were presented with 3 different situations, and were asked to indicate which two situations were more similar. All the participant groups made clear distinctions between envy and jealousy situations. It was found however that English monolingual speakers and bilinguals were more likely to group envy and jealousy situations together, than Russian monolinguals. Sachs and Coley (2006: 221) believe that this might be as a result of the linguistic difference which leads to this specific conceptual consequence.

The bilinguals who were tested in Russian performed more like the English monolingual group than the Russian monolingual group. This Sachs and Coley (2006: 221) believe to be as a result of exposure to English. They suspect that: "the bilinguals' familiarity with the English way of labelling the emotions of jealousy and envy highlighted the similarity between them, thus altering bilinguals' conceptual representation of these emotions." In the free sorting task the English monolingual speakers used *jealousy* to describe an envy situation significantly more than monolingual Russian speakers and even bilingual speakers with Russian as L1. Here the influence of English on the bilingual speakers did not seem to have such a significant impact as in the triad sorting task. Although the effect of English on the conceptual structure of Russian in Russian/English bilinguals seems to be minimal, Sachs and Coley (2006: 225) still believe that the process of acquiring English and becoming fluent in it, may have the conceptual consequence of highlighting similarities between the concepts envy and jealousy that otherwise might not have been that noticeable. Their results show that the categorising of emotion concepts is largely independent of how the emotional terms map onto those situations in one's language, however bilinguals offer interesting perspectives and show that becoming fluent in the L2 can have an effect on the way that situations in the L1 are conceptualised (Sachs & Coley 2006: 227).

Other work which investigates the effect of an L2 on L1 emotions includes, Besemeres (2004) Pavlenko (2005, 2008) and Knickerbocker and Altarriba (2011). These studies investigate the cross-linguistic influence on the domain of emotions by using a number of psycholinguistic and narrative analysis methods. The psycholinguistic methods include priming and emotional stroop tasks. In priming tasks participants are presented with two words, and have to decide if the second word is a non-word or a word. If the

two words are related to each other, participants usually make the decision (if word 2 is a word or a non-word) faster. In emotional stroop tasks participants are required to report on the colour of an emotion or neutral word. Emotion words seem to affect performance on this task, where the word is an emotion word participants take longer to name the colour (Knickerbocker & Altaribba 2011: 456). Methods employed in narrative analysis include for example discourse analysis and positioning theory (Pavlenko & Lantolf 2000, see discussion in 4.5.2).

#### *4.2.3.2 Objects and substances*

According to Jarvis and Pavlenko (2008: 136) many studies on the differences in the expression of grammatical number across languages and the influence it has on conceptual structures, are done from the perspective of the differences between classifier languages such as Yucatec, Japanese and Mandarin and non-classifier languages such as English. The classifier languages do not possess a morpho-syntactic count/mass distinction. In classifier languages "nouns typically denote substances, unbounded and non-discrete and are accompanied by numeral classifiers" (Jarvis & Pavlenko 2008: 136). According to Jarvis and Pavlenko (2008: 137) the different ways of expression grammatical number might have implications for the way that speakers of different languages pay attention to the number of objects. Another consequence of this cross-linguistic difference may be the way in which speakers pay attention to the shape of objects, with speakers of noun class languages expected to pay more attention to the shapes of various objects.

In a number of studies Athanasopoulos (2006, 2007, 2008) explores CLI in the conceptual domain of objects and substances in bilinguals. Athanasopoulos (2006: 91) used a picture-matching task similar to the one employed by Lucy (1992). Participants were shown an "original" picture, and then a number of alternates, and were then asked to judge which of the alternates were more similar to the original picture. The participants included intermediate and advanced Japanese/English bilinguals and monolingual English and Japanese speakers who served as a monolingual baseline to replicate Lucy's original study. The results showed that as in Lucy's study, differences between the monolingual groups were observed as a result of grammatical differences in the two languages. Number seemed to be a more salient feature for English speakers compared to Japanese speakers. English speakers paid more attention to the differences in the number

of countable objects than to the differences in number of non-countable substances, Japanese speakers made no such distinction. The intermediate English L2 users' cognitive structures were still influenced by their L1 and displayed results similar to that of the monolingual Japanese group although a slight shift toward the L2 pattern was observed. The advanced L2 users seemed to be significantly influenced by their L2 and showed results more similar to that of the English monolingual group. Athanasopoulos (2006: 94) believes that the results indicate that "changes in cognition may be traceable from an intermediate L2 level, but significant changes become apparent only once an advanced level of L2 proficiency has been reached." The behaviour of the groups also seems to correlate with a proficiency and grammaticality judgment test; the more successful the participants were in these tests, the more like monolingual English speakers they behaved in this task. Explanation for these particular results of the study, Athanasopoulos (2006: 94) believes can perhaps be found in the factor of language mode, as identified by Grosjean (1992). Grosjean (1992: 136) sees a language mode as: "a state of activation of the bilingual's languages and language processing mechanisms. This state is controlled by such variables as who the bilingual is speaking or listening to, the situation, the topic, the purpose of the interaction, and so on." In this case instructions were given in English and it is believed that this triggered the English language mode. Another reason might be the fact that the Japanese speakers were learning a language with more marked linguistic structure than their L1 and were influenced by the fact that this particular aspect of reality is marked significantly more in their L2 than in their L1. The fact that the bilinguals were living and tested in the UK, can also make immersion into the English culture a possible explanation for the preference of advanced L2 learners for the English linguistic structure. Athanasopoulos (2006: 95) believes that the results of the study support "the view that language influences cognitive dispositions by directing speakers' attention to specific features of stimuli." The results indicate that L2 speakers who are very proficient in their L2 can acquire the ability to direct attention to the stimuli according to the L2.

To address some of the issues that might have had an effect on the previous experiment (such as language mode), Athanasopoulos (2007: 692) conducted an experiment similar in design, but with a few changes to establish more clearly the factors that influence cognitive functioning. In this experiment an equal number of objects corresponding to singular count and mass nouns in English were presented once again to monolingual speakers of English and Japanese and bilingual Japanese/English speakers. To

disentangle the effect that language of instruction might have in activating a particular language mode, there were two experimental settings. Some bilinguals were tested in English by a non-Japanese administrator, while some bilinguals were tested in Japanese by a Japanese administrator. The results show that when controlling for L2 proficiency, extra-linguistic variables such as length of stay in the L2 country and language of instruction are not significant predictors of the shift in bilingual cognition. This finding suggests that language may affect habitual thought at a deeper, more permanent level.

Evidence from the empirical studies reviewed above seems to indicate that the interaction of languages in the bilingual mind can exert changes in conceptualisation patterns and perhaps restructure certain cognitive operations, although these changes are tied up with many other factors besides CLI. A particular conceptual consequence of bi-directional transfer is proposed by Kecskes and associates (2000, 2003, 2005) as the altering of 'conceptual fluency'.

#### **4.2.4 Conceptual fluency**

Kecskes (2000) was not the first to use the concept 'conceptual fluency'. Danesi's (1995) developed the concept from his work on SLA. Danesi's (1995) interest in 'conceptual fluency' stems from the language development of L2 learners, specifically the reasons why L2 learners seemed to display high levels of verbal fluency (grammatical and communicative competence), but seemed not to have the same level of conceptual appropriateness found in the discourse of NSs. This he believed was as a result of L2 learners speaking in the L2, but still thinking in the L1, and this manifested itself in the language of L2 speakers as a lack of 'conceptual fluency' (Danesi 1995: 4–5). According to Danesi (1995: 5) to be conceptually fluent in a language, it means "to know in large part, how the language reflects or encodes concepts on the basis of metaphorical reasoning." Danesi (1995: 7) draws on the work of Lakoff and Johnson (1980) who claim that most of our concepts are metaphorical in nature (see a more detailed discussion of Lakoff and Johnson's work on conceptual metaphor in Chapter 2, section 2.2.3.1.4). Lakoff (1992) believes that the contemporary theory of metaphor is "primarily conceptual, conventional and part of the ordinary system of thought and language." Lakoff (1992) further believes that metaphor is not simply a matter of language but also of thought and reason; in fact language, is seen as secondary to mapping, a distinction is thus drawn between metaphor, which is "conceptual mapping", and metaphoric

expression, which refers to "an individual linguistic expression." Danesi (1995), in line with this view of metaphor argues for the integration of metaphorical or conceptual competence in the SLA curriculum.

Danesi (1995) argues that the explicit teaching of 'conceptual fluency' is lacking in the average L2 classroom. Support for this was provided by an empirical investigation done at the University of Toronto, with two groups of students who were doing Italian (Danesi 1995: 11). Group A consisted of 12 non-native speakers of Italian, 4 each from the elementary, intermediate and advanced stage. Group B consisted of 12 native speakers, also from the three stages mentioned above. The groups were relatively small; the goal was not to draw statistical inferences, but instead to establish patterns. The participants in this study were not informed about the goal of the task, and each completed a comprehension task. The tasks included students having to select the meaning of metaphorical statements and a translation task where students had to translate metaphorical sentences from English to Italian and vice versa.

The results of the study showed an advantage to students from the advanced stage (both groups) as well as a clear advantage to the native speaker group. Danesi (1995: 12) sees this as an indication that conceptual fluency is not explicitly taught to L2 learners and is lacking in most L2 learners. In another study at the same university, students who had completed a minimum of three years of Spanish instruction were used as participants. Once again two groups were established, a group with twenty five non-native speakers of Spanish and a group of five native speakers. For this study the students had to write a short in-class essay on one of three topics, the essays were then collected and analysed for evidence of metaphorical reasoning. The analysis entailed a measurement of the metaphorical sentences as a percentage of the total number of sentences, an index Danesi (1995: 12) calls "metaphorical density." A metaphorical sentence was defined as "a token or instantiation of the underlying conceptual system: e.g. an orientation metaphor, an entity metaphor." The results in this case showed a difference between the two groups, which was significant,  $p < 0.5$ , with the native group scoring over 80% higher in average density. Students also seemed to transfer metaphors from English to Spanish.

Danesi (1995: 15) believes that CA has a role to play in the investigation of conceptual fluency. However he argues for an approach different from the traditional CA approaches which will not investigate contrasted verbal structure as abstracted from conceptual

reasoning but will contrast them "in terms of the conceptual domains they reflect" (Danesi 1995: 15). The errors that result from the unconscious transfer of conceptual formulas will be labelled by (Danesi 1995: 15) as "conceptual transfer." This definition of Danesi (1995) is a reflection of the theoretical thinking of the time that viewed transfer as negative. It contrasts significantly with the definition of conceptual transfer of Jarvis and Pavlenko (2008) (see section 4.2 above), who do not view conceptual transfer as inherently negative and unidirectional.

In line with current research on transfer Kecskes (2000, 2003) takes Danesi's (1995) work forward, but views conceptual transfer/ influence not only as a phenomenon which happens from the L1 to the L2, but also from the L2 to the L1. The focus in Kecskes' work is also not only on errors and interference but the possibilities of the facilitative and positive effects of conceptual transfer. Kecskes (2000: 146) refers to 'conceptual fluency' with regards to the acquisition of an L2 as "close to native use and comprehension of concepts of the target language." The notion of 'conceptual fluency' that I work with and develop further in this dissertation is the one that is used by Kecskes and Papp (2003: 252):

Conceptual fluency refers to the extent that bilingual speakers are able to understand and use concepts, knowledge and skills acquired through the channel of either language and means the level of free access to vocabulary in both languages. It presupposes that the conceptual-semantic interface works properly and, as a result depending on the level of 'conceptual fluency', the bilingual person has greater or lesser difficulty finding the right words to express his/her ideas through the channel of either language.

Kecskes (2000: 147) also believes that not all L2 learners become multi-competent; in order for an L2 learner to be regarded as multi-competent a certain threshold of proficiency needs to be passed for the CUCB to develop. Part of the proficiency is the 'conceptual fluency', essential Kecskes (2000: 147) believes for 'multi-competence' to develop, if the conceptual base is not affected, the learning of the L2 is just an educational enhancement, and will not alter any conceptual patterns.

Danesi (1995: 15) posed questions for future research into a conceptually based CA. These are "What kinds of conceptual interferences come from the students' native conceptual system (interconceptual interference), and how much conceptual interference is generated by the target language itself (intraconceptual interference)?" Danesi (1995:

16) also believes that it further opens up questions about the metaphorical nature of concepts, how semantic and grammatical categories reflect conceptual structures or domains in language, the relation between 'conceptual fluency' and world knowledge, and how to integrate conceptual aspects of language teaching with grammatical and communicative syllabi. These are issues which are taken up in many of the contemporary investigations into conceptual transfer.

Kecskes (2000) investigated 'conceptual fluency' in situation bound utterances by means of a survey study. This speaks directly to the question of the relation between 'conceptual fluency' and world knowledge that was posed by Danesi. By means of data that was collected from 88 non-native speakers of English and 33 native speakers of English, with the use of non-native speakers coming from ten different countries. All these non-native speakers of English acquired the language in a FL environment. Three kinds of tests were given to all participants of the study. These tests were two discourse completion tests, a problem solving test and a dialogue interpretation test. The data was analysed by comparing the non-native speaker responses to each other and also to the group of native speakers. Kecskes (2000) found that in the selection of situation bound utterances cultural specificity and individual learner strategies played a major role

Kecskes and Papp (2003: 247) believe that the effect of the L2 on the L1 is a potential rather than a necessity on the conceptual level, and affects the use of the L1 as a whole, furthermore this effect occurs only once a certain threshold is reached. This hypothesis is consistent with Athanasopoulos and Kasai's (2008) findings that the L2 only started to affect the L1 at the level of advanced proficiency in the L2. However it is contrary to Brown's (2008) finding that L1 gesturing can be affected by the L2 even at a relatively low level of proficiency. These seemingly contradictory findings point to the importance of various factors that interplay with the effect of the L2 on the L1. Kecskes and Papp (2003: 247) see two factors in particular shaping L1 performance when affected by the development of another linguistic system (L2), in a FL environment where there is a lack of the presence of target language culture, but an intensive exposure to the language. These two factors are the level of proficiency and the development of a CUCB; and nature of transfer. In the Athanasopoulos and Kasai (2008), and the Brown (2008) studies different aspects of the conceptual/linguistic system were investigated which might be an explaining factor for the different outcomes.

As stated earlier Kecskes and Papp (2003: 249) argue that proficiency in the L2 has to reach a certain hypothetical level in order for it to have an effect on the CUCB and not only be some kind of educational enhancement. This threshold they believe is reached when the learner starts using conceptual mediation together with lexical connections. They also believe in order to demonstrate the FL-L1 influence, signs for change in L1 production must be looked at, since this can reveal conceptual change, signs which include the use of L1 vocabulary and sentence building. They also argue that conceptual change is always a dynamic process, that the more proficient the FL learner becomes in the FL and the more firmly the CUCB is established, the more positive the outcome of the L2 conceptual effect on the L1 might be. They believe that "this positive transfer is predominantly neither structural nor lexical but pragmatic, knowledge and skill transfer that is bi-directional and has a serious bearing on the language behaviour and discourse organisation of the multilingual speaker because it is a phenomenon of the CUCB rather than language channel." If exposure to the FL is intense and proficiency in the FL is high, it results in conceptual rather than linguistic transfer, which is transfer as a CUCB phenomenon, "when knowledge or skills acquired through one language system become ready to be used through the other language channel(s)" (Kecskes & Papp 2003: 252). They believe that students who had intensive FL instruction or have the FL as medium of instruction use their L1 differently to monolingual users without that kind of exposure, and that the result is 'conceptual fluency' which is different from that of a monolingual speaker. They essentially turn to linguistic elements to demonstrate conceptual change, since they believe that in order for this change to be demonstrated quantitatively, concrete linguistic elements need to be investigated.

Kecskes and associates (2000, 2003, and 2005) indicate a number of indices which they believe can be used in the measurement of 'conceptual fluency'. This includes lexical quality, cognitive functioning and structural well-formedness. These indices will be discussed in more detail in Chapter 5, but need discussion here nonetheless, because it gives us an idea of the theoretical grounding on which their notion of 'conceptual fluency' is based. One of the indices which will be discussed here is lexical quality (Kecskes & Papp 2003). Kecskes and Cuenca (2005: 50) follow the word association model of Kroll and associates (2001), and believe that before the development of the hypothetical threshold, L2 users access L2 words by referring to their L1 translation equivalent. The

development of the CUCB is discussed by Kecskes and Cuenca (2005: 51) in the following way

The strength of connections between the FL word and the conceptual system varies as a function of relative fluency in the FL and relative language dominance. The higher the fluency in the FL, the less the learner has to rely on L1 word association because the growth of FL proficiency brings about changes in the conceptual system which starts to accommodate knowledge and concepts gained through the FL. Consequently, it gradually ceases to be an L1 dominated conceptual base and changes into a CUCB which is responsible for the operation of two language channels. The emerging CUCB makes it possible to establish a direct connection between the L2 word and the appropriate concept in the CUCB.

Kecskes and Cuenca (2005) conducted an empirical study specifically to investigate the relation between lexical choice and 'conceptual fluency' in the target language. The study was done at an immersion school in Barcelona, with learners who were proficient in Catalan and Spanish and had English as FL. In the case of this specific school, English was not only taught as FL, but was also used as medium of instruction for 40% of the curriculum, the assumption was made that the CUCB of the students had developed sufficiently to lead to conceptual fluency in English. The seventeen participants who took part in the study all had non-native like competence in English. Data was collected by means of two newspaper articles, one in Catalan and one in English. The participants were required to read the article and were given thirty minutes to summarise the content in the other language. The two languages were administered on different days, and participants were instructed to write a "conceptual summary" of the article, a summary which captures the main ideas rather than translate the article as is. The summaries were analysed by looking at length and resemblance to the original.

Kecskes and Cuenca (2005: 56) make the distinction between a conceptual and lexical summary in the following way, the use of keywords and content words substituted by synonyms is key to a conceptual summary, while a lexical summary is seen as "a shortened repetition of the original text in the reverse language." The results of the study showed that the summaries from Catalan to English were short, while summaries from English to Catalan were long. Kecskes and Cuenca (2005: 56) also believe that the summaries were lexical, rather than conceptual. This they believe is an indication that the assumption about the conceptual fluency of the participants in English, as well as about the development of the CUCB was not correct. For these participants, the CUCB is only

at the initial stages of development. This can partly be ascribed to the fact that the learning activities are aimed at developing grammatical and lexical proficiency and not conceptual or pragmatic proficiency. According to Kecskes and Cuenca (2005: 67) a possible solution is that "students need to focus not only on the linguistic but also on the socio-cultural differences and similarities between their language and culture which will support both their conceptual and academic development."

Jarvis and Pavlenko (2008: 230) argue however that claims made about conceptual proficiency and fluency need to be made with some caution. These studies often do not take work done in bilingualism and cognitive psychology around conceptual development into account. The methodologies used in investigating conceptual fluency should be re-examined in order to become more interdisciplinary, and display a more sophisticated understanding of concepts, conceptual representation and conceptual transfer. Pavlenko (2000: 2) proposes that methodologies developed in cognitive psychology and linguistic anthropology might be more useful in investigating conceptual development. Specific methodological practices identified by Pavlenko (2000: 2) include elicited language production and investigation into non-linguistic behaviours. Kecskes and Papp (2003) use different methodologies to investigate 'conceptual fluency', but agree with Pavlenko (2000) that conceptual representation is not static, but can change in situations where individuals are exposed to more than one language.

An area of bilingualism research which has been investigated more extensively and for a longer period of time than conceptual transfer is the cognitive effects of bilingualism. In this case the independent variable investigated is bilingualism and not language X's influence on language Y. The factor that connects this line of research with research on CLI on the conceptual level is an assumption that knowing and using two languages can have certain effects on aspects of cognition.

## **4.3 COGNITIVE EFFECTS OF BILINGUALISM**

### **4.3.1 Introduction**

Bialystok (2001, 2009) has reported varying results on the effect of bilingualism in different cognitive domains, identifying in some cases no effects, positive effects and negative effects. Older studies, in particular those conducted before 1960, reported

mostly negative effects. Macnamara and Kushnir (1971: 485), for example, reported that bilingualism violates the expectation that all language processing should be in one language and therefore "disrupts interpretative processes." This is a typical finding of the time where bilingualism was seen as going against the natural monolingual norm. Bialystok (2001: 59) cites Macnamara (1966) who concluded that "bilinguals have a weaker grasp of language than monoglots" (p.31). Macnamara also offered reasons why bilingualism causes language deficits. These were that:

- 1) Linguistic contrast creates interference, especially for highly divergent languages;
- 2) Cultural assimilation is crucial to language learning and is not usually present for bilingual children;
- 3) Language models are often inadequate and opportunities to learn each language are less for bilingual children;
- 4) Time available to learn each language is less for bilingual children.

Bialystok (2001: 60) believes that Macnamara's study shows illogical argumentation and methodological flaws, as is the case for many other earlier studies on bilingualism. He also wrote from the perspective of bilingualism in an immigrant situation. Other types of bilingualism such as the use of an L2 as lingua franca, the use of two or more languages in multilingual communities, or a situation of elite bilingualism were not explored in these earlier studies. According to Hoffman (1991: 4) individual bilingualism has in the past, often been blamed for a bilingual child's underachievement at school and in intelligence tests, and has been considered to lie at the root of minority members lack of assimilation into mainstream society.

Hamers and Blanc (2000: 85) report that psychometric studies on bilinguality, done during the 1960s revealed mostly negative consequences of bilingual development. These earlier studies reported academic retardation, lower IQ, social maladjustment, and mental confusion. Lee (1996: 501) for example cites Stoddard and Wellman (1934) who proposed that "proficiency in two languages retarded cognitive growth and only led to mental confusion." These earlier studies have been criticised for using bilinguals who were not comparable to monolinguals in terms of socio-economic background, or proficiency in the language of testing. The bilinguals were often also selected on the basis

of having a foreign last name, coming from an immigrant home or speaking a foreign language at home. In these studies bilinguality was also not adequately defined, and speakers were tested in their weaker language (Hamers & Blanc 2000: 86). These studies were contradicted by some case studies done at more or less the same time. The now famous study done by Werner Leopold (1939–1949) of his daughter Hildegard, reported that the two languages Hildegard was exposed to was beneficial to her mental development. On the basis of his case study, Leopold proposed bilingual children understand the symbolism and abstractness of language earlier on than monolingual children, since they have to acquire two forms for each referent.

In more recent studies, positive effects of bilingualism on cognition seem to outweigh the negative ones. In particular bilinguals are credited with outperforming monolinguals in metalinguistic awareness, inhibiting conflicting information and divergent thinking (Diaz 1983; Bialystok 1999, 2001; Kharkhurin 2007). The study that is credited with changing perceptions on bilingualism is that of Peal and Lambert (1966) which investigated the relation of bilingualism to intelligence<sup>13</sup>. This study concluded that bilinguals outperformed monolinguals in cognitive ability due to "enhanced mental flexibility and strong concept formation skills" (Lee 1996: 503). The study is not without its critics who believe that bias was shown in the selection of participants. Peal and Lambert (1966) only included highly proficient bilinguals. Macnamara (1966) argued that the better performance in intelligence tests of the bilinguals (compared to the monolinguals) was not as a result of them being bilingual, but that these participants were more intelligent to begin with. Macnamara's argument was that the bilinguals were highly proficient bilinguals because they were more intelligent and not more intelligent because they were bilingual. Macnamara (1966) states "thus it is extremely likely that children were selected for the bilingual group who were not only better at English than the monoglots, but also intellectually brighter than them. In other words, the research would appear to have been carried out on a biased sample of children." Anisfiel and Lambert (1969: 127) counter Macnamara's argument by indicating that in their report they discussed and presented both possibilities to interpret the correlation between intelligence and bilingualism. After reviewing previous literature and studies on the subject they found that these previous studies were not undertaken with enough care to convince them that

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<sup>13</sup> There is no single definition or measure of intelligence that is sufficient and value-free.

the positive effects of bilingualism was due to the bilingual children being more intelligent from the outset.

Since Peal and Lambert's study more studies began to report positive cognitive effects of bilingualism. Ben-Zeev (1977) for example reported that cognitive development was accelerated by bilingualism. Her hypothesis was that bilinguals have to deal with two distinct language systems, which they have to keep separate, and one strategy to keep the language separate is to "pay particular attention to the systematic aspects of both languages" (Ben-Zeev 1977: 1009). This she believes leads to highly bilingual children being able to process syntactic rules with a flexibility which is different from and more advanced than that of monolingual children. Ben-Zeev (1977) believes that bilingual children learn about the arbitrary nature of language earlier on, and also sees language learning as hypothesis testing.

Cummins (1979) proposed that competence in the L1 was crucial to determining the effects that L2 acquisition will have on cognitive development, specifically for CALP. His threshold hypothesis (1979: 222) proposed that "there may be threshold levels of linguistic competence which a bilingual child must attain both in order to avoid cognitive disadvantages and allow the potentially beneficial aspects of bilingualism to influence his cognitive and academic functioning." He believes that cognitive development in the bilingual child can only be explained by looking at "the interaction between linguistic, socio-cultural and school program factors." Cummins (1979: 233) believes that the threshold hypothesis fails to account for how L1 and L2 skills are related and which type of bilingual schooling program is most likely to result in either an additive or subtractive form of bilingualism under varying bilingual learning contexts. He thus developed the developmental interdependence hypothesis. This hypothesis proposes "that the level of L2 competence which a bilingual child attains is partially a function of the type of competence the child has developed in the L1 at the time when intensive exposure to L2 begins." Cummins suggests that linguistic experience in the home contributes to a significant degree to the development of L1 literacy skills and that the skills needed to extract meaning from a text can be transferred to another language. This Cummins (1979: 238) also sees as the key role in achieving success in school. Cummins believes that success in schooling will only occur if learners understand the concepts that academic vocabulary refers to. Cummins asserts "if a child on entry to school does not have access

to the semantic meanings assumed by beginning reading texts and culturally-different schools the early search for meaning in printed texts is likely to be futile."

Diaz (1985: 1377) identifies gaps in earlier studies that investigated the cognitive effects of bilingualism. One of the shortcomings is believed to be that comparisons were made between monolinguals and bilinguals. Instead, Diaz suggests that comparisons can be made within bilingual groups, with different degrees of bilingualism. Diaz also criticizes the exclusive focus on balanced bilinguals and states that most studies done on the cognitive effects of bilingualism "looked only at children who are fully proficient in both languages or have treated bilingual samples as homogeneous groups." Another shortcoming is one which was also a criticism of Peal and Lambert's landmark study, the question of cause-and-effects: is increased cognitive development a result of bilingualism or is highly proficient bilingualism the result of higher intelligence? This Diaz (1985: 1377) believes was not properly controlled for in previous studies as a result of reliance on correlational, cross-sectional data. Diaz's (1985: 1378) own study in response to the gaps identified examined the relation between bilingualism and cognitive ability by investigating a group of bilingual children with varied proficiency in the L2. Those with low and high L2 proficiency were also investigated separately with regards to bilingualism and cognitive ability. A longitudinal study, which investigated effects at two points in time, also allowed for more investigation into cause-and effect. The majority of participants were not balanced bilinguals. Participants were measured in terms of degree of bilingualism, analogical reasoning, metalinguistic awareness, non-verbal abilities, home language background and socio-economic status. It was found that "degree of bilingualism is a strong predictor of cognitive variability for children of relatively low second-language proficiency"; however this relation seems to disappear with children with high L2 proficiency. Through the longitudinal nature of the study the data also supported a bilingualism cognitive abilities causal model. Diaz (1985: 1384) concluded that "if there is indeed a cause-effect relation between degree of bilingualism and cognitive ability, bilingualism is most likely the causal factor." This finding Diaz (1985: 1386) believes challenges Cummins' threshold hypothesis by showing that "degree of bilingualism will predict significant portions of cognitive variants only before a certain level of L2 proficiency has been achieved."

Recently, positive effects of bilingualism have been found on metalinguistic awareness, executive control functioning and creativity.

#### **4.3.2 Metalinguistic awareness**

Bialystok (2001a: 123) believes the concept of metalinguistic awareness is important since it has been identified as a way that bilingual children distinguish themselves from monolingual children. Lee (1996: 504) regards metalinguistic awareness as involving "the ability to objectify language to focus on the form, rather than the meaning, of sentences", while Diaz (1983: 40), similarly defines it as "the ability to analyse objectively linguistic input." A number of empirical studies have been done to investigate the claims of a bilingual advantage in metalinguistic awareness (see for example Galambos & Hakuta 1988; Cromdal 1999). The outcomes of these studies have been varied, with some showing no advantages to bilinguals, while other showed clear advantages. These studies point out that metalinguistic awareness is difficult to define and pinpoint and that the interaction between the languages differs according to task type. Carlisle, Beeman, Davis and Spharim (1999), for example, investigated the relationship of metalinguistic ability to reading achievement in children who were becoming bilingual in Spanish and English. The children in their study had "underdeveloped" L1 capabilities came from disadvantaged backgrounds and did not have literacy skills in the L1 (Spanish). The findings were that vocabulary in both languages contributed more to reading achievement, than the level of bilingualism. The vocabulary development however was linked to the extent of their metalinguistic development in both languages. They concluded their study by saying that "the development of native and second language vocabularies positions a child to acquire skill in reading, as does an understanding of the written language code" (Carlisle et al. 1999: 475). They proposed that in research on metalinguistic awareness of bilingual children greater attention should be paid on the role of vocabulary development.

Jessner (1999: 202) writing from the perspective of multilingual development states that recent studies into bilingualism show benefits to bilingual children in terms of "communicative sensibility, creativity and metalinguistic awareness." Jessner (1999: 203) believes that multilinguals have different metalinguistic skills than monolinguals due to frequency of use, and that the acquisition of a third language causes changes in language learning as a result of the interaction of the psycholinguistic systems of the different

languages. Jessner (1999: 204) reports results of an empirical investigation where participants who were Italian/German bilinguals, acquiring English, were asked to think aloud during an academic writing process, and were not allowed to use a dictionary. The results showed that the participants used all three languages in the process, compared equivalents from the different languages and made connections between the three. This Jessner (1999: 207) believes points to the fact that metalinguistic awareness plays an important facilitating role in the acquisition of additional languages and speeds up the language learning process.

Bialystok (2001b: 169) cautions against a blanket assignment of increased metalinguistic abilities to bilinguals vs. monolinguals, but identify certain tasks where the bilingual advantage is more prominent than others. Specifically, she links metalinguistic ability to two cognitive processes- control of selective attention and analysis of representational structures, with bilinguals showing marked advantages in control (Bialystok 2001b: 169). Research into control of selective attention has expanded; it is not only viewed as a contributing factor in metalinguistic awareness, but a specific cognitive advantage, discussed below in 4.3.3.

### **4.3.3 Executive control functioning**

Bilinguals constantly have to contend with two potentially competing linguistic systems (Bialystok 2007: 210). Bialystok (2007: 211) states that "the representational systems underlying both languages for bilingual speakers are constantly active and available during all language use activities." If this is the case, then bilinguals need a mechanism to control attention to the system that is currently being used and inhibit the system that is not used at that specific moment. According to Bialystok (2007: 212) certain processes are necessary to control the two language systems, which include, attention, inhibition, monitoring and switching and these are all components of the executive function. The executive function of bilinguals might be differently developed from those of monolinguals.

Bialystok (2007: 212) puts forward three hypotheses regarding the executive control function in bilinguals. The first is that since the executive function is the last cognitive ability to develop, and bilinguals use this function more frequently than monolinguals, bilingual children may develop the cognitive ability earlier than monolinguals. The

second is that adult bilinguals may be more efficient in executive processing than their monolingual counterparts. Thirdly, since, the executive processing function is the first to decline due to cognitive ageing; older bilinguals may be more protected against this decline than monolinguals. In various studies Bialystok (2005, 2007a, 2007b, 2009) has shown that bilingual children outperform monolingual children in tasks that require them to ignore misleading information. This Bialystok (2007: 215) believes is not because bilingual children are more intelligent or knowledgeable than monolingual children, but instead because they "have an enhanced ability to control the use of their knowledge in performance, especially where competing or distracting information must be resisted." The source of this enhanced ability is believed to be the fact that they have to contend with two language systems, which are both consistently available, this advantage are extended to non-linguistic tasks as well. Investigation into the second hypothesis showed that there are few differences in processing in tasks used to measure executive control in mono- and bilingual adults, however, tasks which required extra controlled effort, show an advantage to bilinguals. Bilinguals also seem to use Broca's area more extensively for even non-linguistic conflict resolution tasks. It was also found that bilingualism seems to protect older bilinguals against the decline of executive functioning processes.

Ransdell, Barbier and Toomas (2006) investigate the effects that bi- and multilingualism might have on central executive functioning, specifically in long term- and working memory. They hypothesized that bi- and multilinguals might have a unique long term and working memory (WM) due to the fact that they have a lifetime of experience in activating and inhibiting language. Knowledge about activating and inhibiting language is built through experience and has been termed by some as metacognitive awareness. Ransdell et al. (2006: 728) believe that metacognitive awareness "includes knowledge about cognitive processes as well as self-control mechanisms while monitoring and regulating behaviour." Ransdell et al. (2006: 729) were specifically interested in the relations between reading comprehension span (RS)<sup>14</sup> and language experiences. They predicted that one possible domain where bilinguals might excel would be self-assessment of their own reading ability.

The study had an American, French and Estonian sample of bilingual tertiary students. The study compared meta-cognitive knowledge in the domain of self-assessment,

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<sup>14</sup> Reading comprehension span "measures the extent to which a participant can read increasingly larger sets of sentences while storing the final words of each sentence for later recall" (Ransdell et al. 2006: 730).

specifically in terms of speaking, listening, reading and writing in the two or more languages that each participant indicates are their current strongest languages. The prediction was that the bilinguals would be able to assess their skills more accurately. Ransdell et al. (2006: 730) chose specifically the relation among RS and language experiences, because they believe there is ample evidence that poor readers cannot as successfully suppress irrelevant information as good readers. They further believe that perhaps bilinguals who constantly have to actively suppress and inhibit language codes might have also developed a mechanism which allows them to be more efficient and that they are more accurate in predicting their own behaviour. The participants in the Ransdell et al. (2006) study had the task of completing a Language Experience Questionnaire (LEQ) task in English. This experience asked questions on past experiences with language (first languages learned etc), language choice and preference and self-assessment of language proficiency. They also completed the Nelson-Denny reading comprehension subtest, Form G, as well as a RS test in which they had to try and remember the last word in each sentence in a series of unrelated sentences read to them. The results showed that bilinguals were able to more accurately self-assess their reading skills. Ransdell et al. (2006: 737) believe that these results show that: "bilingual and multilingual students have better metalinguistic awareness of their language skills in reading and WM than do students who are monolingual, but who have comparable native language skills." They believe that the results of the study point to the fact that language experience may interact with self-assessments skills, but also identifies it as an area of further research.

#### **4.3.4 Creativity**

Bilinguals are also credited with being more creative than their monolingual counterparts (Ricciardelli 1992). Kharkhurin (2007: 181) uses Mumford et al.'s (1991) definition of creative thinking which is "an ability to initiate multiple cycles of divergent and convergent thinking, creating an active, attention-demanding process that allows generation of new, alternative solutions." According to Kharkhurin (2007: 175) there is a mismatch between experimental studies which show a bilingual advantage in creativity, while real-life observations do not confirm this finding. He believes that part of this mismatch can be attributed to the types of testing that is used. Tests of divergent thinking are often used as tests for creativity, however Kharkhurin (2007: 178) believes that this is

not a direct measure of creativity, and that divergent thinking contributes to the development of creativity. Kharkhurin (2007: 180) cites Guilford (1967) who believed that divergent thinking is a major component of creativity and attributed four characteristics to it, which include

fluency (the ability to rapidly produce a large number of ideas or solutions to a problem); flexibility (the capacity to consider a variety of approaches to a problem simultaneously); elaboration (the ability to think through the details of an idea and carry it out); and originality (the tendency to produce ideas differently from those of most other people).

However convergent thinking, the ability to narrow down possible options and ideas to one possible solution, is also considered a major component of creativity.

In an empirical study conducted by Kharkhurin (2007) it was found that the argument cannot be made that bilinguals are more creative than monolinguals: although they outperform monolinguals in fluency, flexibility, and elaboration in divergent thinking, they do not seem to be more original than monolinguals. Thus the influence that bilingualism might have on creativity is more indirect; certain cognitive processes might be used more efficiently by bilinguals, which might encourage more sophisticated cognitive functioning which might lead to creativity. However other factors might be more important in the development of creativity than bilingualism. Some of these factors might be the age at onset of L2 acquisition. Higher scores in divergent thinking are obtained by those who acquired the L2 at a younger age. Proficiency in both languages also seems to be a factor with those with high proficiency in both languages scoring higher in the elaboration part of divergent thinking.

Age of SLA and its influence on the development of creativity in bilinguals is one of the factors that were explored by Kharkhurin (2008), together with language proficiency, and length of exposure to a new cultural environment. His participants were all university students, monolingual English speakers and bilingual Russian/English speakers. The results of the study showed that bilinguals who acquired their L2 earlier in life outperformed bilinguals who acquired their L2 later in life on the measure of fluency and flexibility. According to Kharkhurin (2008: 237) earlier bilinguals have access to more conceptual representation due to their early exposure to an L2, and this may lead to increased fluency and flexibility. Highly proficient bilinguals outperformed those with

lower levels of proficiency in the measure of elaboration, while those with prolonged exposure to the new cultural setting outperformed the rest of the group in all of the measures that make up divergent thinking. Kharkhurin (2008: 236) attributed the impact of language proficiency to the fact that the lexical and the conceptual connections between the two languages that the bilingual knows are well developed and that the "language mediated concept activation" could be used more effectively, which led to increased elaboration. However, bilinguals were not found to outperform monolinguals in tests of originality which reiterates Kharkhurin's (2007) conclusion that divergent thinking is not the only aspect of creativity.

These and other more recent studies into the effect of bi- and multilingualism in metalinguistic awareness and other cognitive effects show that the situation for bilinguals is not straightforwardly positive or negative, but shows some gains and losses. It also seems to support and extend Cook's notion of 'multi-competence', i.e. that bilinguals might have a unique competence, different from that of monolinguals. This competence is however not only related to linguistic competence but also competence in various conceptual and cognitive domains.

#### **4.4 LEARNING IN TWO LANGUAGES**

Studies on the cognitive effects of bilingualism mostly concentrated on the effects of bilingualism on learning in general, as well as more specifically the relationship between language and academic learning. The relation between cognitive development, learning and bilingualism is investigated from different theoretical positions. The issue of language and learning and language and cognitive development is particularly contentious, because if it is found that bilingualism is detrimental to learning, bilingualism will be avoided by parents and bilingual education will be avoided by authorities.

According to Bialystok (2007b: 393) language is the "interface between our social and cognitive world" and plays a role as an important social tool in human interaction, determination of social position, and educational opportunities. As a cognitive tool it is the means by which concepts and meanings are gained, a system for problem solving, and creates an organisational basis for learning. She further believes that children growing up in a bilingual environment "will have different experiences than those who encounter

only one language and these differences may have a profound impact on children's social, cognitive, and linguistic development" (Bialystok 2007b: 393). Genesee (2008: 24) believes that through increased globalisation the need for bilingualism has increased, but that it is not only oral bilingualism that counts but biliteracy in order to fully take part in and take advantage of an increasingly multilingual world. Baker (2003: 95) raises the point that bilingual education can never be understood without contextualising it within the political situation of a nation and that it forms part of national and regional language policies. The focus of the next part of this chapter is on academic learning through two languages, or through an L2 or FL.

#### **4.4.1 Learning in formal educational context through an L2**

Research on bilingual education and education through an L2 has largely been limited to research on children in primary and secondary education. The research has also been largely conducted in immigrant contexts (e.g. Spanish children in the USA). Outside of these contexts, research on bilingual education has been dominated by Canadian research on immersion education.

Bialystok (2001: 153) believes that how and the rate at which bilingual children acquire literacy will depend on social, educational and political factors at the time that literacy is introduced. It might entail children being exposed to both languages in school through some kind of bilingual education. Genesee (2004: 548) defines bilingual education as: "education that aims to promote bilingual (or multilingual) competence by using both (or all languages) as a media of instruction for significant portions of the academic curriculum." The criterion for defining significant portions of the academic curriculum is at least 50% of the prescribed non-language related curriculum of studies for one or more years. Genesee (2004: 548) also sees the integration of content and language as the "hallmark of bilingual education." Various forms of bilingual education exist.

Corson (1993: 74) identifies forms of bilingual education which range from transitional bilingual education to forms of maintenance bilingual education. The goal of transitional forms of bilingual education is to allow the minority language speaker to get access to the mainstream majority language as soon as possible; the minority language is just used until the individual is seen as having enough proficiency in the majority language. Forms of maintenance bilingual education include those types which use the minority language

as medium of instruction for the early years of schooling to ensure that the language does not become extinct and those that encourage bilingual education through schooling for both groups (majority and minority), and extent support beyond the school system (Corson 1993: 75). Baker (2003: 97) distinguishes between 'weak' and 'strong' forms of bilingual education. Weak forms of bilingual education have assimilation into the majority language and culture as their main aim and include "submersion, structured immersion, withdrawal classes, various forms of sheltered English, transitional bilingual education, and mainstreaming with foreign language teaching." On the other hand, strong forms of bilingual education have bilingualism, cultural pluralism and biliteracy as their main aims (Baker 2003: 97). Strong forms of bilingual education include, "US dual language schools, heritage language programs, Canadian immersion, and the European Schools movement" (Baker 2003: 97). Although Baker (2003: 96) sees bilingual education as an important way of ensuring language maintenance, language revitalization and a means to reversing language shift, bilingual education in itself is not enough to ensure the survival of a language. Cummins (1981: 17–21) reviews seven bilingual programs which proved successful in terms of the language proficiency students developed in both languages, and the academic achievement of these students. These include the *Rock Point Navajo Study*, *Legaretta Study*, *Nestor School Bilingual Program Evaluation*, *Santa Fe Bilingual Program*, *Sodertalje Program for Finnish Immigrant Children in Sweden*, *Manitoba Francophone Study* and the *Edmonton-Ukrainian- English Bilingual Program*. According to Cummins (1981: 21) a review of these programs indicates that "minority children's L1 proficiency can be promoted in school at no cost to the development of proficiency in the majority language", and that there are research which suggests that successful bilingual education can lead to academic and intellectual advantages over monolingual children.

A particular form of bilingual education which has proved successful in some contexts such as Canada is immersion education. The landmark study in immersion education is the St-Lambert Quebec French immersion project in Canada (Williams Fortune & Tedick 2008: 4). In this program, all subject matter was taught in French to children who had English as L1. From grade 3 English was introduced as a language of instruction for some subject matter, until eventually English was used for 50% of the curriculum around grade 5 or 6 (Williams Fortune & Tedick 2008: 4–5). According to Genesee (2004: 551) research on immersion education in diverse settings has shown that students who have as

an L1 a language of dominance in a society acquire at a significant level more advanced levels of functional proficiency in the L2 than students who receive conventional instruction in the L2. Their L1 skills are also comparable to those students of who only received instruction in their L1. Students in immersion education contexts tend to be students who are the speakers of majority languages, and although they might be exclusively taught in the in the L2, they usually are exposed to literacy at home in the L1 (Bialystok 2001: 153). Central to immersion education is the theory of additive bilingualism, which Genesee (2008: 29) describes as "the belief that acquisition of a second language does not interfere with or retard development of the native language." The situation is usually not as favourable for bilinguals who have a minority language as L1. According to Bialystok (2001: 153) the social and cultural pressures which shape the literacy and educational experiences for bilingual children speaking a minority language as L1, usually lead to a more intense and less favourable educational experience for these children. Cummins (1981: 21) believes that the differences in being taught through an L2 for minority and majority language speakers can be ascribed to factors such as security of children's self-concept and identity, prestige of the L1 and level of support for L1 in home and environment. The important distinction for Cummins (1981: 21) is that the goal of immersion education for majority speakers is bilingualism, while for many programs in minority language situations the goal of education through the L2 is L2 proficiency and not bilingualism. Thus bilingual programs for minority language children can be effective if the goal is to promote proficiency in both languages.

Saville-Troike (1984: 199) specifically investigates the factors which might influence academic achievement for learners learning through an L2, using learners who were matched for English proficiency and socioeconomic status, and who received education and testing through English. According to Baker (2003: 101) bilingual education is just one of the factors that influence a child's academic achievement at school. Saville-Troike (1985: 199) considers the following factors: "relative productive competence in English morphology, syntax, and vocabulary, verbosity, patterns of social interaction, first language performance and personality factors." Her findings showed that accuracy in English morphology and syntax in oral language did not seem to make a big difference in academic achievement. However the number of vocabulary items used by each child seemed to be correlated to reading achievement. The overall time spent using English in interaction did not seem to correlate with academic achievement to any significant

degree, however, the children's native languages did seem to influence it in a significant way. For example it was found that children with high reading proficiency in their native languages, generally also had high reading proficiency in English.

Saville-Troike (1984: 216) concluded her study by pointing out that the children who participated in the study came from different backgrounds; thus factors which could be generalised were minimal. Vocabulary knowledge in English did seem important for academic achievement when learning through English. The children who achieved the best marks in the content subjects that were taught through English "were those who had the opportunity to discuss the concepts they were learning in their native language with other children or adults." Further she also concluded that there is a clear difference between the skills and communicative needs needed to be successful in social communication and those needed to be successful for academic achievement in the classroom. Collier (1995) also tried to identify components which are essential for academic achievement in students who are educated through bilingual education. Her definition of bilingual education included both minority language students who speak a language other than the language of schooling at home and majority language students who are taught content subjects in the bilingual classroom. She proposed four major components which are interrelated; these include sociocultural processes, language development, academic development and cognitive development.

Thomas and Collier (2002: 1–5) report on a comprehensive study which investigated the long term academic achievement of English language learners, who spoke a wide variety of first languages (80), from 1996-2001 in five school districts in the USA. Students from mainstream English programmes, whose parents refused bilingual programmes, fared the worst and also showed the highest dropout rate. It was found that students need at least 5-6 years instruction in their L1, which may be part of a bilingual programme in order to catch up with majority language speakers' performance in terms of academic achievement. L1 speakers of English who were in two-way bilingual immersion programmes<sup>15</sup> maintained English, acquired an L2 and outperformed their comparison group who were being schooled monolingually on all tested measures. Thomas and

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<sup>15</sup> Lindholm-Leary and Howard (2008: 177) describe the structure and goals of two-way immersion programs in the US as to "integrate English Language Learners (ELLs) from a common native language background and native English-speaking (NES) students for academic instruction through both languages, with the goals of academic achievement, bilingualism and biliteracy development and cross-cultural competence for all students."

Collier (2001: 7) also found that the strongest predictor of L2 achievement was years of schooling in the L1. The more formal schooling in the L1, the higher the L2 achievement. Baker (2003: 99) reports on various advantages of bilingual education, which includes a chance for both languages to fully develop, insight into different cultures, biliteracy, increased academic achievement in well-implemented bilingual programs, general cognitive benefits, increased self-esteem for minority language speakers, establishing identity at a local regional and national level, and various economic advantages. Baker (2003: 101) also refers to various limitations of bilingual education. According to Baker (2003: 101) bilingual education is not a guarantee for effective schooling, since language is just one factor that influences the success of schooling. By learning an L2 at school, learners acquire a formal register which does not necessarily prepares them for social interactions outside school. Finally Baker (2003: 101) also raises concerns that especially in minority language situations, the minority language might become a language only of school.

Carstens (2006: 4) who writes from a South African perspective, and specifically in view of the South African language policy, believes that education is the link between higher and lower functions of language. However in the current South African environment access to education is deemed as more important than L1 instruction (Carstens 2006: 4). Banda (2010: 221) also writing from a South African perspective, provides insights into how bilinguals in South Africa defy and challenge monolingual instructional practices. These practices challenge western models of bilingual education and notions such as additive and subtractive bilingualism. In Banda's research into coloured<sup>16</sup> schools in the Western Cape, he found that teachers in most cases used the students' multilingual repertoires to enhance their teaching and learning, sometimes outside of the set models prescribed by the school. In fact Banda argues (2007: 232) that the schools use "multiple monolingualism" models and will be better served by drawing on the multilingual resources those students bring to the classroom.

In a similar vein, Cummins (2010: 221) argues for a reconceptualization of bilingual education, with an increased use of multilingual instead of monolingual instructional

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<sup>16</sup> The term "coloured" is controversial and contested. It is an apartheid classification of people with mixed descent, made up of European settlers, the indigenous Khoi & San groups, Nguni groups and slaves imported from India, Madagascar, Mauritius and Saint Helena (amongst others). The debate around the classification will not be entered into in this dissertation. For a more detailed account on the construction of "coloured" in South Africa see Adhikari (2005) and Goldin (1987).

strategies. Building on cognitive and psycholinguistic theories of bilingualism such as Cooks' (1999) notion of multi-competence (see Chapter 3), Cummins believes that there is little support for the idea that the L2 is best acquired when the L1 is not used or drawn on in the classroom. Cross-lingual transfer occurs as a matter of natural interaction of languages. Cummins (2010: 231) believes that this natural interaction can be used and that teachers can teach for transfer, thus in his conclusion Cummins remarks that "... when students' L1 is invoked as a cognitive and linguistic resource through bilingual instructional strategies, it can function as a stepping stone to scaffold more accomplished performance in the L2." According to Cummins (2009: 267) five types of transfer is possible through bilingual education. These include transfer of conceptual knowledge, meta-cognitive and metalinguistic strategies, pragmatic aspects of language use, transfer of specific linguistic systems and transfer of phonological awareness.

#### **4.4.2 Learning in bilingual higher education context**

Academic learning at higher education institutions, in multilingual contexts; have received limited attention in scholarly work. The focus of research on academic learning was directed toward the development of academic literacy and English as a foreign language (EFL), especially in immigrant settings where students need to become proficient in the dominant language in order to succeed at university. Scholars from multilingual contexts have recently started to point out the necessity of investigating multilingual learning in such contexts. The renewed attention that studies in linguistic diversity, both in the neo-Whorfian paradigm and the Vygotskian paradigm has received have also found its way into studies of multilingualism at institutions of higher education. Much of the attention in bilingual higher education is directed towards the spread of English in higher education. By some English is seen as a killer language, replacing smaller regional academic languages, by others English is seen as advancing science in academia by facilitating exchange of ideas across national borders (Coleman 2006: 4).

According to Purser (2000: 451) a bilingual university is a product of not only the linguistic context in which it exists, but also the political and social conditions of the time during which the institution was founded. Some universities such as Abo Akademi in Finland and the University of Ottawa in Canada have been in existence for more than a century in the bilingual communities they serve. Other bilingual universities such as Free University of Bozen in Italy and the European University Viadrina are newer institutions

(Purser 2000:452). In European and Canadian contexts, the establishment of bilingual universities was either to accommodate minorities, or to include English in its teaching offerings in countries where it is not a majority language (Anckar 2000; Beillard 2000; Maldonado 2000). In South Africa, higher education institutions which formerly catered for white Afrikaans speaking students in particular, have the need to transform themselves to bring in a more diverse and multilingual student population. This need for transformation is in conflict with Afrikaans only language policies. (Van der Walt 2004). The debates on issues of transformation and inclusion, language rights etc., have turned the attention of researchers to multilingualism in higher education, and in particular the role that language plays in academic success. Van der Walt (2004: 141) points out the tension in the development of inclusive language policies at higher education, by showing that the challenge in South Africa is that a multilingual environment should be created where all languages are treated as potential academic and scientific languages while making sure that the current LoTLs do not become a tool of exclusion or hamper the academic achievement of students.

In South Africa, higher education has become more accessible to larger numbers of students who have an African language as L1, but who for the most part of their schooling would have been exposed to English as LoTL. These students are thus not very literate in their L1 (Banda 2007: 3). This brings a new set of issues into the higher education debate, for example what the role of African languages should be in higher education in South Africa, especially taking into consideration that African students entering university have received very little of their prior education in their home languages. Alexander (2003) for example argues that by using African languages in higher education a true African Renaissance can be achieved. Leibowitz (2005: 664) reports on a research project conducted at the University of the Western Cape in South Africa and believes that success at university writing is often more dependent on students' abilities to compose coherent texts, than their fluency in a particular language. Banda's (2007: 14) investigation into the mediating role that study groups fulfil reiterates Leibowitz' findings, that translating or "Xhosalising" texts does not necessarily promote better understanding, but that what is needed is "translation of cognitive concepts and structures from ESL to cognitive concepts and structures in Xhosa and vice versa."

Canagarajah (2002: 34) believes that a more relativist view of academic discourse allows

teachers of writing or academic literacy in multilingual settings to view different conventions as legitimate and not necessarily one better than the other. However this orientation of contrastive rhetoric should not be viewed through a deterministic lens of the student not being able to move past the conventions of their own languages as this assumes that "human agency cannot transcend cultural biases." Further he argues that traces of L1 conventions in L2 academic discourse are not always a case of interference, rather it can be a case of negotiation between the two types of conventions. Different language groups are also in contact with each other in multilingual communities and these groups "modify, reconstitute, and borrow from other communities" (Canagarajah 2002: 35).

A number of studies have also investigated the effect of the use of the L2 in higher education on academic achievement in the South African context. Studies conducted by Webb (2002) and Gerber, Engelbrecht, Harding and Rogan (2005), concluded that instruction through the L2 at higher education institutions in South Africa can lead to harmful effects on academic achievement. Investigating student performances at the University of Pretoria Webb (2002: 50) puts forward that as the number of students receiving education in their L2 increased, overall academic achievement decreased. Webb (2002: 51) admits that there are many other factors that can influence academic achievement, although he believes that language might be an important factor and will need to be actively investigated (see a fuller discussion of Webb's study in Chapter 7).

Gerber et al. (2005) also point to the negative effects of learning mathematics through the L2 on academic achievement. Although Gerber et al. (2005) are cautious in drawing conclusions; they do find a statistically significant difference between Afrikaans students who received instruction through their L1 and those who received instruction through their L2, in favour of the L1 group.

Bilingual education and bilingualism in general not only has consequences on the linguistic or cognitive level. Bilingualism also affects the lived experiences of individuals. An area of research that brings out the "bilingual voice" (Pavlenko 2005) is the use of autobiographical data or narrative accounts of bilinguals on being bilingual. This approach is also partly utilised in this dissertation, in order to establish how participants view their own language abilities, considering varying degrees of exposure to English as LoTL.

## **4.5 NARRATIVE PERSPECTIVES ON CROSS-LINGUISTIC EFFECTS OF BILINGUALISM**

### **4.5.1 Autobiographical studies**

A recent phenomenon has been to include the "bilingual voice" in studies on bilingualism (Pavlenko 2005). Studies have mostly been done on bilinguals by monolinguals and have in a sense subjected bilinguals without any insights from bilinguals themselves and how they experience bilingualism. A particular interesting way of going about studies of self-conception and self-positioning has been to use language memoirs and autobiographies written by bilingual writers (Besmeres 2004; Pavlenko 2002; Kramsch 2005). Other techniques have been to elicit narratives by using pictures or videos, to treat questionnaires (with open ended questions) and interviews as narratives rather than quantitative methods of data collection or to use diaries and language journals, and classroom assignments in similar vein (Pavlenko 2007: 165).

According to Pavlenko (2002) narrative studies have become a legitimate source of data in studies on language acquisition and language learning. It is also acknowledged that this type of data can provide a complementary account when used with traditional more empirical data. Not only does this type of data allow voices of learners and teachers into research, it can also provide detail about language ideologies that might shape the acquisition or use of a particular language. Pavlenko (2007: 164) identifies three major contributions that autobiographical or narrative studies add to the fields of bilingualism and SLA. She believes that it gives insights into peoples' private worlds, which cannot always be accessed by experimental means of research, it also highlights connections between learning processes and phenomena which might not have been investigated before, and it provides historic and diachronic sociolinguistic information especially in contexts where other sources are scarce. Pavlenko (2002: 214) emphasizes the co-constructed nature of narratives, as well as the shaping role of society, culture and historical conventions. Kramsch (2005) argues that the so called "language memoir" has to be seen not as true reports of how people learn to use and adapt language, but "as the truthful experiences of multilingual subjects attempting to express in their adopted language or, in a mix of languages, things they could not say in their native language alone." According to Kramsch (2005), SLA theory mainly focused on two kinds of knowledge: "knowing that (facts about the language) and knowing how to (language

performance)". What narrative studies or language memoirs add is "remembering how (past experiences and emotions) and imaging what if (future scenarios for action)."

#### **4.5.2 Insight into the effects of bilingualism on sense of 'self'**

Pavlenko and Lantolf (2000: 163) analyse language memoirs of authors who try to become native speakers of their L2. In their analysis they find that the narratives of the bilingual writers provide a space where identities are reconstructed and life stories are told by having the detachment and security that writing and using an L2 offers. They are specifically interested in the writers' construction of 'self', and believe that a 'self' is not the same as a 'person.' They use Harre's (1987: 110) definition of self and person which states that a person is "the publicly recognized human individual who is the focus of overt practices of social life"; a self on the other hand refers to "the still centre of experience to which various states, including organizations of memory, perception, and agency are attributed." Harre and Gillett (1994: 104) cited by Pavlenko and Lantolf (2000: 163) identify four central tenets of the self, which are "a location in space or a point of view; a location in time, or a trajectory or path through time; a location of responsibility, or agency; and a social location in a manifold of persons, ordered by status, age, reputation, and the like."

Further, Pavlenko and Lantolf (2000: 163) believe, that a self is a dynamic and coherent system. This system is continuously constructed and is formed as individuals participate in the everyday practices of their culture, which are mostly verbal. In their research they try and investigate the effects on a self when an individual moves from participation in the discursive practices of one culture, to those of another culture. This is particularly important for the current research, as this dissertation is also interested in the effects on a self when an individual moves from participation in the discursive practices, in the specific domain of academics, of one language increasingly to that of another language. Pavlenko and Lantolf (2000: 163) specifically look at agency and time. In their analysis of Hoffman's *Lost in Translation* they point to the importance of the use of first and second person pronouns, which indexes "the content or social force of an utterance", with "the spatial, temporal, moral, and social manifolds of a self." This use of the indexical pronouns allows the individual to experience the world from a unique spatial and temporal position. Individuals also construct themselves as an agent of actions which can contribute to (re)formation of the world and of other agents which inhabit the world. An

important point related to language learning that Pavlenko and Lantolf (2000: 169-170) make is that agency is a determinant of ultimate attainment in a second language. Thus they argue, "those who do not become members of another culture, never set out to translate themselves in the first place, never intended to fit into the new social networks, to negotiate new subjectivities of gender, adulthood, parenthood, etc. of the host culture." The proposal from Pavlenko and Lantolf (2000: 170) is that ultimate attainment, or native-like ability is to some extent a choice, and that agency and intentionality should take centre stage. Some individuals might not choose to fully become part of a new culture or language. Their agency and positioning is constrained by various factors such as power relations involved.

Following a somewhat different form of collecting data, but still analysing it within the narrative tradition Burck (2005) explores the experiences, use of language, and the perceived effect of it of bi/multilingual individuals living in Britain, by conducting interviews with 26 individuals. She links the individual to family life and the wider social context. This approach is used because she views identity and self not as individual and private but as embedded in power and social relations. She also believes that current literature on narratives indicates that "children and adults positioned in several languages construct different narratives of self in different linguistic contexts, related to differences of structure, conceptualizations of self, indexing, styles of presentation and available canonical narratives" (p.25).

Wortham (2000: 167) believes that autobiographical narratives do more than represent the self; they also position the narrators in relation to their audiences. The narrator's self-perception is influenced and is dependent on the audience. Wortham (2000: 177) identifies certain cues which narrators use to position themselves and other participants in a narrative in a particular way. These cues include:

- 1) choosing how to denote characters in the narrative,
- 2) choosing "metapragmatic verbs to describe the past event of speaking",
- 3) attributing "quoted speech to their characters",
- 4) using evaluative indexicals, which presuppose something about characters' social positions and position the narrator with respect to those positions" and,

5) taking "advantage of epistemic modalization to characterize the relative epistemic status of themselves with respect to their characters".

The effects of bilingualism on self-perception have been investigated extensively in emotion research. Wierzbicka (2004: 94) believes that research into bilingualism and emotions offers new insights on "wider issues of the relationship between languages, culture, and self." She however cautions against viewing bilingual testimonies as their experience of talking two languages, instead it should be viewed as their experience of "living with other people through two different languages." Besmeres (2004: 157) believes that

The experience of migrating into a new language often prompts the recognition that feelings that were previously felt to be purely personal are at least partly dependent on cultural forms. At the same time it may confront the bilingual with a struggle to choose between different ways of feeling and differing cultural norms of expression, and hence with the possibility of going beyond a particular emotional world.

Studies in the narrative tradition, which uses bilinguals' own perceptions and constructions of self offers insights which might not have been available with experimental studies only. This approach is subsequently also used in this dissertation with interview data not regarded as facts, but as constructions of how participants view their own experiences with language in the academic context.

## **4.6 SUMMARY**

This chapter aimed to discuss the conceptual and cognitive effects of bilingualism. Firstly traditional psycholinguistic quantitative studies were discussed both in experimental settings and within the context of bilingual education. Although there is still disagreement over whether a conceptual level of representation can be distinguished from a semantic level, conceptual transfer is acknowledged as a legitimate field of study. Evidence is also found that the introduction of concepts in an additional language can alter the conceptual system of the bilingual. Further, cognitive effects on bilinguals are found to be more complex than just positive or negative. However evidence is mounting that bilingualism and bilingual education (if implemented with bilingualism in mind) is not detrimental to the cognitive development of bilingual children or adults.

The last part of the chapter explored the effects of bilingualism from a different angle. It focussed on what bilinguals themselves can contribute to the field of study by using autobiographical means of data collection. This means of data collection opens up different forms of analysis, such as thematic and discourse analysis. It provides insight into how bilinguals experience living with two languages, what they think the effect is on their linguistic abilities and their sense of self. It also provides information on how outside voices and ideologies contribute to the way that bilinguals view themselves.

In chapter 5 the methodologies used in the study in order to investigate the effects of bilingualism on conceptual fluency, academic achievement and sense of self will be discussed.

## CHAPTER 5

# RESEARCH DESIGN AND METHODOLOGY

### 5.1 INTRODUCTION

In this chapter, first the general research design of the study will be explained. Second, I shall explain specific aspects, such as, the research site, the participants, the kinds of data used, and the research instruments. The study used the following data collection instruments: the Toets vir Akademiese Geletterheidsvlakke/ Test of Academic Literacy Levels (TAG/TALL) which are regarded as reliable, valid and standardised language skills tests, together with individual tasks that make up an academic literacy module for which all the participants selected for this study were enrolled. A set of semi-structured interviews conducted with a selection of the participants were also used in the study. Information about the participants (race, gender, average academic performance) accessed from university records provided valuable biographical information. The TAG/TALL construct will be discussed in detail to clarify which areas of conceptual fluency this instrument measures. The procedure that was used to collect the data as well as the rationale behind choosing the specific instruments and methods of analysis will be explained.

One specific question that this chapter will address will be one on cross linguistic influence (CLI) that Jarvis and Pavlenko (2008: 27) articulated as: "How can the specific effect of cross linguistic influence be *isolated, identified and measured?*" This question already indicates the difficulty not only of isolating and identifying CLI but also of quantifying the influence of one language on another. Thus, this chapter will explain how, for the purposes of this study, the effect of CLI, specifically on "conceptual fluency" was isolated, identified and measured.

### 5.2 GENERAL DESIGN OF THE STUDY

The research is interested in the influence of the L2 on the L1 in the development of conceptual fluency in bilinguals. More specifically it investigates how the introduction of

English as LoTL at university, influences conceptual fluency in the L1 (Afrikaans) of speakers who did not have English as LoTL before entry to university. The specific aspect of conceptual fluency that we are interested in is that which is needed in a formal learning environment in higher education. The focus will be on the skills required to successfully engage in formal academic discourse. I believe this instance of conceptual fluency can be investigated by looking at specific aspects of academic literacy. The aforementioned academic literacy tests and a related academic literacy development course are seen as representative of these aspects. Both the tests and the course are designed along principals that test language skills and knowledge similar to what is termed by Kecskes and Papp (2000, 2003) "conceptual fluency". This chapter will give an explanation as to why it is believed that the TAG/TALL, and subsequently the academic literacy course are suited to the purposes of testing conceptual fluency in the context of higher education.

The research also attempts to investigate the effect of increased exposure to the L2 on academic achievement at university. This is a pertinent issue in view of debates about language policy, and research on bilingual education and the cognitive effects it holds for individuals. Further, the research investigates how students' perceptions of their own language abilities and proficiency are influenced by the introduction of an L2 as LoTL. In order to investigate the influence of the L2 on the L1, the research employs both a more traditional method used in psycholinguistics (standardised language tests, measures of academic achievement) and methods used more in discourse analysis and narrative studies. According to Jarvis and Pavlenko (2008: 28) the methodology one should employ for an investigation into CLI depends on the scope of the investigation, although the same types of evidence are required for different types of studies. They distinguish between CLI as an individual psycholinguistic phenomenon and, and CLI as a societal phenomenon. Whereas this research focuses on identifying CLI from the individual, psycholinguistic perspective and not from a societal perspective, it has to be pointed out that it is difficult to completely isolate the two. Jarvis and Pavlenko (2008: 29) believe that a psycholinguistic perspective can be seen as "an endeavour that involves probing the *internal languages*, or mental grammars, of individual language users. The goal of this area is to determine the mental processes underlying CLI, as well as the internal (cognitive, conceptual, and affective) and contextual (linguistic, social and environmental) factors that both trigger and constrain these processes." The study is

designed to meet the specific needs of a psycholinguistic interest. More specific information about the participants and the types of methods used will be given in the sections that follow.

### **5.2.1 Approaches followed in research design**

This study will take both an intrasubjective and intersubjective approach. It largely follows the thinking of Jarvis and Pavlenko (2008: 32–33) in deciding on the theoretical distinctions that need to be considered. Intrasubjective approaches focus intensively on individuals by focusing on the patterns of CLI found in the language use (production or comprehension) of individuals. These usually take the shape of case studies which might also be longitudinal in design. Longitudinal studies here are defined as ones that track patterns of transfer in specific language users over time as their knowledge of their languages changes. This research, although not a longitudinal study is designed according to longitudinal principles, as conceptual fluency was assessed before the introduction of an L2 as LoTL and again after the introduction of the L2 as LoTL. The main advantage of this type of approach is seen to be the delivery of a significant level of interpretational validity, at least where the findings of such intrasubjective research are grounded in a careful and thorough examination of CLI in a person's language use in a clearly specified context. The primary disadvantage is seen to be that it disallows generalization of findings derived from a case study of a single language user, or even from a collection of case studies of a small group of individuals. A fundamental goal of intrasubjective studies is to uncover specifics about how CLI manifests itself in the language and cognition of individuals, instead of focussing on a larger group where insight into individual variation in CLI might be more difficult to obtain. Intrasubjective studies are found to deliver a rich presentation of data which includes descriptions of the language users who produced the data, their activities and states of mind prior to and during the data collection, and the linguistic and situational environment in which the data were collected.

In this dissertation methods of intrasubjective studies were employed and these will be elaborated on in section 5.4 below, the section dealing with the participants. Biographical information about the participants and a description of the environment in which the data were collected is given. Interviews conducted with a selection of the participants are analysed and interpreted. Typically intrasubjective studies of a psycholinguistic nature

employ inferential statistical tests to analyse the data. The current study follows this approach.

To limit the disadvantages of intrasubjective methods identified by Jarvis and Pavlenko (2008), intersubjective methods can be used additionally. Intersubjective approaches focus on patterns of language use observed in relatively large, well-defined groups of language users. These kinds of studies are usually regarded as cross-sectional studies which hold the advantage of being more generalizable. Cross-sectional studies are defined as ones in which performance data are collected from individual language users "at a single point in time, with no attempt made to track how CLI might change in relation to changes in the individuals' knowledge of their languages" (Jarvis & Pavlenko 2008: 32). A disadvantage, however, is the potential lack of attention to the unique characteristics of individual participants and the environments in which the data were collected. To minimise this disadvantage, researchers are encouraged to supplement their quantitative studies with qualitative studies.

This study follows the abovementioned suggestions, using intrasubjective as well as intersubjective methods of analysis. On the one hand there are more participants than a typical intrasubjective study would have; on the other hand the data is not collected at a single point in time, which is atypical in intersubjective studies. The data is collected at various points across one year. Data collected from the bigger sample was analysed by using descriptive and inferential statistics. The interview data obtained from a smaller sample was analysed by using thematic analysis initially.

### **5.3 RESEARCH SITE**

The research is conducted in a multilingual context in the Western Cape, which as a province has three official languages, namely Afrikaans, English and Xhosa<sup>17</sup>. Other South African languages such as languages in the Sotho family, Venda as well as a variety of European and other African languages representative of immigrants, refugees or visitors, are also prevalent in this province. In the Western Cape, Afrikaans (at 55%) is the majority language, representative largely of speakers ethnically identified as white and "coloured".

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<sup>17</sup> In Xhosa the language is referred to as IsiXhosa, with the noun class marker *isi* being used as a prefix. For this dissertation the language will be referred to as Xhosa, as more commonly referred to in English.

### **5.3.1 The University as site of bilingual education**

English has internationally been developing into the lingua franca of higher education in that publication of scholarly work is largely done in English (Coleman 2006). Therefore, in contexts which do not have English as a majority language, proficiency in English academic discourse is becoming increasingly important. It is no longer possible to define higher education in such contexts in any other terms than as a form of bilingual education. The most effective form of bilingual education is defined by Genesee (2004: 548) as: "education that aims to promote bilingual (or multilingual) competence by using both (or all languages) as a media of instruction for significant portions of the academic curriculum." Different forms of bilingual education exist, which results in different outcomes in terms of academic progress of students. This ranges from transitional forms of bilingual education where the L1 in a minority language situation, is just used until the L2 (majority language) is established and replaces the minority language, to maintenance bilingual education where the goal is to use both languages and to maintain the L1 (Corson 1993: 81). A large body of research exists around bilingual education specifically for bilingual children at primary school or secondary level (see Collier 1995; Corson 1993, as well as section 4.4 in Chapter 4 for a more comprehensive overview). A body of work is also steadily developing on bilingual universities and the use of English as L2, and as LoTL at tertiary level, although comparatively very little research about bilingual higher education exists compared to primary and secondary education (Langer & Imbach 2000; Purser 2000; Coleman 2006; Paxton 2009).

The specific site of higher education where the research was conducted, Stellenbosch University (SU), is the oldest Afrikaans university in the country, which, as academic home to the first seven leaders of state after unification in 1910 is often associated with Afrikaner nationalism. Until recently, due to the same apartheid legacy as the four other historically Afrikaans universities, student enrolment was overwhelmingly white, and thus under-representative of the ethnic diversity of the country. Enrolment of students with other languages than Afrikaans as L1 has significantly increased over the past 15 to 20 years. However, this has only limitedly changed the diversity profile of enrolment. Also, according to policy, academic staff appointments are made with a view to the scholarly excellence of candidates so that increasing numbers of the lecturing staff are L1 speakers of languages other than Afrikaans. This, together with a preference to publish

academic work in English, has led to this historically Afrikaans university increasingly moving towards bilingual language policies.

### **5.3.2 SU Language policy in the distribution of languages of learning**

Considering impressions that countrywide the continued use of Afrikaans in public spaces is steadily diminishing, the past 10 years has seen the development at SU of much controversy<sup>18</sup> around how Afrikaans is to be maintained as the medium of education at this institution. From time to time the debate on the SU language policy flares up, seeking to resolve questions as to maintenance of Afrikaans as the only language of teaching (at least at undergraduate level), or of introducing more English as medium of education. Introduction of English is not only a pragmatic consideration related to the L1s of students and teachers; many also see this as a means of including a larger and more representative part of the country's population. Currently, most of the staff members and students at SU have Afrikaans as L1, but if it wishes to attract students from diverse racial and social demographics, bilingual options need to be considered. Brink (2006: 81) states that there are both soft recommendations that "Stellenbosch should have and exercise a commitment to Afrikaans" and harder demands that "Stellenbosch should have the non-negotiable and sharply-delineated identity of an Afrikaans university." Arguments for and against the sustained use of Afrikaans as LoTL at SU abound.

#### **5.3.2.1 Current language policy of SU**

The language policy starts by saying that "The University is committed to the use and sustained development of Afrikaans as an academic language and accepts the responsibility to promote it" (<http://www.sun.ac.za/university/Taal/dokumente/LangPolFinal2002.pdf>).

Afrikaans is the default LoTL at undergraduate level, with English being used to a greater extent at the postgraduate level. Steps are also being taken to promote Xhosa as an emerging academic language. Although Afrikaans is regarded as the default language of instruction on the undergraduate level, various options for medium of instruction are offered through the policy for different circumstances. The language abilities of the lecturer, the composition of the student groups in different modules and the nature of a

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<sup>18</sup> For more on the language policy debate see Hugo (1998), Mabokela (2001), Giliomee (2004) and Du Plessis (2006).

particular programme are all taken into consideration. The options include A (Afrikaans only), E (English only), T ("tweetalig" – bilingual in that English and Afrikaans are to be used, again in different possible ways in the same classroom), and the A/E option (parallel streams in Afrikaans and English.)

The A-option (as stated above) is the default option. Students receiving education through this option, will have lectures in Afrikaans, study material may be in Afrikaans and/or English, while the study framework may be given in Afrikaans and English to accommodate students with limited Afrikaans proficiency. The T-option (sometimes referred to as T-specification) allows for the use of both Afrikaans and English in teaching. Students receiving education through the T option will have lectures in Afrikaans for no less than 50% of the time. Textbooks and reading material are in Afrikaans and/or English, while study notes, transparencies and electronic learning and teaching material are fully in Afrikaans and English or alternately in Afrikaans and English. This option is used if either the students or lecturers' language competence requires greater use of English, if the programme is unique to the university so that inclusion of non-Afrikaans L1 students is inevitable, or if multilingualism is seen as important in the context of a certain degree. The E option (E specification) is seen as highly exceptional, and is used in cases where the programme is unique in South Africa, where the students do not have the necessary language skills in Afrikaans, where the lecturer does not have a sufficient level of Afrikaans proficiency, and where regional co-operation and strategic aims necessitate the use of English. When this specification is followed, lecturing is primarily in English, textbooks and reading matter may be in Afrikaans and/or English, notes are in English (where required core notes may be provided in Afrikaans), with teaching aid, electronic learning and teaching material in English. The parallel medium is a model used more systematically at other historically Afrikaans universities (e.g. University of Free State and University of Pretoria), and is currently strongly advised for SU as well ([http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid\\_e.pdf](http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid_e.pdf)). The newest revisions to the policy recommend that the A/E specification be accepted as "a viable option, which where it is academically attainable and accountable, and affordable, be encouraged. The A&E language specification can, like the A specification, be utilised without motivation" ([http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid\\_e.pdf](http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid_e.pdf)).

Faculty yearbooks do provide information about which language specifications are used for each module. This language policy was implemented in 2003, and was consistently monitored by a Language Task Team with a view to best teaching and learning outcomes. In November 2007, the language task team's work was regarded as completed and although the current language policy was retained, certain recommendations which include the more comprehensive use of the A/E option were made. ([http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid\\_e.pdf](http://www.sun.ac.za/university/Taal/Hersiening/docs/HersieningTaalbeleid_e.pdf)).

### ***5.3.2.2 Language plan of SU in a teaching and learning context***

Measures are also in place in order to more effectively implement the language policy, in the form of a language plan. The language plan points out possible complicating factors in the language policy. Particularly relevant to this current study, is the awareness that students who do modules in the A or T option require academic language proficiency in both Afrikaans and English (<http://www.sun.ac.za/university/Taal/Hersiening/docs/TaalplenEng.pdf>).

In order to investigate the effects of the language policy, various studies have been conducted (Leibowitz 2006; Schlemmer 2008). Leibowitz (2006) conducted a survey, by means of web-based and paper-based questionnaires, on the experience of the implementation of the Policy and Plan. It specifically asked lecturers, administrative personnel and students about their experiences with implementation of the policy. The findings indicated that the language policy at SU is a largely emotive issue, and that the majority of the administrative staff and students want the university to maintain its tradition of using Afrikaans as medium of internal communication and of learning. Black students, with low proficiency in Afrikaans, did display feelings of exclusion and alienation. In the survey, a recommendation to more actively utilise the T-option for these students was made. Students, however, showed some negative attitudes toward this option. They complained about repetition (content repeated in Afrikaans and English), however overall the surveys conducted in 2006 (Leibowitz) and 2008 (Schlemmer) both show a general acceptance of the language policy, including the T-option. Lecturers however, were concerned about the workload that the language policy entailed. At the time of the 2006 survey, the racial distribution of students at the University was as follows: 71.4% of the students were classified as White, 14.8% as coloured, 11.9% as African and 2% as Indian. In terms of home language, Afrikaans was the most widely

used home language with 58.5% of students having it as L1, 33.3 % had English as home language , 2.0% indicated that they have both Afrikaans and English as home languages and 1.6% had Xhosa as home language. In 2010, white students were still in the majority, at 67.1%, 16.3 of students were coloured, 14.6% were African students and 2% Indian. Afrikaans was still the home language of the majority of students with 50.54%, while the percentage of students with English as home language increased to 36.90, 3.57% had both English and Afrikaans as home language, while 2.19 % had Xhosa as home language. The rest of the students had either another official South African language (3.32%), or another language (3.48%) as home language ([http://sun025.sun.ac.za/portal/page/portal/Administrative\\_Divisions/INB/Tuisblad/Statistiek](http://sun025.sun.ac.za/portal/page/portal/Administrative_Divisions/INB/Tuisblad/Statistiek)).

## **5.4 PARTICIPANTS**

### **5.4.1 Introduction**

In this section, the procedures used to select the participants and to establish comparable groups will be discussed. Cook (2003: 13) believes that the general methodological paradigm for investigating the CLI of the L2 on the L1 is one of comparing a monolingual group with a bilingual group of speakers who have the same language as L1. Two factors are important in this type of research. The first factor is establishing two equivalent groups of speakers of the same language, one with and one without an L2. The second factor entails making sure that both groups are given the same test of the linguistic feature(s) that are being investigated. The first factor, in particular poses, a problem because of the difficulty of finding "true monolinguals." Secondly, participants, who have not been exposed to an L2, might have lower levels of education than the average bilingual in a similar language context. This would make it difficult to find groups that are properly comparable. To address this methodological challenge Cook (2003: 14) suggests that the idea of using pure monolinguals should be abandoned and that "minimal" bilinguals can be compared to "maximal" bilinguals. Examples of maximal bilinguals might be those who have studied their L2 at university level, while a minimal bilingual might be those individuals with the least possible exposure to an L2 (Cook 2003: 14).

In a multilingual community such as South Africa, the problem of finding "true" monolinguals is pertinent. At school all South African children study at least two languages. Many live in communities where a variety of languages are spoken. Bilingualism is therefore the norm rather than the exception. This obliges one to follow Cook's suggestion of comparing two groups of bilinguals. In this study a group that is exposed more to the L2 in a teaching and learning context is compared to a group who still receives their classes primarily in the L1. Instead of comparing a monolingual group to a bilingual group, both groups used are bilingual, but with one dominant language, Afrikaans. The ideal would have been to work with a group who has had no exposure to English in a learning context, and compare it to a group who has had such exposure. Even that would have posed problems as large amounts of the learning materials widely used in South African educational programmes, such as textbooks and multimedia are only available in English. This means that all the participants would have had some exposure to English, probably already in secondary school, but certainly quite extensively in the higher education context.

Not forgetting such possible confounding particulars, two groups were established for the purposes of the study, of which one group had been taught in courses that were offered in the Afrikaans stream of the parallel medium option, (Group A). The other group had been taught in courses where the T-option was used (Group E). Group A receives all teaching through the medium of Afrikaans, while Group E, in comparison, receives some of their modules through the medium of both Afrikaans and English. The rationale here was that the first group had Afrikaans as their L1 and as primary LoTL, with minimal exposure to English in the classroom. The second group had Afrikaans as L1, but had considerably more exposure to English in the classroom, as well as with regards to learning material. In tracking the development of conceptual fluency, language tests that measure conceptual fluency and that were standardly taken shortly before students entered university were used. This would indicate the level of conceptual fluency participants had before entering into a higher education context. For the second group, entering higher education took them into a context where use of English in the teaching and learning environment would be considerably more than before. After greater (though not exclusive) exposure to English as language of instruction, measurement of conceptual fluency was done a second time. Results of the two groups could be compared; the group

who continued to be taught in Afrikaans only and had considerably less use of English as medium of education serving as the control group.

#### **5.4.2 Assigning participants to groups**

Data was accessed from the university systems, which included official records of the entire selected faculty and their results for the academic literacy course in 2009. Participants for the study were selected based on the following criteria: Afrikaans L1 and English L2. Only students, whose official university records indicated that they have Afrikaans as their home language and Afrikaans as home language at high school, were selected. Students who indicated Afrikaans and English as home language were eliminated from the study. Originally 385 participants fit this criterion. From this population, it had to be determined which participants received more exposure to English, and who continued having Afrikaans as primary medium of instruction. Faculty yearbooks were consulted to determine the languages that were used as medium of instruction for different courses and subjects. Although many generic subjects are offered across the first year, participants do start specialisation in this faculty from their first year already. Most of the subjects are offered through the A/E option, although there are some exceptions. A number of programmes were identified as exceptions; these are programmes which offer some modules conducted through the T option. These participants thus had more exposure to English than their fellow students in this faculty. The assumption is that the Afrikaans participants in the parallel medium stream would continue attending Afrikaans classes, and in actual fact will be instructed through the A option (this assumption was also confirmed by participants during interviews).

After selecting the group with more exposure to English, a comparable group was selected as control group. These were participants who were in the same course of study but followed different streams, or specialisation where all of the modules for these participants were conducted through the A option. Participants whose first registration at the University was prior to 2009 were eliminated from the study, to limit effects of prior exposure to academic literacy and increased use of English as possible explaining variable. Participants who did not have a complete dataset for the academic literacy module were also eliminated from the study, so that non-submission of tasks could not be

the reason for poor performance in the module. A group of 87, 45 in Group E and 42 in Group A made up the specific focus sample.<sup>19</sup>

### **5.4.3 Individual variables in bilingual learning**

Grosjean (1998: 2) identifies a list of factors which can influence the individual differences observed in bilinguals and their performance in bilingual learning. These include: language history and relationship, language stability, function of languages, language proficiency, and biographical data. Each of these will be briefly introduced to indicate their relevance in the analysis and interpretation of data in this project. Some of these factors were controlled for in the study to decrease the possible influence of these factors, while others were actively investigated as factors that play a role in the development of conceptual fluency in an academic context.

#### **5.4.3.1 *Language history and relationship***

The participants selected for the study show similarity in language history and relationship, in the sense that all of them are Afrikaans/English bilinguals, and from one faculty<sup>20</sup> in the *Scientia*, with Afrikaans as L1. Information obtained from the university databases did not give information on whether the schools that participants went to had Afrikaans as medium of instruction, however there was information on which language each student gave as their L1, as well as on Grade 12 language subject choices. This information allowed an assumption that students who indicated that Afrikaans was their L1 and had Afrikaans as L1 at school are those who went to Afrikaans medium schools or had been in the Afrikaans stream of parallel medium schools. During interviews, the students who acted as respondents were asked about their language histories and how they acquired their L2. This gave qualitative insight into their language histories and the kinds of language relationships they typically exhibit or enter into.

#### **5.4.3.2 *Language stability***

Concerning stable patterns of knowledge and use of the languages in focus in this study, it has to be noted that on entering a higher education institution, certain kinds of change

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<sup>19</sup> An a-priori sample size calculator confirmed that this number of participants surpasses the recommended sample size (recommended size,  $n = 52$ ).

<sup>20</sup> Due to ethical considerations the faculty from which the students were selected cannot be specifically named.

are inevitable. All the participants in this study had recently embarked on a higher education where they were introduced to academic uses of language in classrooms and in learning which they would not have come across in the same way before. All the participants would have been introduced to new concepts and words which would increase their linguistic repertoire. The group selected as control group (Group A), would have experienced less change, as they would still have had all of their classes delivered primarily through medium of Afrikaans as they had had in secondary school.

Both groups would have had increased exposure to English as much of the learning materials, such as textbooks, are available in English only. The group who attended classes where English was used in lecturing would be likely to undergo more change than Group A, since they would have been using their L2 in a domain that it had not been used before, or if used, only to a limited extent.

#### **5.4.3.3 *Function of languages***

The participants in this study use Afrikaans for most functions in their life, i.e. in everyday conversation, in education, in reading and writing, among peers, in their families and so on. Their L2 is typically used in fewer domains and for a reduced range of functions. The institutional culture of SU is predominantly Afrikaans. Nevertheless, the participants, as all other students at SU, increasingly use English in new functions in the learning context. The group with increased exposure to English will of course use English for this function more extensively.

#### **5.4.3.4 *Language proficiency***

Different levels of language proficiency in the L1 and L2 are likely to have an impact on the kinds of development bilingual learners are likely to undergo. As a crude measure of proficiency the grades obtained in Afrikaans and English in their Grade 12 exams were used. This was firstly done because the kinds of conceptual fluency that we are interested in is that of a formal environment and secondly, because the end of year Grade 12 results come from a national test. Many universities also use Grade 12 language marks as an indication of proficiency and as a tool in selection of students (Seelen 2002; Koch & Dornbrack 2008). For example in order to be accepted at the University of Pretoria in the BCom (Accounting) program new students are required to have achieved no less than 50% in Afrikaans or English as home or first additional language

([http://web.up.ac.za/sitefiles/file/academic-year-2011/Study\\_Programme\\_Information\\_2012pdf](http://web.up.ac.za/sitefiles/file/academic-year-2011/Study_Programme_Information_2012pdf)). This measure of proficiency is however questioned in the current study, by investigating the reliability of the use of Grade 12 language marks as indicator of the development of conceptual fluency.

For the level of conceptual fluency in an academic context, the TAG and TALL results obtained before entry into university were used as measure. Participants with differing proficiency levels were selected, although the two groups did not show statistically significant levels of difference in terms of Grade 12 grades or TAG/TALL results. For qualitative insight interviewed students were asked about their self-perceived language proficiency in both Afrikaans and English.

#### **5.4.3.5 Biographical data**

Biographical data can be used to determine that there are enough shared features to make a comparison meaningful and reliable. The University databases were used to get the biographical information of participants. Participants were selected from a diverse group, both males and females, from different socio-economic and educational backgrounds. The distribution of these variables is however similar across the two groups. All of them are between the ages of 18-22 and were registered in the same faculty in similar fields of study. As white and coloured students make up the biggest percentage of Afrikaans speakers in the country, no black students are represented in the sample. 91% are white, while 9 % are coloured, 62% of the sample are females and 38% are male.

#### **5.4.4 Factors that interact with cross-linguistic influence**

CLI interacts with a number of other factors; actively investigating this interaction is important as it fulfils four important functions. Jarvis and Pavlenko (2008: 52) explain the way this may improve the quality of research, as helping the researcher to

- (a) identify CLI where it might otherwise be obscured by the influence of other variables,
- (b) confirm that the CLI effects that have been identified really were brought about through CLI and not through other factors,
- (c) measure the relative effects of CLI in relation to other factors that affect language acquisition and use, and
- (d) determine the degree to which other factors either amplify or moderate (i.e. trigger or constrain) the effects of CLI.

Of course the question would then be which outside factors to actually take into account. Jarvis and Pavlenko (2008: 52) identify the factors suggested in the literature as a logical starting point. The researcher must decide which of these factors are likely to play an important role, although in an ideal study all the factors would be taken into account. Another consideration is how to isolate these outside factors from CLI. Jarvis and Pavlenko (2008: 53) propose that once identified, these variables can be eliminated from the study, held constant, randomly or equally distributed across all participants or participant groups, or the researcher can actively investigate the effect of the factor in question.

The outside factors suggested by Jarvis and Pavlenko (2008: 206) that will be taken into account in this study are i) length in terms of time, frequency and intensity of language exposure, ii) general level of proficiency and iii) factors related to language use.

Kecskes and Papp (2003: 44) also suggest some factors which determine the degree of conceptual dependency on one specific language. These include the nature of multilingual development, age, environment, degree of difference between languages and the way in which languages were acquired. Age is controlled for in this research in the sense that all the participants are in the same age-range, 18- 22 years. How much educational input participants are likely to have had, is controlled for by assuring that all participants completed their secondary schooling between 2006 and 2008. Students with prior exposure to explicit instruction in academic literacy were eliminated from the study.

## **5.5 DATA COLLECTION INSTRUMENTS**

According to Jarvis and Pavlenko (2008: 30) methods used in psycholinguistic approaches to CLI are often ones adopted from experimental psychology such as bilingual lexical priming, category matching, elicited imitation, eye tracking, introspective measures, lexical decision, reaction time, stimulated recall, structural perception and interpretation. Other techniques employed include those adopted from linguistics and anthropology, such as observations of natural language use, and the use of grammaticality or acceptability judgements. In psycholinguistic analysis, using appropriate elements of both approaches will give a more adequate account of CLI.

### 5.5.1 Language tests as data collection instruments

In this study the main instruments used are the TAG and TALL tests administered to all participants on their entry at Stellenbosch University. The decision to use TAG and TALL was partly based on my unfamiliarity in developing testing instruments of this nature, thus the decision to use an instrument developed by experts in the field of language testing. Secondly, the test is believed to measure aspects of conceptual fluency in an academic higher education context. I had various consultation sessions with the developers of the test, evaluated it against Kecskes' notion of conceptual fluency, and looked at previous as well as current versions of the test (a discussion of how the test is believed to evaluate conceptual fluency follows in section 5.6.2 of this Chapter). After a number of meetings with the developers, the decision was made to use the TAG and TALL as a reliable and valid instrument to test conceptual fluency.

All the participants in the study were registered in an academic literacy module (hereafter AL 111<sup>21</sup>). The tests and tasks done in AL 111 are based on the same construct as the TAG and TALL. The results students achieved in the module were compared across the two groups. The results of the entry tests were also compared within groups to the results achieved at a later stage during the course. The TAG/TALL test was used in its entirety because it is felt that the test as a whole assesses conceptual fluency (explained in section 5.5.5.1). Certain sections of the test will be discussed separately for a more nuanced and fine grained analysis. All the term tests of AL 111 use the multiple choice question format, which is similar to the TAG/TALL format. Some of the other tasks done in the course (such as written assignments) are of a different assessment type.

The research is also interested in the effect of increased use of the L2 on academic achievement. This approach is one that is consistently used in studies that evaluate bilingual education (Thomas & Collier 2002). Although the aim of the current study is not to evaluate the effectiveness of bilingual education, it is still useful to determine the effect of the L2 as LoTL on learning outcomes. Access to full academic records of participants was gained for the entire first year. The weighted average<sup>22</sup> of all the courses enrolled for during the first year for the first semester and for the full year were used, as well as the weighted average for the major subjects at the end of the first year. This was

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<sup>21</sup> The name of the specific module cannot be used due to ethical considerations.

<sup>22</sup> A weighted average refers to an average mark in the modules completed by a student, weighted according to the credits and academic level of each of the modules.

done working with the weighted average, and then extracting the marks of the two support subjects, of which AL111 is one. Lindholm- Leary and Howard (2008: 177) state that studies which focus on academic outcomes of students in bilingual programs use standardized test scores, as this is needed to report on effectiveness of these programs. The average of student performance across their first year of study is used in this dissertation as a measure of academic achievement as this is the measure against which students are judged for promotion to subsequent years of study. This measure of academic achievement does not take into account other factors that might influence learning outcomes, but is a measure that is used by university authorities, as well as by outside institutions in the awarding of scholarships, internships etc. Although this is not a complete reflection of academic learning as a cognitive function, it is an important measure. If it is found that the language of instruction affects this measure negatively, in some way, it will have implications for language policy and planning, and the human rights of students.

#### ***5.5.1.1 TAG and TALL tests***

The TAG and TALL tests have been used at Stellenbosch University since 2006 to test academic literacy skills of incoming students in both English and Afrikaans. In 2005 a pilot of the test was done across four faculties. The test is used nationally and was created specifically for the South African context, thus it is not a translated version of a test developed abroad (Van Dyk & Kistner 2008). Initially the tests were used as language placement tests, i.e. merely diagnostically and for assistance in making informed decisions before streaming students to the appropriate support course. The rationale is that many participants with high academic potential were at risk of not achieving academic success because of low levels of academic literacy or academic language proficiency. The tests have subsequently been standardised, are believed to be valid as an instrument aiding placement, and have constant high reliability measures (Van Dyk 2010). They were developed in collaboration with experts at the University of Pretoria and Northwest University. Each year a new test is used for security reasons, although the design remains the same and the cut scores are annually determined using the same measures, or by equating tests with one another.

Since 2008 the tests have been administered at SU by the Centre for Prospective Students as part of an admission battery; pre-2008 they were administered by the University's

Language Centre. The Language Centre, in collaboration with its national partners, is still responsible for the content of the test. Since 2008 the test is no longer only a placement test, but is used as part of a series of entry tests. Three faculties make use of the option to employ the tests as placement tests as well.

The TAG/TALL tests were developed with a view to assessing academic discourse as a communicative and interactional genre. Van Dyk and Weideman (2004a: 7) see a test of academic literacy as one that will test the student's ability to perform the following actions

1. Interpret texts in light of their own experiences and their own experience in light of texts;
2. Agree or disagree with texts in light of that experience;
3. Link texts to each other;
4. Synthesize texts and use their synthesis to build new assertions;
5. Extrapolate from texts;
6. Create their own texts, doing any or all of the above;
7. Talk and write about doing any or all of the above; and
8. Perform actions 6 and 7 in such a way as to meet the expectations of their audience.

The blueprint of the test is also based on a specific view of language and academic literacy. Van Dyk and Weideman (2004a: 6) reject the notion of language as a set of skills but rather agree with Bachman and Palmer (1996) that one should think of language in terms of specific tasks and activities in which language is used purposefully. The testing instrument is based on a view of academic literacy not only as a skill but as a socially situated practice.

Van Dyk and Weideman (2004a: 10) describe the blueprint of the tests as one that allows for assessing the following language related tasks and abilities:

1. Understand a range of academic vocabulary in context;

2. Interpret and use metaphor and idiom and perceive connotation, word play and ambiguity;
3. Understand relations between different parts of a text, be aware of the logical development of (an academic) text, via introductions to conclusions, and know how to use language that serves to make the different parts of a text cohesive;
4. Interpret different kinds of text type (genre); and show sensitivity for the meaning that they convey, and the audience that they are aimed at;
5. Interpret, use and produce information presented in graphic or visual format;
6. Make distinctions between essential and non-essential information, fact and opinion, propositions and arguments; distinguish between cause and effect, classify categorise and handle data that make comparisons;
7. See sequence and order, do simple numerical estimations and computations that are relevant to academic information, that allow comparisons to be made, and can be applied for the purposes of an argument;
8. Know what counts as evidence for an argument, extrapolate from information by making inferences, and apply the information or its implications to other cases than the one at hand;
9. Understand the communicative function of various ways of expression in academic language (such as defining, providing examples, arguing); and
10. Make meaning (e.g. of an academic text) beyond the level of the sentence.

In the development of the TAG/ TALL a number of task types were experimentally tested (Van Dyk & Weideman 2004b). Some of these task types were: scrambled text, register and text type, vocabulary knowledge, dictionary definitions, error identification, interpreting and understanding visual and graphic information, longer reading passage, academic writing tasks, and cloze procedure. These tests are time constrained which obliges a test format with less time consuming tasks. A multiple choice format was elected. Van Dyk and Weideman (2004a: 16) acknowledge established prejudices against using multiple choice test format questions in language testing; however, they believe

that this particular format can be justified and that it actually allows for creative ways of testing. The current version of the test used for the purposes of this dissertation includes six sections, which are: scrambled text, interpreting graphs and visual information, genre, register, and style, understanding texts, academic vocabulary, and, grammar and text relations.

### ***5.5.1.2 The relation between TAG/TALL and measurement of conceptual fluency***

Kecskes and Papp (2003: 253) propose different measures which collectively give an indication of the development of conceptual fluency. In this section I shall explain how the TAG and TALL are considered to measure the various components of conceptual fluency that Kecskes and Papp have proposed.

Kecskes and Papp (2003: 253) find that conceptual fluency can be measured through aspects of language use which include: structural well-formedness, lexical quality and cognitive functioning. They believe that the effect of the L2 on the L1 can lead to a more sophisticated use of the L1, "which may occur in the form of a positive change in literacy skills, text developing and manipulating skills, sentence construction, and a more selective use of the vocabulary." They specifically look for a positive qualitative change in the use of the L1 that is quantifiable. The TAG/TALL test measures academic literacy in terms of text developing and manipulating skills, sentence construction and the use of academic vocabulary. The tests do not measure naturally occurring data. As this study is interested in L1 production of formal discourses in a higher education context, the construct of the test does not pose an impediment. Although the test is a receptive one, in multiple choice format, it allows the possibility to measure academic literacy in creative ways (Van Dyk & Weideman 2004b). Multiple choice questions (MCQs,) also have the advantage of measuring a "fairly wide variety of different kinds of precise learning points" (Brown & Hudson 1998: 659). One of the criticisms against MCQ formats of language testing is that this testing format is not authentic, as in actual language use, users are rarely confronted by selection options (Brown & Hudson 1998: 659). However, other arguments would be that this is exactly what is required of users, that at each point they make selections, and even more so for bilinguals, who have to choose between two language systems (Finkbeiner, Gollan & Caramazza 2006). It is acknowledged however that "reading, listening, grammar knowledge and phoneme discrimination" can be tested

through MCQs and can provide knowledge about how effectively students use these areas of linguistic knowledge (Brown & Hudson 1998: 660).

For Kecskes and Papp (2003: 251) change in 'conceptual fluency' can be identified only if two comparisons are made, namely when actual L1 production is compared with the L1 production of an earlier period before the introduction of the foreign language (FL) or with L1 production when exposure to the FL<sup>23</sup> was less extensive. Following the suggestions of these scholars, this study will compare the TAG/TALL results of tests written before entry into university with the results of the tasks and tests done, during the AL 111 module. In this study, although the TAG/TALL is used in its entirety, specific task types included in the test are comparable to the indices (structural well-formedness, lexical quality and cognitive functioning) identified by Kecskes and Papp (2003). These will be discussed below.

### **Structural well-formedness**

Kecskes and Papp (2003: 255) find that elaborated use of subordination and a variety of conjunctions can be read as a sign of a positive change in conceptual fluency in a speaker. This, they believe, is the case because the complexity and nature of clause organisation have been shown by linguists investigating child language acquisition to be an important sign of how thought is developed; it is also shown by researchers into child language development that very often the development of language goes hand in hand with cognitive development (see Gopnik 2001).

For the current study, we believe the sections on "scrambled text" and "grammar and text relations" measure structural- well-formedness. According to Butler (2006: 152), this task type tests "not only participants' ability in recognising text relations, drawing on their interpretative abilities regarding the context, but also their ability to recognise lexical clues contained in the sentences." This section typically requires students to arrange a set of random sentences in an order in which it forms a coherent and cohesive text. The section on scrambled text is marked out of a maximum of five to minimise the effect of washback<sup>24</sup>. According to Butler (2006: 152) the section on "grammar and text relations"

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<sup>23</sup> Kecskes and Papp (2000, 2003) typically investigates the development of conceptual fluency in foreign language learners. This study investigates the development of conceptual fluency in L2 users.

<sup>24</sup> According to Brown and Hudson (1998: 667) washback refers to "the effect of testing and assessment on the language teaching curriculum that is related to it."

requires students to choose between four options regarding where these words have been left out in the sentences. The second part of the question requires that participants, having been given the specific place where a word has been left out, choose between four options as to what is the correct word. The third is a combination of the first two parts, requiring students to integrate the two tasks by recognising where a word has been deleted and selecting the most suitable word to fit there. These sections of the TAG test assess participants' functional knowledge of sentence construction, word order, vocabulary, punctuation and at times also communicative function, with the main focus on the grammatical or structural features of the language. This section consists of approximately fourteen marks. This section is a modified cloze and shows the highest sub-test-test correlation, in other words, the marks from this section are typically the closest to the mark for the complete test.

### **Lexical quality**

As a component of conceptual fluency 'lexical quality' refers to not the number of words present in production, but how varied and sophisticated the words or word types are. A larger variation and sophistication of lexical items used reveals greater lexical proficiency. Confident use of elaborate vocabulary is connected to conceptual development because fully developed concepts at a non-linguistic level are found to result in proper use of their labels. Kecskes and Papp (2003: 257) propose that the effect of the L2 on the L1 can be detected in lexical quality in that the

increase and change in the content of certain concepts, reconceptualization and concept modification brought about in the CUCB (common underlying conceptual base) by the emergence of L2 may result in the activation of L1 words that earlier belonged to the passive vocabulary of the speaker. It may also result in a more elaborated and frequent use of L1 words related to the new vocabulary and metaphorical system developed through the L2 channel.

The expectation in development of lexical quality is that speakers will not use more L2 borrowings, but that the appropriate use of L1 words that are indirectly activated by the new language they are exposed to will increase.

In the construction of the TAG the section on "academic vocabulary" is believed to test lexical quality. This section is marked or assessed out of approximately twenty marks. This section typically presents students with an extract from a text, with one word

missing. Missing words can be at the beginning, end or middle of the extract. Students then have to select the most appropriate word from a selection of lexical items, typical of academic discourse; these include items such as "infer", "imply", "advocates," "confirm" etc. This section tests word knowledge of academic vocabulary within their context. The appropriate items as well as the distractors are selected from internationally respected academic word lists (see Nation 1990; Coxhead 2000).

### **Cognitive functioning**

Kecskes and Papp (2003: 258) believe that a difference in conceptual fluency can be exhibited not only in formal linguistic elements such as grammatical structures and words, but also in cultural values, text comprehension and discourse organisation. Two subcategories of cognitive functioning are modality index and metaphorical density. They believe that one of the measures of conceptual fluency is how confident participants are in the use of modality. If a new language is added to the L1, increasing proficiency in the new language has the effect of restructuring the L1 based conceptual system and of developing it into a CUCB. Based on this change, Kecskes and Papp (2003: 258) hypothesise that the new conceptual mechanisms and structures may result in new metaphors in the use of the L1. With the emergence of the CUCB, the number and nature of metaphors in L1 production is expected to change, because bilingual speakers with good L2 proficiency may rely on a vocabulary that is supported by mental representations from two languages.

The sections on "understanding text" and "genre/register/style" are believed to test cognitive functioning. Butler (2006: 153) explains that the "genre/register/style" section requires participants to recognise different written text types, and match two groups of sentences with regard to similarity in text type. These sentences are selected from various genres such as advertising, newspapers and literary genres. According to Brown and Hudson (1998: 659) matching tasks can be an effective way of measuring passive vocabulary knowledge. As Kecskes and Papp (2003: 257) propose that exposure to the L2 "may result in the activation of L1 words that earlier belonged to the passive vocabulary of the speaker", this task type is in line with their proposal for measuring aspects of conceptual fluency. For the section on text comprehension, participants are asked to read a longer text and answer questions which focus on participants' abilities to classify and compare information, make inferences, recognise metaphorical language,

recognise text relations and distinguish between essential and non-essential information, and make meaning beyond the sentence level (Butler 2006: 153). Typical questions are identifying the relationship between paragraphs, identifying definitions etc. The section on text comprehension and understanding consists of the most marks in the TAG tests, namely fifty marks.

Although the sections identified above are comparable to Kecskes and Papp's measures of structural well-formedness, cognitive functioning and lexical quality, it is apparent that there are certain overlaps between the sections. For example, the "understanding text" section requires knowledge of sentence connectors which makes a sentence meaningful and coherent, thus well-formed. The test will be used in its entirety as a test of conceptual fluency, specifically in an academic higher education context. The specific sub-sections will be isolated to inform discussions about specific aspects of conceptual fluency.

The tasks and tests done in AL 111 teach and test these measures of conceptual fluency in a similar way. Some of the tasks done as part of AL 111 include a focus on discourse markers, identifying text types and producing a longer, coherent written piece of work. All of these are believed to test some aspect of conceptual fluency. The aims of the module are given as the ability to develop relevant academic language/cognitive strategies in order to become a strategic and critical thinker, to communicate effectively with lecturers and fellow students about written texts in which you identify and solve problems, collect, analyse, categorise and evaluate information (T Van Dyk, pc). The AL 111 focuses on both reading and writing competence. The argument is made that the construct of the academic literacy module, the TAG and TALL and the other tests that make up the course, tests conceptual fluency in the context of higher education to various degrees.

### **5.5.2 Interviews used as data collection instrument**

All 87 participants whose TAG/TALL results and AL 111 outcomes were used in the first part of the study, were approached via email to take part in semi-structured interviews. The initial emails were followed up by another round of emails. Only a small number of these students responded to the emails and took part in the second part of the study. Participation in the interview was completely voluntary, and participants were made aware of their rights, and gave consent to the researcher to use their interviews in this

dissertation. The aim was to interview at least 10% of the selected sample, the response however was lower than expected and only 5% responded positively. Four participants from the initial sample participated in the study two from Group A and two from Group E. Questions for the interview were prepared beforehand, but if participants volunteered more or different information, they were encouraged to share this information (interview questions and schedule attached in appendix A).

As these participants could not be tracked up until their third year due to time constraints, another component was added to the study by asking three third year students from the same faculty, following similar degree programmes, to be interviewed in order to gather experiences of participants who have been exposed to English for a longer period of time, in a teaching and learning context. Three students from this senior group were interviewed. Thus a total of eight participants were interviewed.

During the interviews participants were given an opportunity to share language histories, to self-assess their conceptual fluency in an academic context, and to discuss the perceived effect that the increased use of the L2 in the educational context has had on them. The idea was not to make generalizable assumptions from the interviews as the sample size is small, but to investigate the individual variability and get insights from bilinguals themselves. Pavlenko (2008: 147) describes the usefulness of using self-reports together with experimental data as highlighting the human dimension and giving the opportunity to draw on people's insights which cannot be easily observed in other ways.

Participants were interviewed in a quiet room in the General Linguistics Department at SU. The interviewer took notes during the interview. Questions were specifically aimed at finding out how participants perceived their classes, their experience of the language situation in the class, their thoughts and feelings about how the medium of instruction affects their conceptual development and academic performance at University. This will provide for a richer description of data and is in line with many bilingual researchers, such as Pavlenko (2005), who believes that the bilingual voice is very often absent in bilingualism research and should be included.

## **5.6 PROCEDURE OF ANALYSIS**

### **5.6.1 Language tests**

The results from language tests and the overall academic performance during the students' first year at university were analysed by using descriptive and inferential statistics, specifically using the statistical program SPSS 17. The aim was to quantify certain aspects of CLI in a sample of first year students with Afrikaans as L1. This has been done by comparing the two groups with each other, as well as comparing the same group at different points in time, for different tasks. For each of the two groups, their test scores before entry to university were compared to test scores after the first semester and then again at the end of the year. The overall academic performance for each of the groups was also investigated after the first semester and again at the end of the course. Finally, between-group comparisons were also done.

The participants were not tested in strict experimental settings, the tests that form a normal part of the AL 111 (as explained earlier) were used as the main measuring instrument. These tests and task types are taken to be a reliable instrument, in that as indicated in sections 5.6.1 and 5.6.2 above, the task types are taken to test the type of measures that in which this research is interested in. This study is also aimed at investigating the effect of an L2 as medium of instruction on the L1 in a "naturally" occurring but formal higher education environment. The data although not spontaneous, is still more natural than what would have been found in a strictly experimental study. In order to understand how the bilingual mind operates more research is needed that works with the natural occurrence of language development in an extended longitudinal study. Previous experimental studies, although useful, do not "represent the natural course and environment of L2 acquisition" (Abutalebi, Tettamanti & Perani 2009). The methods of data collection and analysis used in this study are intended as a contribution to more natural data in the study of the development of conceptual fluency in bilinguals.

### **5.6.2 Interviews**

Pavlenko (2007: 165) evaluates three commonly used methods of analysis for autobiographical studies. These are subject reality, life reality and text reality. According to Pavlenko (2007: 166) studies involving subject reality make up the largest body of research on autobiographical accounts of language learning. Typically this type of

analysis involves content or thematic analysis of the subjects' thoughts and feelings about learning a language, views on language maintenance and ethnic identification and bilingual language attitude. Pavlenko (2007: 166) considers this approach valuable in highlighting themes and trends which are important to bilinguals or L2 learners, and might not have been visible with other types of studies. However, Pavlenko also identifies various shortcomings of this approach. Some of the shortcomings are: an over-reliance on repeated themes, a lack of theoretical grounding in the analysis, and an over-reliance on what is in the texts, while what is absent can be equally important. According to Pavlenko (2007: 168) life reality type of autobiographic studies treat textual meaning as experiential meaning. This approach does allow the voices of real language learners to be represented; however, by treating narratives as factual account, the constructed nature of peoples' realities through narrative is ignored. This type of study would be more methodologically rigorous if linguistic and observational data is included. The more recent type of approach, that of textual realities explores how narrators construct themselves in the languages they know or the language that they are in the process of acquiring, how they create textual homes for themselves and how narrators position themselves and what this says about their experiences. Pavlenko (2007: 171) suggests three complementary approaches to the study of autobiographical data, which include a cognitive approach that treats it as meaning making system, treating it as exemplars of how people understand; textual approaches which see the dialogic qualities of text, thus as an interplay of different voices as well as how these voices speak to society and culture; and discursive approaches which view it as interaction-oriented productions, exemplars of the co-constructed nature of storytelling.

The interview data in this dissertation will firstly be analysed by using thematic analysis. The thematic analysis will be a precursor to an analysis which investigates how the participants construct their own language proficiency and ability in both languages, and how the activities they engage in affect these perceived proficiencies and the changes therein. For this purpose, sociocultural theory, as used by Lantolf (2000) is used, with a particular interest in social activity and agency. To investigate how participants construct their own language proficiencies and how they integrate other voices into this construction, work that is associated with Bakhtin's notion of (1981) 'dialogic qualities of text' is consulted. In particular these theoretical constructs will allow the researcher to analyse how the participants draw on outside and prior discourses to construct their

experiences at tertiary level and their perceptions of their language abilities and use. Secondly, it will also allow an investigation into how the social activities that these participants are engaged in shape how they use their languages in the development of their conceptual fluency in a higher education context.

## **5.7 SUMMARY**

It is believed that having both traditional methods of psycholinguistic data collection and analysis such as language tests, and approaches which focus on the "bilingual voice" through the use of narratives or elicitation of life histories, provides a more nuanced and more complete picture of the effect of the L2 on the L1 in an educational context. In particular it will provide information not only on the effect of the L2 on the L1, but also on how bilinguals use the resources from both their languages and how they experience and construct the effect of their L2 on the L1. Chapter 6 gives an account of the outcomes of the collection and analysis of the data.

## CHAPTER 6

# ASSESSMENT OF THE EFFECT(S) OF THE L2 ON THE L1

### 6.1 INTRODUCTION

The results of the sample study set out in Chapter 5 will be presented here. This will include presenting the results that relate to participants' performance in tests that assist in measuring conceptual fluency, results that reflect early indicators of academic achievement at university, and a preliminary analysis of the interviews. First, the results of the statistical tests will be given. The interview results will be presented next, providing a preliminary discussion of findings that emanate from the interview data. These results will be discussed in the chapter that follows in view of relevant theories set out in Chapters 2-4.

### 6.2 CONCEPTUAL FLUENCY

Chapter 5 discusses at length how the participants for the study were selected; therefore this information will not be repeated here. The study included 87 participants, of whom 45 were exposed to English as medium of instruction through the T-option (referred to as Group E) and of whom 42 continued to attend classes taught through the medium of Afrikaans, as during their secondary schooling (referred to as Group A). The opportunity to follow classes through Afrikaans is made possible for Group A by the fact that the courses they are enrolled for are presented through the so-called parallel medium option. In other words, their lectures are in Afrikaans, in different classes to the English students (see section 5.3.2 in Chapter 5 for a discussion on the LoTL policy at Stellenbosch University).

This chapter will discuss the results in view of the research aims. The first research aim is *"to clarify for the purposes of this study, the notion of 'conceptual fluency' as it is used by scholars such as Kecskes and Papp (2000, 2003, 2005) and Danesi (1995, and to place this in a higher-education context"*.<sup>25</sup> This is mostly a theoretical matter

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<sup>25</sup> See Chapter 1, section 1.4 for the complete list of research aims

which was addressed in the theoretical section (Chapter four, section 4.2.4). However, the results of the empirical investigation will add to the formulation of this notion of 'conceptual fluency'. For this the first aim will be returned to in Chapter 7 which will discuss the findings, and place the concept of 'conceptual fluency' in the current theoretical framework. The following sections start with findings linked to the second aim of the research, namely *to investigate the influence of the use of an L2 as language of teaching and learning on particular aspects of academic literacy at tertiary level, which can be viewed as components of 'conceptual fluency' manifest in the L1*. The results offered in 6.2.1 address this aim of the study.

### **6.2.1 The relation between degree of L2 exposure and L1 conceptual fluency**

Academic literacy tests, and tasks done as part of the AL 111 course were used as measures of conceptual fluency or, more precisely, a specific type of conceptual fluency, namely that which is required to function effectively in a higher education, formal learning environment (see Chapter 5, sections 5.6.1-5.6.2 where the construct and use of these tests are explained). In order to isolate the effect of the LoTL on conceptual fluency the two groups were carefully matched on Grade 12 marks in Afrikaans and English, and the academic literacy and academic achievement with which they entered university. Independent t-tests were run to determine the differences in means on the following variables:

- *school achievement* as indicated by participants' Grade 12 final average,
- *Grade 12 Afrikaans and English* marks, and
- *TAG and TALL test results* which are administered before the start of the first academic year, as indication of participants' academic literacy levels on starting their higher education.

The means of these variables were compared before the start of their first academic year at university to ensure that differences in conceptual fluency and academic achievement between the two groups cannot be ascribed to one group having been better equipped in terms of these variables than the other. Studies which have compared bilingual groups with monolingual groups (in this study a group with minimal exposure to the L2 is compared to a group with more exposure) and which have shown a bilingual advantage

have been criticized in the past for not controlling for certain variables. Differences in performance in two groups were then ascribed to bilingualism and not these variables which might have had an influence, on tests of bilingual cognitive functioning or academic achievement (Macanamara 1966; Morton & Harper 2007). In particular, the landmark study of Peal and Lambert (1966) was criticised for bias in the selection of participants, who were seen as more intelligent than the monolingual group to start with, thus their performance in various tests were seen by some other researchers as a result of their level of intelligence and not their bilingualism *per se* (see Chapter 4, section 4.3 for a detailed discussion of the study, as well as the criticism raised against the results of the study). The results of the t-tests done in the present study, however, show no statistically significant differences between groups for any of these measures. The results of these t-tests are presented below in table 6.1. As is common practice in statistical analysis in social science a  $p$  value of less than .05 is regarded as significant.

**Table 6.1: Results of independent t-test comparing the two groups' Grade 12 Average, Eng/Afr Grade 12 marks, TAG and TALL**

	Grade 12 average TAG	Afrikaans	English grade 12 TALL	grade 12
<b>Group A</b>				
<b>(n = 42)</b>				
(mean)	72.9		71.7	70.8
	60.3		66.4	
(SD)	15.4		7.5	9.2
	11.7		11.9	
<b>Group E</b>				
<b>(n = 45)</b>				
(mean)	78.1		75.4	64.6
	63.8		66.8	
(SD)	8.8		9.6	8.6
	13.8		13.3	
<i>t</i>	1.96		1.94	1.99
	1.25		.16	
<i>df</i>	84		83	83
	85		85	
<i>p</i>	> .05		> .05	> .05
	>.05		>.05	

Since there were no significant differences between the groups, they were treated as comparable. Statistical tests were then conducted to actively investigate the effect of increased exposure to English on conceptual fluency in Afrikaans. The data was analysed within the same group across time, as well as comparing the two groups at the same point in time. The within-group data will be presented first. The results from Group A are given first, and the results from Group E follow.

### 6.2.1.1 Results for the within-group data

Paired sample t-tests were used throughout to analyse whether there were differences in means across time for measures of conceptual fluency. Conceptual fluency was measured through TAG, Test 4 and the grades obtained in AL111 after the first and second semester. Test 4 is essentially the same test as TAG, administered at a different time.

TAG was written before participants started their first academic year at university, while Test 4 was written towards the end of their first academic year as part of the AL 111 course. The two tests are administered based on an interrupted series design. Interrupted time-series analysis is a "statistical method for analyzing temporally ordered scores to determine if an experimental manipulation, a clinical intervention, or even a serendipitous intrusion, has produced a reliable change in the scores" (Hartmann, Gotrman, Jones, Gardner, Kazdin & Vaught 1980: 543). The use of this type of design allows one to investigate if exposure to more academic uses of language, and instruction in academic literacy changes aspects of conceptual fluency. It also allows one to investigate what the effect of different degrees of exposure to LoTL can be on conceptual fluency, by comparing TAG results to the Test 4 results (written after exposure to English in teaching and learning, especially for Group E). The results of the AL 111 were selected because they include a number of different assessment types (responsive and productive), and allow performance to be measured at two points in time, at the end of the first semester of the first year and at the end of the first academic year.

### i) Group A

#### TAG

The means of TAG were compared to the means of Test 4, by using a paired sample t-test. The means of TAG and Test 4 are presented below in table 6.2. The results for the t-test show that there is a significant difference between TAG and Test 4,  $t(41) = 5.815$   $p = .000$ . Thus there is a significant improvement in this particular measure of conceptual fluency.

**Table 6.2: Means TAG and Test 4: Group A.**

	TAG	Test 4
<b>Group A</b>		
<b>(n = 42)</b>		
(mean)	60.33	68.8
(SD)	11.72	9.461

#### Subsections of TAG

As discussed in Chapter 5 (section 5.6.2), the TAG consists of various sub-sections. By determining which specific subsections showed the most improvement, results can be

interpreted in a more nuanced way. It can be investigated through this approach which specific aspects of conceptual fluency lend themselves best to cross-linguistic influence. The means of the subsections of TAG were compared to the means of the same subsections of Test 4 by using a paired sample t-test. The results of these tests are illustrated in table 6.3.

**Table 6.3: Results of paired sample t-test, subsections of TAG/Test 4: Group A.**

Academic	Scrambled Text text vocabulary	Text editing	Text type	Text compr.
<b>Group A (n = 39)</b>				
Maximum score	5 20		5 14	50
TAG (mean)	1.6 9.6		2.5 12.4	28.3
(SD)	1.5 3.2		1.7 1.9	7.5
Test 4 (mean)	2.3 12.7		4.5 13.4	34.4
(SD)	1.8 4.0		.9 .9	6.2
<i>t</i>	-1.94 -4.77		-7.30 -3.16	-5.48
<i>df</i>	38 38		38 38	38
<i>p</i>	.060 .000		.000 .003	.000

As table 6.3 illustrates, of the different subsections of TAG, academic vocabulary, text comprehension and text type in particular showed a significant improvement. However all the sections showed some significant improvement, except the section on scrambled texts, which is believed to correspond to Kecskes and Papp's measurement of structural

well-formedness as this section requires students to reorganise an incoherent text. The subsections which show the most significant improvement are those that correspond to lexical quality and cognitive functioning in Kecskes and Papp's (2003) measurement of conceptual fluency (see Chapter 5, section 5.6.2).

### AL 111 marks

Grades obtained in the academic literacy course during semester 1 were compared to grades obtained in semester 2 for the same course. This overall score took into account performance on tests, take-home assignments and tutorial exercises. The overall mark for academic literacy which was used is the mark which appears on the official university records of students. The means of the AL 111 course for the first and second semester are presented below in table 6.4. As can be expected from the minimal difference in means, no significant difference was found in the results of the paired sample t-test,  $t(41) = -1.49$ ,  $p = .145$ . This suggests that overall performance in the AL 111 course did not improve to a significant extent.

**Table 6.4: Means of AL 111 first and second semester: Group A.**

	AL 111 (first semester)	AL 111 (second semester)
<b>Group A</b>		
<b>(n = 42)</b>		
(mean)	62.8	64.0
(SD)	7.5	7.8

### ii) Group E

#### TAG

As with Group A, the differences in the means between TAG and Test 4 were investigated for Group E by means of a paired sample t-test. The means of TAG and Test 4 are presented below in table 6.5. A similar trend to the one found in Group A (namely, a significant increase in conceptual fluency as measured by TAG) was found in Group E, with the difference between the two means being statistically significant  $t(44) = 5.786$ ;  $p < 0.01$ ).

**Table 6.5: Comparison in means TAG and Test 4: Group E.**

	TAG	Test 4
<b>Group E</b>		
<b>(n = 45)</b>		
(mean)	63.8	72.4
(SD)	13.78	12.37

### **Subsections of TAG**

The results of the different subsections of TAG and Test 4 were compared by means of a paired sample t-test. The complete results of the t-test are provided in table 6.6.

For Group E all the different sections showed significant improvement. The specific subsections that seemed to show the most significant improvement were the sections on text comprehension, academic vocabulary and text type. Unlike Group A, the section on scrambled text also showed significant improvement. Thus all the sections that are equated to Kecskes and Papp's (2003) measurements of conceptual fluency (structural well-formedness, lexical quality and cognitive functioning), show significant improvement for Group E.

**Table 6.6: Results of paired sample t-test subsection TAG/Test 4: Group E.**

	Academic	Scrambled Text text vocabulary	Text editing	Text type compr.
<b>Group E (n = 41)</b>				
Maximum score		5 20	5 14	50
TAG (mean)		1.5 9.6	3.6 12.6	31.9
(SD)		1.6 3.7	1.5 2.9	8.5
Test 4 (mean)		2.4 13.1	4.5 13.5	37.3
(SD)		2.0 4.0	1.2 .8	7.3
<i>t</i>		-3.19 -7.13	-3.90 2.28	-4.19
<i>df</i>		40 40	40 40	40
<i>p</i>		.003 .000	.000 .028	.000

**AL 111 marks**

The overall academic literacy marks at the end of the year were compared to the marks of the first semester. The means of the first and second semester are presented below in table 6.7. The paired sample t-test shows that this difference does not reach the level of statistical significance,  $t(44) = 1.51, p > .05$ .

**Table 6.7: Means of AL 111 first and second semester: Group E.**

	AL 111 (first semester)	AL 111 (second semester)
<b>Group E</b>		
<b>(n = 45)</b>		
(mean)	62.2	64.1
(SD)	10.89	9.84

To summarise, Group A showed a significant difference between their performance on TAG and Test 4, as well as a significant difference between their performance the subsections of TAG and Test 4, except for the section on scrambled text. No statistically significant difference between the groups performance in the first and second semester of AL 111 were found

Group E showed a statistically significant difference in means between TAG and Test 4, and a significant difference between their performance on all the subsections of TAG and Test 4. There was no statistically significant difference between their performance in the first and second semester of AL 111.

The next section presents a comparative analysis in which the performances of the two groups were compared to each other at the same point in time.

#### ***6.2.1.2 Results for between group comparative data***

The two groups were compared to each other using the same measures as in the case of the within-group data. The within-group data provide evidence of how the respective groups developed conceptual fluency over time, while the comparative data provide insight into the differences between the groups at a single point in time. Specifically the comparisons are made towards the end of their first academic year at university. The means of the following variables were compared through independent sample t-tests: Test 4 (both the test in its entirety and certain subsections) and the final score of AL 111.

## Test 4

The means of Test 4 of the respective groups are presented below in table 6.8. An independent sample t-test revealed that the difference between the means of Test 4 for the control and exposure group was not statistically significant  $t(85) = 1.51, p = .13$ .

**Table 6.8: Means Test 4, Group A & Group E.**

		Test 4	
	Group A (n = 42)	Group E (n = 45)	
(mean)	68.8		72.4
(SD)	9.5		12.4

To investigate the possible differences in the extent to which the two groups improved, the raw scores of the difference between TAG and Test 4 were converted to an index labelled "improvement percentage." The means of the respective groups' improvement percentage (presented below in table 6.9) were compared through an independent sample t-test. As can be expected from the minimal difference in means an independent sample t-test revealed no significant difference between the means of the "improvement percentage" from TAG to Test 4,  $t(85) = .075, p > .05$ .

**Table 6.9: Means improvement percentage, Group A & Group E.**

		Improvement percentage	
	Group A (n = 42)	Group E (n = 45)	
(mean)	16.58		16.25
(SD)	19.8		21.4

## Subsections of Test 4

Results obtained in Test 4 did not show significant differences between the groups. This finding only gives an indication of the performance on the test in its entirety, and does not reveal if there was any difference between the two groups on particular sections. Therefore subsection data for Test 4 was compared between groups to determine whether one group fared significantly better or worse on specific subsections than the other group. However, there was no statistically significant difference between the means of the two groups on the different subsections. Table 6.10 provides detail on the results of this test.

**Table 6.10: Independent t-test results, subsections: Group E vs. Group A.**

	Academic	Scrambled	Text	Text
		Text	text	type
		vocabulary	editing	
Maximum				
score		5	5	50
		20	14	
<b>Group E</b>				
<b>(n = 42)</b>				
(mean)		2.4	4.5	37.3
		13.1	13.5	
(SD)		2.0	1.2	7.3
		4.0	.8	
<b>Group A</b>				
<b>(n = 39)</b>				
(mean)		2.3	4.5	34.4
		12.7	13.4	
(SD)		1.8	.9	6.2
		4.0	.9	
<i>t</i>		.34	.26	1.71
		.32	.95	
<i>df</i>		79	79	79
		79	79	
<i>p</i>		>.05	>.05	>.05
		>.05	>.05	

**AL 111 marks**

The final mark for AL 111 was compared between the two groups. The means of the two groups are presented below in table 6.11. As can be expected from the results displayed in table 6.11, an independent sample t-test did not yield any significant differences between the means of the two groups,  $t(85) = .89$ ;  $p > .05$ .

**Table 6.11: Means AL 111, Group A & Group E.**

	AL 111	
	Group A (n = 42)	Group E (n = 45)
(mean)	63.4	63.2
(SD)	7.0	9.5

In summary, the between-group comparisons in section 6.2.1 did not reveal significant differences between Group E and Group A in terms of any measures of conceptual fluency in a higher education context.

## 6.2.2 The relation between Grade 12 language test results and L1 conceptual fluency

The third aim of this thesis is *to investigate Grade 12 learners' Afrikaans and English marks as a possible determiner of the development of 'conceptual fluency' and 'multi-competence' in higher education.* The results presented in this section of the work relate to this specific aim.

### 6.2.2.1 Correlations between Afrikaans and English Grade 12 grades and conceptual fluency

A Pearson product-moment correlation coefficient ( $r$ ) was calculated to assess the relationship between Grade 12 marks for Afrikaans and English on the one hand, and performance on TAG, on the other. No significant correlation was found between either Afrikaans Grade 12 marks and TAG, or between English Grade 12 marks and TAG, for either of the two groups. As evident in tables 6.12 and 6.13, language performance in Grade 12 is not significantly correlated to performance on TAG at point of entry into university.

**Table 6.12: Correlation between Afr/Eng Grade 12 and conceptual fluency: Pearson's  $r$  values for Group A.**

	TAG	Test 4
<b>Group A (n = 42)</b>		
Afrikaans gr 12	-.03	-.10
English gr 12	-.01	.04

**Table 6.13: Correlation between Afr/Eng Grade 12 and conceptual fluency: Pearson's  $r$  values for Group E.**

	TAG	Test 4
<b>Group E (n = 45)</b>		
Afrikaans gr 12	-.06	-.04
English gr 12	-.15	.02

Pearson correlations were also used to examine the relation between Grade 12 marks for Afrikaans and English, and Test 4 (recall that Test 4 is essentially the same test as TAG, but is administered at the end of the first academic year). As with the results of TAG, no significant correlations were found for either of the groups. These results are presented in tables 6.12 and 6.13 below. A medium strong significant correlation was however found between Afrikaans and English Grade 12 performance for both groups,  $r = .70, p < .001$ , (Group E) and  $r = .60, p < .001$  (Group A). In other words, the Pearson correlation did not reveal a significant relationship between Grade 12 marks in either the L1 or L2, and conceptual fluency at the beginning, or at the end of the year. Performance in Afrikaans and English in Grade 12 was however found to be highly correlated.

In addition to investigating the larger Group A and Group E, the groups were split into smaller groups. The TAG scores were used to create these sub-groupings. The concept of 'risk levels' was used to create these groups. This is an approach used by the Language Centre that administers the test, and is calculated in the following way:

High risk: less than average (average – 1 standard deviation)

Medium risk: less than average, but more than (average- 1 standard deviation)

Low risk: more than average, but less than (average + 1 standard deviation)

Very low risk: more than (average + 1 standard deviation)

(Van Dyk & Kistner 2008)

This approach was used to determine if there are specific groups of students for whom Grade 12 marks in their two languages play a more important role than others, for conceptual fluency development. The norm based approach was followed when organising Group A and E into risk levels (Van Dyk & Kistner 2008). For Group E it was found that high risk students are those whose TAG scores are below 49.9, while for

Group A the TAG scores of the high risk group are below 48.6. A breakdown of risk levels in percentage is presented in table 6.14.

**Table 6.14: Distribution of risk levels.**

Risk level	Group A	Group E
High risk	14% (n = 6)	18% (n = 8)
Medium risk	41% (n = 17)	33% (n = 15)
Low risk	31% (n = 13)	31% (n = 14)
Very low risk	14% (n = 6)	18% (n = 8)

The distribution of risk levels in these two groups is very similar, with most of the students in the medium to low risk group, and the smallest percentage of students in the high and very low risk groups for both control, and exposure group.

### **6.2.2.2 Correlation of conceptual fluency development and risk levels**

#### **i) Group A**

##### **Comparison of TAG and Test 4**

Paired sample, t-tests were run to determine the difference in means between TAG and Test 4 in the different risk level groups. The results are presented in table 6.15.

**Table 6.15: Paired sample t-test results TAG- Test 4 risk levels: Group A**

	High Very low Risk risk	Medium  risk	Low  risk
TAG	(n = 6)	(n = 17)	(n = 13)
(mean)	43.3	54.8	66.4
(SD)	79.8 5.4 6.2	3.3	3.0
Test 4			
(mean)	62.8	64.1	71.6
(SD)	82.3 10.4 5.2	6.0	7.2
<i>t</i>	-4.26 -1.39	-7.1	-2.36
<i>df</i>	5 5	16	12
<i>p</i>	.008 >.05	.000	.036

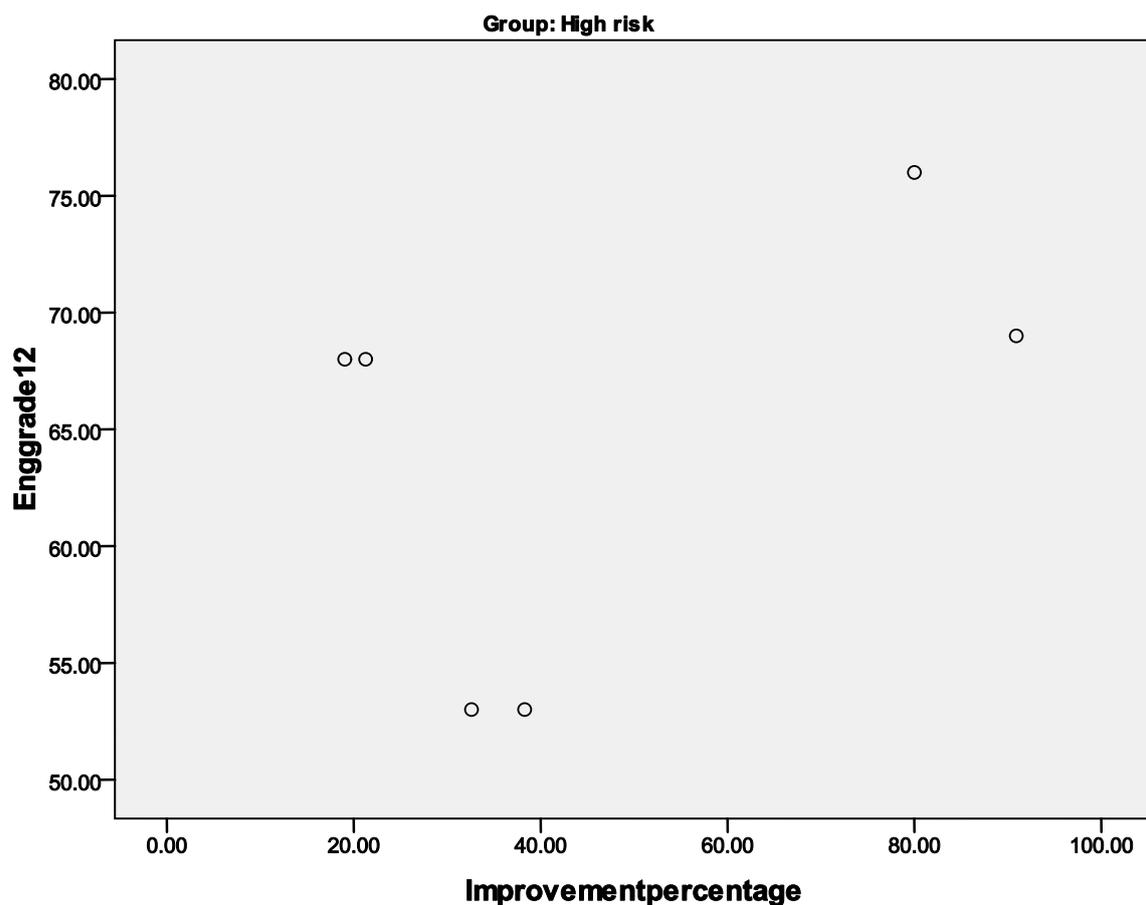
For three of the four risk level groups, there is a significant difference between the means of TAG and Test 4. The only group where there is not a significant increase from TAG to Test 4 is the very low risk group.

A one-way Analysis of Variance (ANOVA) was run to compare the differences in means of the improvement percentage across the four groups (high risk-very low risk). This test revealed that there is significant variance in the extent to which the different risk levels groups improved their academic conceptual fluency,  $F(3, 38) = 11.27, p = .001$ . An ANOVA however, cannot indicate between which of the groups the differences are found. For that purpose a post hoc test (Bonferroni) was run in order to determine which groups are significantly different from each other. It revealed that the significant group differences are found between the high and medium risk group ( $p = .001$ ), between high and low risk ( $p = .000$ ), and between high and very low risk ( $p = .000$ ). There was in other

words no significant difference between the medium and low, or between the medium and very low risk group.

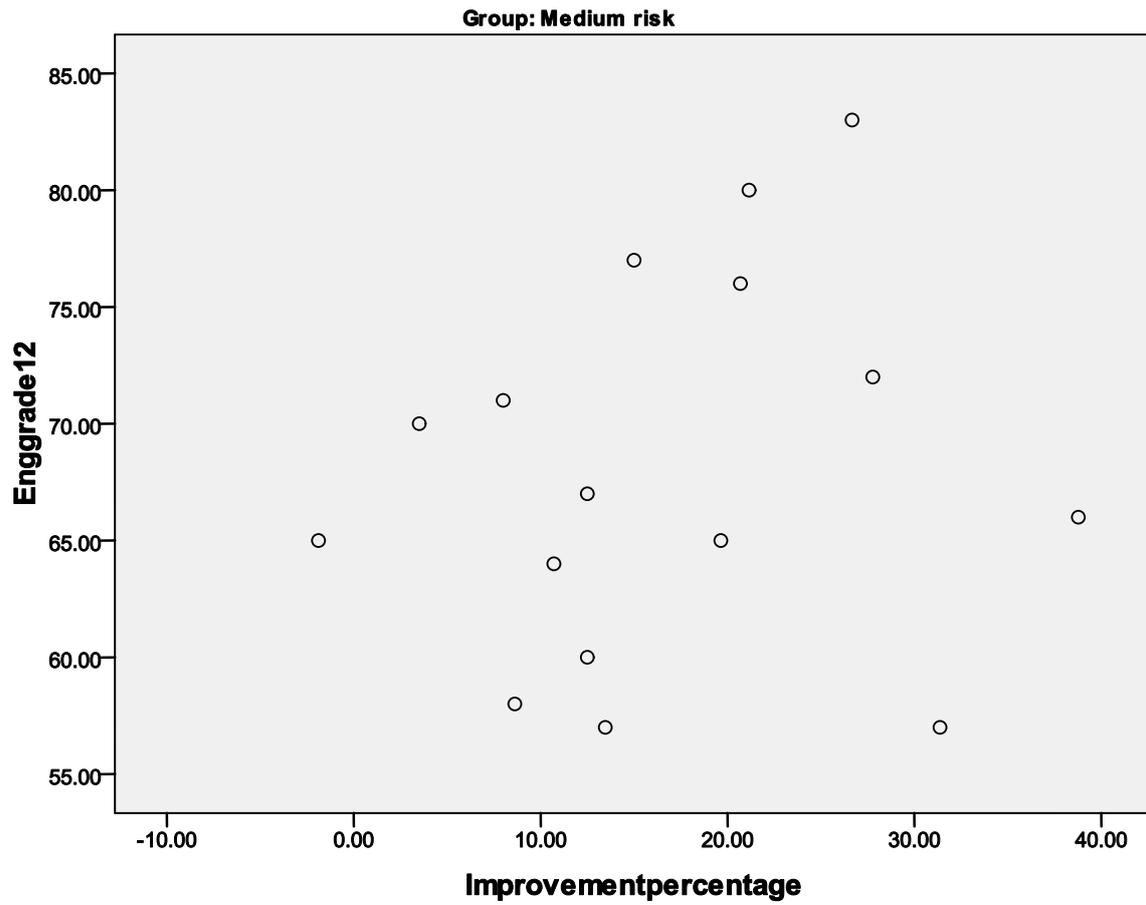
### Correlations

In order to explore the relation between Grade 12 marks in Afrikaans and English and the extent to which participants improved their conceptual fluency across the four risk level groups, Pearson correlations were run. No significant correlations were found between these two Afrikaans Grade 12 marks and the improvement percentage,  $r < .62$  and  $p > .05$  in these groups. Similarly, a Pearson correlation test did not reveal a significant correlation between English Grade 12 marks and the improvement percentage. The results of the correlation tests of the English Grade 12 marks are presented in figures 6.1-6.4.



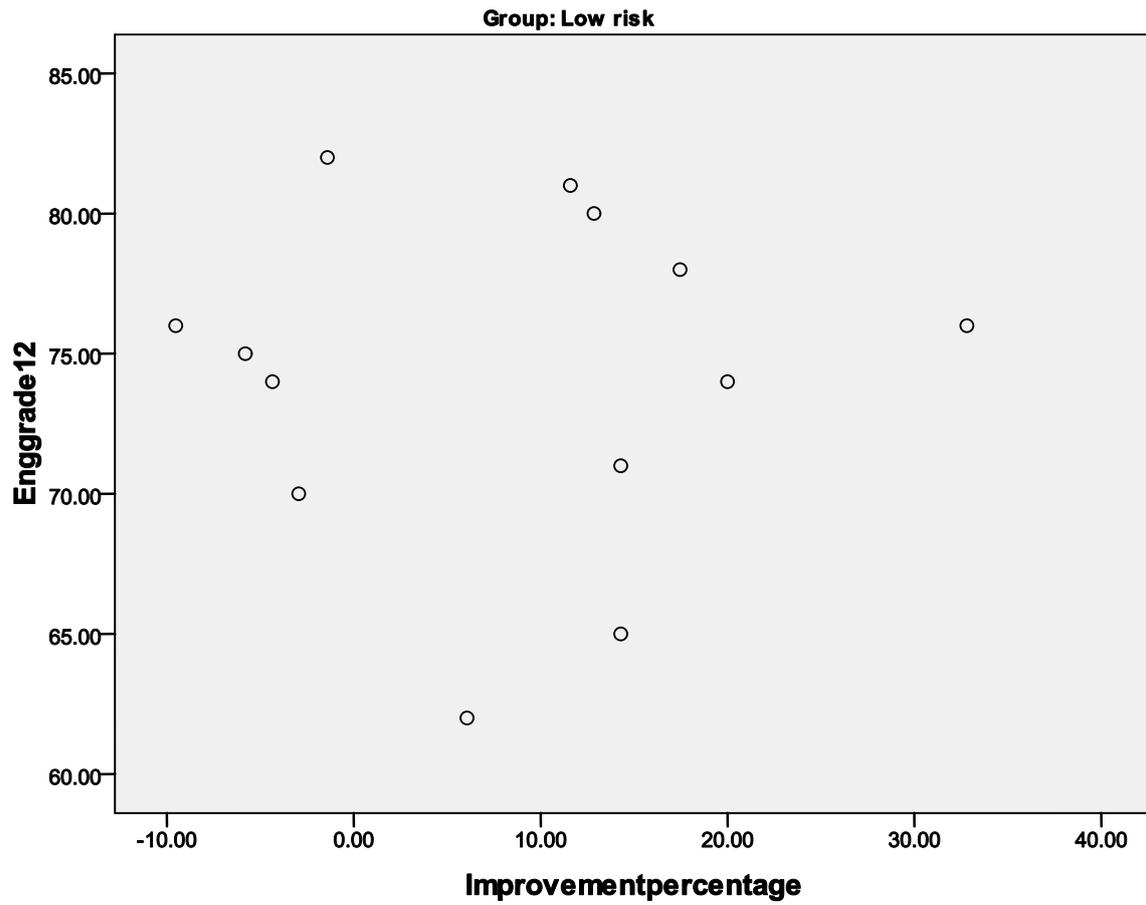
$r = .45$ ,  $p > .05$  (not significant).

**Figure 6.1: English Grade 12 correlation to improvement percentage: Group A High risk group.**



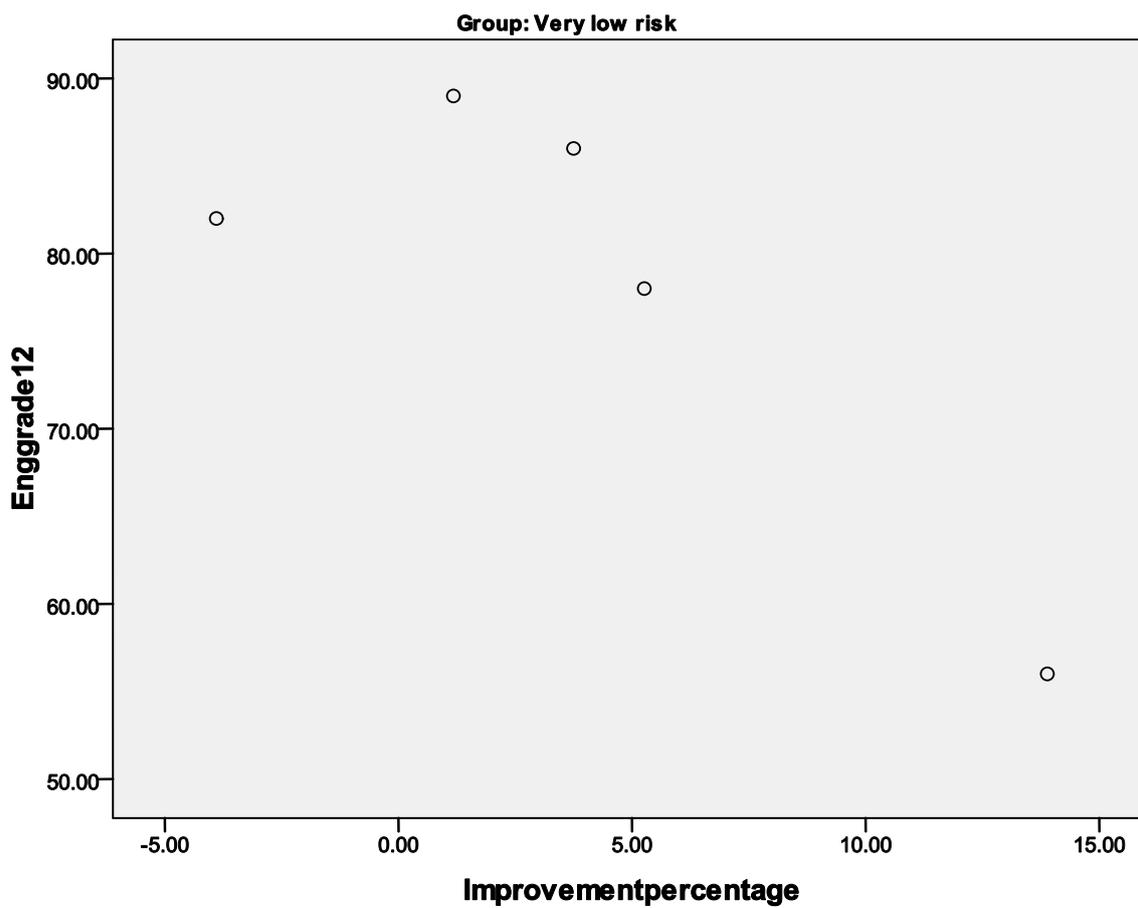
$r = .18$ ,  $p > .05$  (not significant).

**Figure 6.2: English Grade 12 correlation to improvement percentage: Group A Medium risk group.**



$r = .01, p > .05$  (not significant).

**Figure 6.3:** English Grade 12 correlation to improvement percentage: Group A Low risk group.



$r = -.83$ ,  $p > .05$  (not significant).

**Figure 6.4: English Grade 12 correlation to Improvement percentage: Group A, Very low risk group.**

In summary, Group A displays significant improvement in conceptual fluency for three of the four risk levels. The only group that does not display significant improvement is the very low risk group. Group A does not show any significant correlation between the improvement percentage and either Afrikaans or English Grade 12 marks for any of the risk level groups.

## ii) Group E

### Comparison of TAG and Test 4

Paired sample t-tests were run with Group E to determine the difference in means between TAG and Test 4 for the different risk level groups. These t-tests reveal a

significant difference in means for TAG and Test 4 for all the groups besides the low risk group. The results of these t-tests are presented in table 6.16 below.

**Table 6.16: Paired sample t-test results TAG- Test 4 risk levels: Group E.**

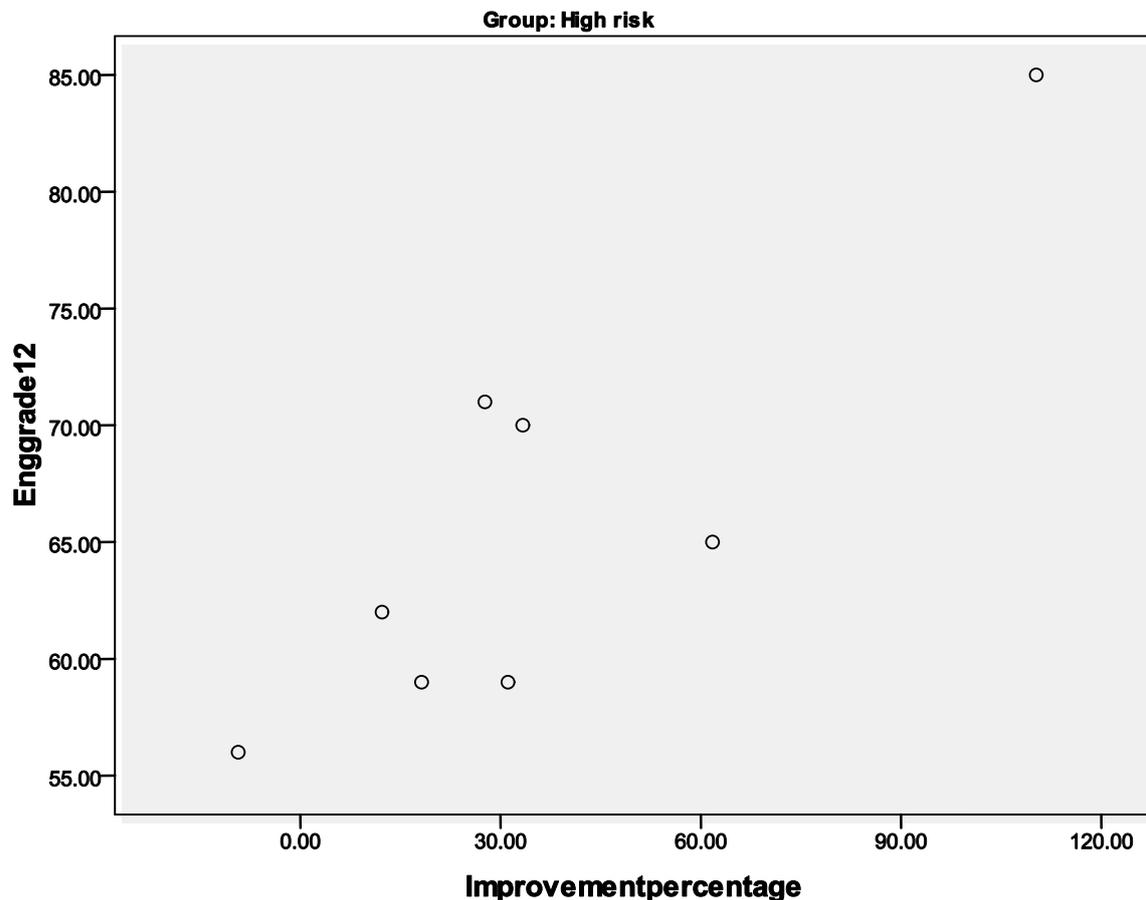
	High Very low risk risk	Medium risk	Low risk
TAG	(n = 8) (n = 8)	(n = 15)	(n = 13)
(mean)	42.9 82.4	57.9	71.5
(SD)	4.7 5.3	4.3	3.7
Test 4			
(mean)	57.3 87.1	70.9	74.7
(SD)	12.0 3.2	6.9	10.5
<i>t</i>	-2.97 -2.54	-9.22	-1.1
<i>df</i>	7 7	14	12
<i>p</i>	.021 .039	.000	>.05

A one way ANOVA was used to compare the differences in means across the four groups (high risk-very low risk) for the improvement percentage. It reveals a significant difference between groups,  $F(3, 41) = 6.39$ ,  $p = .001$ . Post hoc tests (Bonferroni) were consequently run to determine which groups differed. It was found that the high and low risk group differed significantly ( $p = .002$ ) as well as the high and very low risk group ( $p = .014$ ). There was no significant difference between the medium and very low risk group, and the medium and high risk, and medium and low risk group.

## Correlations

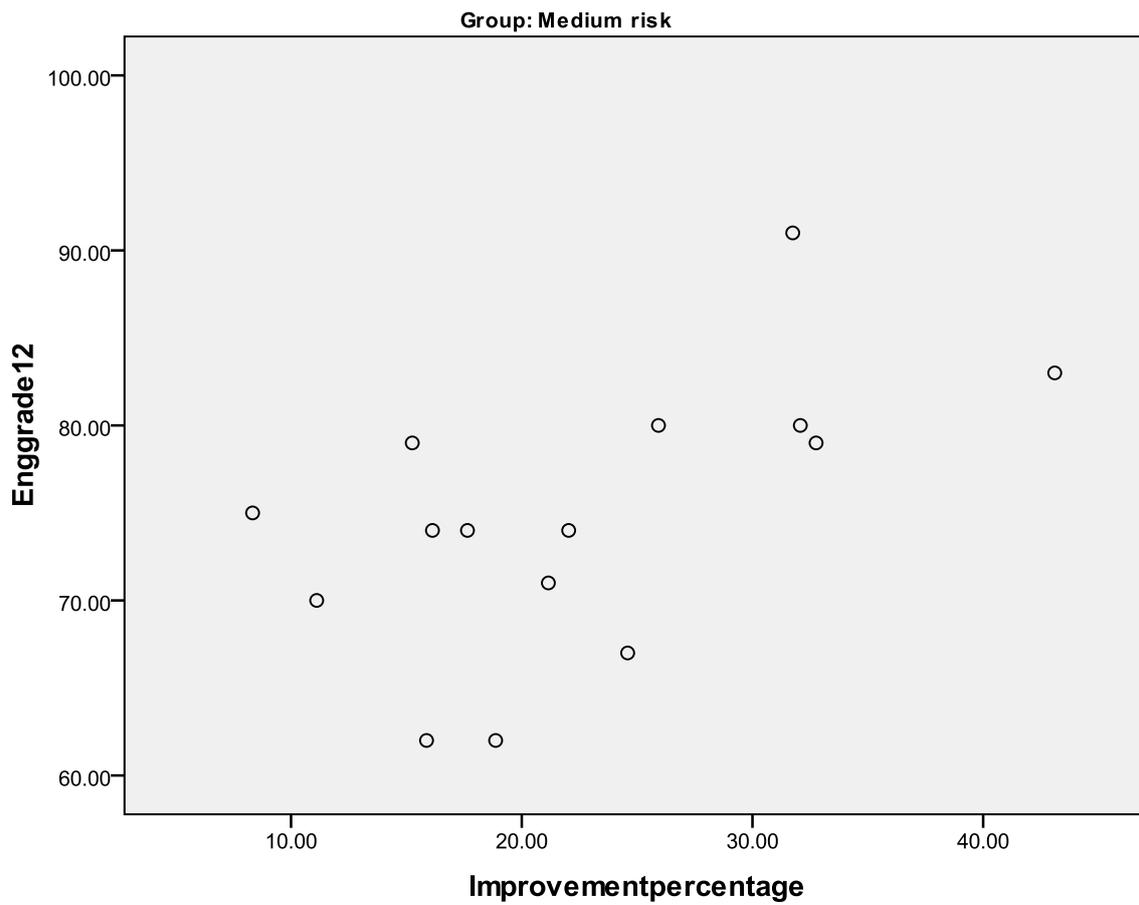
As with the control group, Pearson correlations were run to determine the relationship between Afrikaans Grade 12 and English Grade 12 marks, and the improvement percentage. There is a significant correlation between the Afrikaans Grade 12 performance in only the high risk group, with  $r = .74$ ,  $p = .038$ . In the other risk level groups, these two variables were not significantly correlated,  $r < .25$  and  $p > .05$ .

In the case of the correlation between English Grade 12 and the improvement percentage, Group E does not perform like Group A. There are significant correlations for all the groups, except the very low risk group. The results of these tests are presented in figures 6.5-6.8.



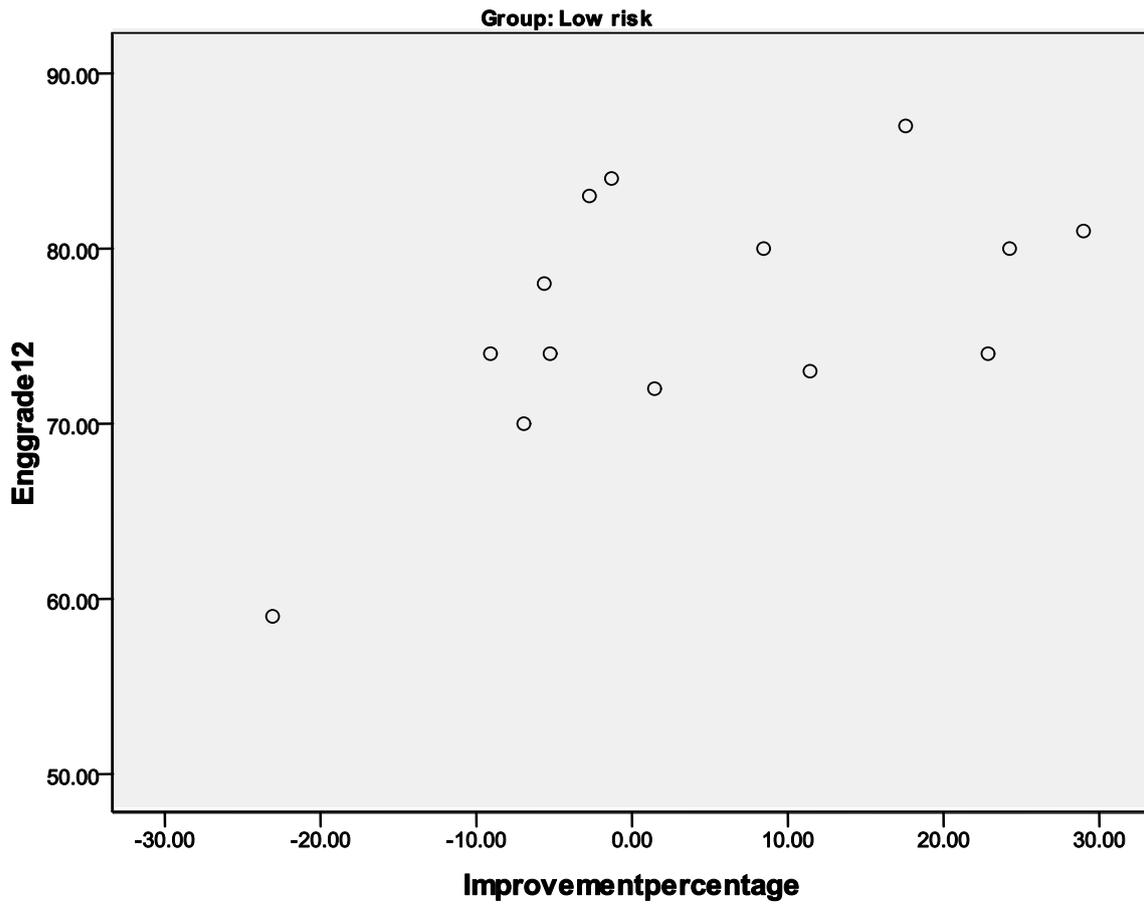
$r = .86$ ,  $p = .007$  (significant)

**Figure 6.5:** English Grade 12 correlation to improvement percentage: Group E high risk group.



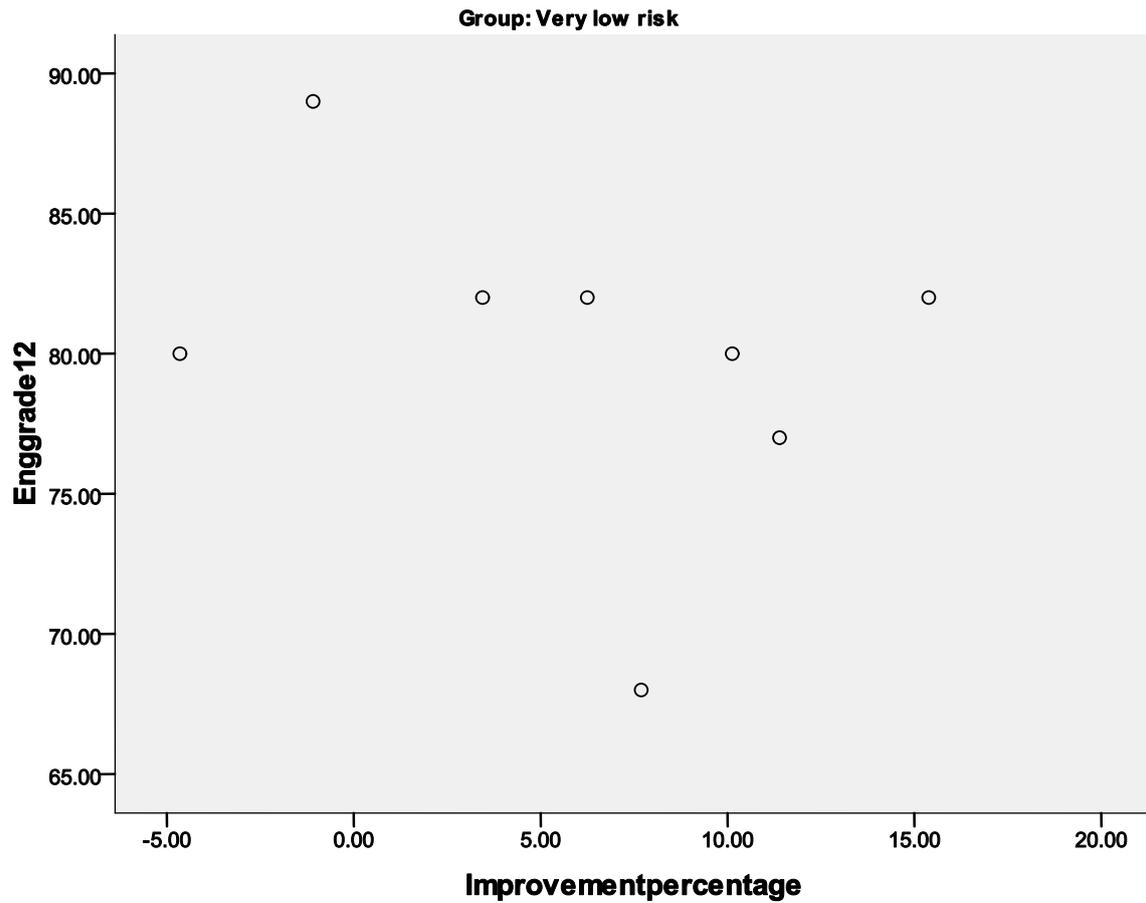
$r = .57, p = .027$  (significant)

**Figure 6.6: English Grade 12 correlation to improvement percentage: Group E medium risk group.**



$r = .57, p = .035$  (significant)

**Figure 6.7:** English Grade 12 correlation to improvement percentage: Group E low risk group.



$r = -.31, p > .05$  (not significant)

**Figure 6.8: English Grade 12 correlation to improvement percentage: Group E very low risk group.**

As was seen from earlier results (section 6.2.2.1), Grade 12 Afrikaans and English marks correlate with each other to a statistically significant extent, in both Group E and Group A. Partial correlations were run in order to determine whether the significant correlations (between Grade 12 English and the improvement percentage) found for three of the four risk level groups for Group E were as a result of the correlation between Afrikaans and English. When the effect of English is partialled out, the correlation remains insignificant in all the groups ( $r < .65, p > .05$ ). However, when the effect of Afrikaans is partialled out, the correlation drops, all three groups still display significant correlation, High risk  $r = .81, p = .025$ , Medium risk  $r = .61, p = .021$ , Low risk  $r = .56, p = .048$ . The correlation between English Grade 12 marks and the improvement percentage is thus not as a result of the strong correlation between Afrikaans and English Grade 12 marks.

The results for Group E are different in that for four of the three risk levels there is a significant correlation between the improvement percentage and English Grade 12 performance. The results seem to suggest that improvement in conceptual fluency is related to Grade 12 English marks for these specific risk level groups within Group E only. However the sample size is small so no conclusive interpretations can be made. Cohen's rule of thumb was used to analyse the practical significance (i.e. the meaningfulness of the differences, by indicating the strength of correlation). According to Kirk (1996: 62–65) practical significance investigates the strength of a treatment effect without the complication offered by sample size. When using Cohen's rule of thumb, the strength of the significant correlations between the improvement percentage and English Grade 12 marks for the risk level groups of Group E, can be interpreted as large ( $r < .8$ ) for the high risk group, medium ( $r < .5$ ) for the medium risk group, and medium ( $r < .5$ ) for the low risk group.

### 6.2.3 The relation between factors other than language of instruction and conceptual fluency

The results presented in this section are related to the fourth aim of the present study, namely *to consider other factors than language of instruction as likely determiners in the development of conceptual fluency*. In order to pin down the factors that might have an influence on the development of conceptual fluency in higher education, the relations between conceptual fluency and various other variables were explored. These factors include conceptual fluency at point of entry to university (measured by TAG and TALL), overall academic achievement in Grade 12 and overall academic achievement after the first semester. These will be correlated first to Test 4 and second to the final mark for AL 111. The results are presented in Tables 6.17-6.20.

**Table 6.17: Correlation Test 4 other factors: Pearson's r values for Group A.**

	1 <sup>st</sup> semester		Grade 12 average
	academic TAG achievement	TALL	
Test 4	.69***	.58***	.44**
	.46**		

\*\* = significant at the .01 level; \*\*\* = significant at the .001 level

**Table 6.18: Correlation AL 111 other factors Pearson's r values for Group A.**

	1 <sup>st</sup> semester		TALL
	Grade 12 average	achievement TAG academic	
Overall academic literacy		.73***	.60***
	.46**	.64***	

\*\* = significant at the .01 level; \*\*\* = significant at the .001 level

**Table 6.19: Correlation Test 4 other factors : Pearson's r values for Group E.**

	1 <sup>st</sup> semester		Grade 12
	achievement TAG academic	TALL	average
Test 4	.71***	.56***	.75***
	.71***		

\*\*\* = significant at the .001 level

**Table 6.20: Correlation AL 111 other factors : Pearson's r values for Group E.**

	1 <sup>st</sup> semester		TALL
	Grade 12 average	achievement TAG academic	
Overall academic literacy		.65***	.58***
	.74***	.79***	

\*\*\* = significant at the .001 level

All the variables selected show a strong correlation to performance on Test 4 and the overall mark of AL 111. The findings for both groups are similar, in the sense that the same factors are related to conceptual fluency in a significant way.

### 6.3 THE EFFECT OF L2 AS LoTL ON ACADEMIC ACHIEVEMENT

In this section, results pertaining to the fifth aim of this research, namely *to investigate the possible effect of the L2 as medium of instruction on cognitive development, as reflected in overall academic achievement during the first year at university*; are presented. Academic learning is regarded as a particular cognitive function (see section 2.2.1 in Chapter 2). For the purposes of this research academic achievement as

represented by the average of the first year subjects is used as a measure of academic learning. This is of course a crude measure, and cannot capture the complexities of the different types of expertise that are required for different subjects. The measurement of academic achievement is limited in terms of time, as it is only measured across the first year of study. It also does not take into account the factors which interplay with academic achievement such as personality types, socio-economic conditions, learning styles etc. However, this is the measure that is used in order to promote students to further years of study, and in order to judge students' suitability for scholarships etc. The effect that increased use of the L2 might have on this measure is investigated in this section of the work.

### 6.3.1 Comparison of groups: academic achievement

The two groups were compared in terms of academic achievement during their first year at university. Academic achievement was determined by the average score of all the subjects enrolled for during the participants' first academic year.

The means of the groups for the first semester are presented below in table 6.21. Independent sample t-tests were run to determine if there were any significant differences in means between the two groups. After the first semester, there was no significant difference in this measure of academic achievement,  $t(85) = -.424, p = .607$ .

**Table 6.21: Means academic achievement first semester**

Overall Academic achievement first semester		
	Group A (n = 42)	Group E (n = 45)
(mean)	65.8	64.24
(SD)	13.71	13.86

The means of academic achievement at the end of the first academic year are presented below in table 6.22. An independent sample t-test that was run, showed there was no statistically significant difference between the two groups,  $t(83) = .122, p = .903$ .

**Table 6.22: Means academic achievement end of first academic year**

Overall Academic achievement end of year		
	Group A (n = 42)	Group E (n = 45)
(mean)	60.76	61.15
(SD)	13.68	16.03

This overall mark includes support subjects such as AL 111 and computer skills, which do not necessarily form part of the core subjects of the discipline. In total two support subjects were done by the students in this sample. These support subjects were removed from the scores. The resulting means for the two groups are presented below in table 6.23.

**Table 6.23: Means academic achievement end of first academic year without support subjects**

Overall Academic achievement end of year (without support subjects)		
	Group A (n = 42)	Group E (n = 45)
(mean)	60.44	58.79
(SD)	14.42	15.27

An independent sample t-test shows that there is still no statistically significant difference between the two groups  $t(80) = -.502, p = .617$ .

### 6.3.2 Factors other than LoTL in academic achievement

As LoTL does not seem to influence academic achievement for this specific sample, the relation between other factors and academic achievement were subsequently investigated. These factors include average Grade 12 marks, first semester academic achievement, English Grade 12 marks, Afrikaans Grade 12 marks, and TAG and TALL. These factors were correlated to overall academic achievement for the year, as well as to academic achievement excluding the support subjects. Pearson correlations tests were used to determine the extent to which these variables correlate to academic achievement. These correlations were firstly run for the group of participants (87) as a whole, and then for the specific groups. English Grade 12 and Afrikaans Grade 12 marks do not correlate to academic achievement in a statistically significant way. The correlation between Afrikaans Grade 12 marks and the overall academic achievement is  $r(85) = -.08, p > .05$ , while the correlation between English Grade 12 marks and overall academic achievement is  $r(85) = -.06, p > .05$ . When the larger group is split into the two groups, the same trend is observed (no significant correlation) for both Group A and Group E. For Group A the correlation between English Grade 12 marks and overall academic achievement is  $r(41) = -.19, p > .05$ , while for Group E it is  $r(44) = -.06, p > .05$ . For the correlation between Afrikaans Grade 12 grades and academic achievement, the situation is not much different. Group A shows a correlation of  $r(41) = -.11, p > .05$ , while the Group E has a correlation of  $r(44) = -.06, p > .05$ .

Correlations were also run between the average of the major subjects only and: TAG and TALL; Grade 12 marks. The results of these correlations are presented below in tables 6.24- 6.25.

**Table 6.24: 1st year major subjects correlated to Grade 12 average and TAG and TALL: Pearson's r values for Group A.**

	Grade 12 average	TAG
TALL		
1 <sup>st</sup> year major subjects	.60***	.58***
	.41**	

\*\* = significant at the .01 level; \*\*\* = significant at the .001 level

**Table 6.25: 1st year major subjects correlated to Grade 12 average and TAG and TALL: Pearson's r values for Group E.**

	Grade 12 average	TAG
TALL		
1 <sup>st</sup> year major subjects	.70***	.56***
	.56**	

\*\*\* = significant at the .001 level

For both groups there are significant correlations between TAG, TALL and Grade 12 average on the one hand and academic achievement at the end of the first year at university. Differences between the two groups seem to be minimal.

## 6.4 INTERVIEWS

This section of the work addresses the sixth aim of the dissertation, namely, *to investigate the influence of increased exposure to the L2 (English) as language of instruction on participants' self-perception of their language proficiency in an academic context*. This discussion will provide more insight into different ways in which the participants make use of both their languages in a higher education context.

The interviews were conducted with four of the participants whose tests results and other information was also available. Two of these participants are from Group E and two from

Group A. These were Jaco<sup>26</sup> (male, 19 years of age) and Juanita (female, 19) from Group A and Rikki (female, 19) and Elisna (female, 19) from Group E. These students at the time of the interviews were in their second year of study. Further, another three interviews were conducted with students in their third year of study, from the same faculty as the sample on which this study was based, (all male between 20 and 22 years). These participants are referred to as Byron, Gregg, and Elton. The sample is small, but the aim was not to be able to generalise, but rather to give a voice to bilingual participants, and gain insight into how different individuals experience teaching and learning practices in an L2. Interviews were conducted in Afrikaans. Notes were taken during the interviews. Where relevant, specific phrases or sections will be used in the analysis to illustrate information provided in the discussion; these examples will be translated into English.

Recurring themes, as well as themes which might be idiosyncratic to a specific group or individual will be discussed. The method of theme analysis which was used, is a method proposed by Miles and Huberman (1984). This three stage analysis includes data-reduction, data display and conclusion drawing. Appleton (1995: 995) cites Miles and Huberman who define data reduction as "the process of selecting, focusing, simplifying, abstracting and transforming the data." The data reduction process of this analysis entailed identifying all the themes in the interviews. These themes were originally organised around students' answers to the questions in the interviews. Secondly, common themes or topics were identified and ordered accordingly. Themes which occurred in the majority of interviews were distinguished from themes which were only restricted to a specific group or particular individuals. Interest was not only in common themes but also in particular individual perceptions. Themes were identified as common (**C**), (if they occurred in more than half of the students), group specific (**G**), (if they were confined to a specific group, control, exposure or senior students) or idiosyncratic (**I**), if they only occurred with one specific student. The notes of the interview were consulted on more than one occasion, at different points in time, and were re-ordered and organised a number of times, until the final categorisation was decided upon. The questions of the interview were used as tool of categorisation, although themes were also included that were not necessarily part of the questions asked, but information volunteered by students.

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<sup>26</sup> The names used in the dissertation are not the participants' real names. However, names, rather than participant numbers are given to give the sense of a "bilingual voice" in the research. Participants are regarded as more than just objects of study, but as people with histories and valid stories to tell.

The data will be presented in discursive form, with excerpts from the interviews used as illustrative material or support. This forms only the first part of the analysis. This thesis follows Pavlenko (2007: 167) in her assertion that "thematization is a preliminary analytical step and cannot be confused with analysis." For the analysis of the interview data a particular theoretical framework was adopted. In Chapter 7 the themes which were identified will be discussed by using socio-cultural activity theory and Bakhtin's notions of dialogic qualities of texts (Bakhtin 1981; Lantolf & Pavlenko 2000). By using these theoretical orientations, conclusions will be drawn about the thematic analysis. Thus the conclusion drawing component of the analysis will be discussed more fully in the next Chapter.

#### **6.4.1 Language background**

Students were firstly asked about their language backgrounds. All the students interviewed were between the ages of 18 and 22. All of them also regard Afrikaans as their L1, although they have had various and varied encounters with English.

##### **6.4.1.1 First encounters with English**

Of the seven students, 5 reported that their first encounters with English were at school and that the formal acquisition at school played the most important role in their acquisition of English. Elisna indicated that her exposure to English was basically just restricted to school,

(1.) *Basies net op skool. Ek kom van XX<sup>27</sup> af, 'n klein dorpie in die XX*  
(‘Basically just at a school, I come from ... a small town in the ...’)

However, some of these students indicated that exposure to English was not restricted to school. Some of them had friends, neighbours or family members who had English as L1. Juanita indicated that she has had English speaking friends, since she was young; her best friend and neighbour had English as L1.

(2.) *Ons bure was Engels, my beste vriendin was Engels. Ek het altyd Afrikaanse en Engelse vriende gehad.*  
(‘Our neighbours were English, my best friend was English. I always had Afrikaans and English friends.’)

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<sup>27</sup> Information removed to protect the identity of the participant.

Exposure to English through the larger community, such as church and through the media, specifically television was also mentioned during the interviews. Elton, one of the senior students, revealed that his first encounter with English was in church. Another of the senior students, Gregg, also reveals that his first encounter with English was in the family domain. Many of his cousins speak English as L1, so from a young age he was exposed to English. Rikki was the only student who talked about migrating from a predominantly Afrikaans area to an English area, when her family moved in the middle of her Grade 11 year.

#### **6.4.1.2 Rating of English language proficiency**

All the students gave a high self assessment of their English language proficiency. None of the students assessed their English language proficiency as less than 3/5 for any of the measures given (see interview schedule in appendix A). The senior students tended to rate themselves lower than the second year students. Students mostly reported that their Grade 12 language marks give a reasonable indication of their language proficiency, with a few exceptions. Rikki in answer to the question of whether she thought her language marks at school gave a reasonable indication of her language proficiency at the end of Grade 12, responded in the following way:

*(3.) Glad nie! Ek het Engels tweede taal gedoen op skool, en hulle het daardie jaar die vraestel soos in onbillik maklik maak, so hulle het redelik die punte afgebring, ek dink nie dit is 'n goeie indikatie van my taalvaardighede nie.*

(Not at all! I did English second language at school and they made the paper like unreasonably easy that year, so they brought the marks down, so I don't think it is a good indication of my language proficiency')

Jaco scored almost identical marks for Afrikaans and English, but does not believe that this indicates that he is equally good in both languages, because he did English as L2 at school, while obviously doing Afrikaans as L1. He believes that the standard of the two papers are not the same.

#### **6.4.1.3 Language use at school**

A common answer to the questions about language use at school was that the majority of the students did Afrikaans as L1 at high school, and went to schools that were mostly single medium Afrikaans. There were two exceptions, Jaco, revealed that he went to a bilingual school. At his school some subjects were offered through English and Afrikaans, while others were offered only through Afrikaans. Gregg also went to a

bilingual school which had parallel streams in Afrikaans and English. Elisna did a subject on Information Technology in Grade 12. She reports that the subject terminology was mostly in English; therefore she also did her Grade 12 exam for this subject in English. This data reveals that these students already had encounters with English as medium of instruction, although not to the significant degree that they currently do at university. It also points to the complexity of determining which students had prior exposure to English in a learning context, and which did not. Gregg for example lives on the countryside of the Western Cape, so the assumption would be that his school would be monolingual Afrikaans, but it is in fact a parallel medium Afrikaans/English school. Elisna also indicated that she comes from a small town, where the dominant language was Afrikaans, but she still did Afrikaans and English as first language and wrote one content subject in English.

Rikki reveals that she grew up in an area in which Afrikaans was the dominant language and later in her life while at secondary school she moved to an area which was predominantly English. However, she still wrote her Grade 12 final exam in Afrikaans (all her subjects). Afrikaans was used as the language of schooling for all subjects. Jaco wrote all his subject exams in Afrikaans, and did Afrikaans as L1 and English as L2, although he attended a bilingual school. Although there seem to be some differences, the majority of students have Afrikaans as L1, went to monolingual Afrikaans schools and, and wrote their final Grade 12 exams in Afrikaans.

#### **6.4.2 Language use in an academic environment**

In order to assign students to groups, faculty yearbooks were used to determine which modules were conducted through the parallel medium option and which through the T-option. The interviews were also an opportunity to determine to which extent the language policy in the yearbook is put into practice in the classroom. Six of seven of the interviewed students report that the classes are conducted according to the option that is given in the yearbooks and that they attend the classes that they are assigned to according to their timetables. The yearbooks seem to give a reasonable indication of what actually happens in the classrooms. Only one student, Elton, indicated that he attended a group that he was not originally assigned to because he had a clash. Students also report that lecturers using the T-option use it in varying ways. Some lecturers have all their notes in English, but use Afrikaans to speak in the class (or vice versa), while some tend to have

50% of their notes in English, 50% in Afrikaans and also more or less equally divide their speaking time between the two languages. Gregg in particular felt that the T-option classes leaned more towards English than Afrikaans. From the data gathered from the interviews it seems clear that the assumption can be made that students who are exposed to the T-option are also exposed to English more than students who only attend A- option classes.

#### **6.4.2.1 English language proficiency at University**

Students mostly reported that their English showed some improvement during their time at university, which they mostly attribute to the prevalence of English textbooks. Students from Group E and the senior students in particular indicated that they feel that their English improved. However some idiosyncratic answers were also found. Jaco, from the control group, feels for example that his English did not improve, because he learned English terms, but did not learn any academic "skills" in English. Juanita who also belongs to the control group, actually reports that her English became worse while at university. This students' best friend at home, is English speaking and she always had English friends. Now, however, almost all her friends, classmates and classes are in Afrikaans. She reports that she feels negative about the fact that her English is deteriorating, but also emphasised the fact that she chose to come to this university, and that her second choice of university was another Afrikaans university.

(4.) *Ek het gekies om na 'n Afrikaanse Universiteit toe te kom, my tweede keuse was Vrystaatse Universiteit, nog 'n Afrikaanse Universiteit.*

(I chose to attend an Afrikaans University; my second choice was the University of Free State, another Afrikaans university.)

Elton reports that his English did not change in any way, his friends and family are all Afrikaans, therefore English only plays a restricted role in his life.

(5.) *Meeste van my vriende en klasse is in Afrikaans, Engels speel net 'n klein rol.*

(Most of my friends and classes are in Afrikaans, English only plays a small role.)

The use of English textbooks was a theme that occurred across the board: all the students emphasised that although they might receive classes in Afrikaans most of the learning material and *all of the* textbooks were in English.

#### **6.4.2.2 Afrikaans language proficiency at University**

On the question of how their Afrikaans changed, the answers do not show common themes across the board, rather in this case, a difference can be detected between the two students belonging to Group E, the two students belonging Group A, and the senior students. The two students from Group E report an increased use of code-switching and perceived it as negative. They feel bad about mixing their languages, and see this as an indication that they are losing proficiency in Afrikaans. Rikki reveals:

*(6.) Ek voel dat my Afrikaans ietwat negatief verander het. Dit is jammer dat ek meer my tale meng en dat Afrikaans effens onderdruk word, maar ons moet Engels ook kan gebruik.*

*(I feel that my Afrikaans has changed in a negative way. It is sad that I mix my languages more and that Afrikaans is somewhat oppressed, but you have to use English as well').*

They also mentioned that they feel their English is improving at the cost of Afrikaans. Contrary to this, Byron, one of the senior students actually believes that his Afrikaans improved while at university, because he acquired academic vocabulary which enables him to structure his assignments in such a way that his point comes across more clearly. Gregg feels that his Afrikaans proficiency stayed the same.

#### **6.4.2.3 Doing assignments and studying**

A lot of individual variation was found in terms of the selection of language for assessment and learning purposes both within and between groups. As such no real common themes could be identified, except that students do make use of all their linguistic resources for a number of different reasons. Jaco reports that he uses Afrikaans exclusively in order to write his assignments, this he does because he feels more comfortable doing it in Afrikaans but also for another reason. He believes that writing in Afrikaans makes it easier not to plagiarise, especially when he has to submit assignments via the electronic plagiarism detection tool. Byron also mentions this specific “advantage” of doing assignments in Afrikaans.

Gregg also chooses to do assignments in Afrikaans, while Elton does one particular module in English because he attends the English class for this group. Elisna prefers learning through English but chooses which language to do assignments in depending on the context and situation she find herself in, which not only depends on the module she is doing but also the lecturer concerned. In particular she refers to a lecturer who conducts his classes through the A option. She does not like this lecturer's style of lecturing and

transferring knowledge, therefore she chooses to write assignments in English. Byron believes that in order to hand in good assignments you have to access English information sources as most of the research output is reported in books and journals in English.

#### **6.4.2.4 Understanding concepts and new information**

As for general understanding of concepts, students also report that they use different languages. Jaco believes that he understands concepts equally well in Afrikaans and English. Elisna reports that she understands some concepts better in English and some better in Afrikaans, it depends on the context and situation she finds herself in. Elton makes sense of new information mostly but not exclusively through Afrikaans. Gregg makes sense of new information in Afrikaans and also believes that he understands concepts better in Afrikaans, although he sometimes uses English to facilitate understanding. Byron prefers to use Afrikaans when he is trying to understand new information, but believes that he understands concepts equally well in both languages.

#### **6.4.3 Effects of L2 English material on knowledge development**

Almost all the students perceive that learning through English does not affect their academic performance negatively; however they all report that it takes longer to study through English. This seems to be balanced out with the fact that they believe learning through two languages facilitates understanding. Byron talks about his experiences in learning through English in the following way:

*(7.) Aan die begin was die aanpassing om deur Engels te leer moeilik, dit het al hoe makliker geraak en nou selfs verkies ek dat Afrikaans en Engels in dieselfde klas gebruik word, Afrikaans help met die verstaan van die werk, terwyl meeste van die informasie in Engels is.*

(At the beginning I found the adjustment to learning through English difficult, but it became easier. Now I would actually choose to have Afrikaans and English used in the same class. Afrikaans helps with my understanding of the work, while most of the information is in English')

Elton, another senior student, sums his experiences up in this way:

*(8.) Dis moeiliker want die werkslading is meer, maar dis ok makliker, want ek verstaan beter as ek deur altwee tale leer.*

(It is more difficult because the workload is heavier, but it is also easier because I understand better when I study through both languages').

#### **6.4.4 Perceptions of bilingualism**

A common theme expressed by the majority of the participants was that students were mostly positive towards bilingualism. Rikki, for example, reports that being bilingual allows you the opportunity to study through another language and understand better. She reports that if you do not understand something in the one language, you can translate it into the other and try and facilitate understanding in that way. By some bilingualism is viewed as a compromise, and as essential in order to survive in today's society. Jaco feels that:

*(9.) Afrikaanssprekendes weet dat hulle in 'n Engelse wereld leef.*

('Afrikaans speakers know that they are living in an English world.')

Another point is that students mostly believe that bilingualism holds cognitive benefits, facilitates learning and understanding, but might not hold linguistic benefits or benefits for the maintenance of Afrikaans. Gregg feels that Afrikaans can get lost in all the English and in particular that his field of study is becoming more English. Bilingualism is also viewed positively in terms of communication, and as more inclusive than monolingualism. In particular, the senior students emphasise this specific benefit of bilingualism.

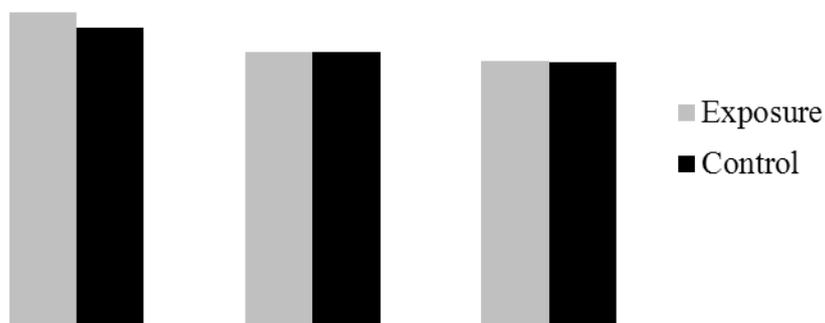
In the next Chapter these themes will be taken up again, firstly to support, contradict, exemplify or add more detail to the findings of the quantitative section of the work. Secondly, these themes will be further analysed within the sociocultural tradition of activity theory and agency (Pavlenko & Lantolf 2000). The themes will also be analysed by looking at the dialogic qualities of these students' responses, which will refer to both internal links and external links (Bakhtin 1981). This analysis will be done to determine how the increased use of English has shaped participants' perceptions of their own language abilities and how they position these abilities in terms of their own and other voices and opinions.

### **6.5 SUMMARY**

#### **6.5.1 Results from language tests and academic achievement**

The quantitative data reveals that there do not seem to be significant differences in conceptual fluency (Test 4), AL 111 marks or overall academic achievement between the

two groups. A visual representation of comparisons of the groups in terms of these variables, after the first year of study, is presented in figure 6.9.



**Figure 6.9: Comparison between Group A & E: overall academic achievement, academic literacy at end of year.**

In spite of the fact that the two groups seem similar in terms of the development of conceptual fluency and academic achievement, there seem to be differences in how the use and knowledge of language is related to conceptual fluency in the L1. Here the differences between Group A and Group E in correlation patterns of English Grade 12 marks and improvement in conceptual fluency for particular risk level groups are relevant. Even though the sample sizes of the risk groups are small, the data emanating from the interviews might reveal more in this regard, specifically about how the knowledge of two languages is related to each other.

### **6.5.2 Results from interview data**

The interviews confirmed that background information regarding the participants in the study was largely similar; all the students interviewed regard Afrikaans as their L1. Their first encounters with English varied although school was identified as the main means of learning English by most of the participants. The language of schooling was mostly Afrikaans for most of the students, although some indicated that they attended parallel medium schools. The interviews also showed that the faculty yearbook was a reasonable indication of the language used in each of the modules.

With regard to the languages participants choose to study, do assignments, and internalise new information the answers vary. Participants make choices regarding this, which does not necessarily have to do with how proficient they are in a particular language. Students also report that their English has improved or stayed the same (with one notable exception which indicates that their English was negatively affected), while with regards to Afrikaans the participants from Group E indicate that their Afrikaans was negatively affected. None of the participants indicate that their studies have been negatively affected by the increased use of English, although it takes longer to study through English. They believe that using both English and Afrikaans holds benefits in terms of facilitating understanding.

The participants mostly view their bilingualism positively, believe that it holds cognitive benefits, but mostly emphasize the fact that bilingualism enables you to communicate with a wider range of people compared to monolingualism. Some participants, however, seem to think that bilingualism is a compromise in a country in which Afrikaans is increasingly being oppressed.

These themes will be picked up again in Chapter 7 and discussed in view of relevant theory; the significance of these findings will also be discussed in Chapters 7 and 8.

## CHAPTER 7

# THE EFFECTS OF INCREASED INSTRUCTION THROUGH AN L2 IN HIGHER EDUCATION: TESTING THE THEORY

### 7.1 INTRODUCTION

In this chapter the empirical results of the study will be discussed in view of the theoretical framework as this was set out in Chapters 2-4. Findings which support or contradict the hypotheses will be discussed within the framework of language contact in the bilingual individual in a South African higher education context. This discussion will in some cases support existing theoretical notions, in other cases add to or elaborate on it, and in some cases challenge existing theory. This chapter, similar to the previous one, will be organised around the research questions and aims of the study. Further it will place the results discussed in Chapter 6 within current theoretical thinking.

### 7.2 LANGUAGE USE IN HIGHER EDUCATION: IMPLICATIONS FOR 'CONCEPTUAL FLUENCY'

This section of the chapter addresses the first research question (see Chapter 1, section 1.5 for a complete list of research questions) of the dissertation, namely, "*How is 'conceptual fluency' instantiated in a higher- education context?*" This section will discuss two pertinent issues: Firstly the view of 'conceptual fluency' developed in this dissertation and secondly how conceptual fluency relates to academic literacy.

The view of 'conceptual fluency' which the arguments in the study were built on was developed by Kecskes and associates (2000, 2003, 2005). As the dissertation progressed, this view of 'conceptual fluency' was expanded and elaborated upon. The main aim of the thesis is to investigate the effect of increased instruction through the L2 on conceptual fluency in the L1; therefore 'conceptual fluency' forms an integral part of this dissertation. It is thus necessary to clearly show how the use of 'conceptual fluency' developed from the inception to the study, to how it is used in this point in the dissertation.

As discussed in the theoretical framework, 'conceptual fluency' is not an unproblematic notion; and it has been questioned and challenged, most notably by Jarvis and Pavlenko (2008). Jarvis and Pavlenko (2008: 230) particularly object to the way in which the notions of 'conceptual fluency', 'conceptual proficiency' and 'conceptual development' are used by Kecskes and associates. Jarvis and Pavlenko (2008: 230) believe that this particular use of terms such as "conceptual" in 'conceptual fluency' does not sufficiently consider existing outcomes and practices of research in bilingualism and cognitive psychology. They find that the current usage of the term "conceptual fluency" disregards the interdisciplinary nature of the phenomenon, and displays naivety in the way that concepts are theorised and defined. In view of the results of the present study and current theoretical thinking, this dissertation wants to propose a very specific instantiation of conceptual fluency for the context of language use in an academic setting. This dissertation uses 'conceptual fluency' in a very specific and narrowly defined way, which is similar to Kecskes and Papp (2003) in some respects, but also deviates from their definition in a number of important ways. This use of 'conceptual fluency' will be clarified in the sections that follow, while concerns raised by Jarvis and Pavlenko (2008) will also be addressed, specifically in section 7.2.3.

### **7.2.1 Conceptual fluency in the development of knowledge**

In this section the position that this dissertation takes to language use in academic contexts and in the process of knowledge development, will first be clarified. Second, the relation between conceptual fluency and academic uses of language will be discussed.

Language use in an academic setting is taken to be an important contributing factor to academic success by many working in the context of bilingual education, teaching English to speakers of other languages (TESOL), and within the context of the education of minority students (Cummins 1979, 1981; Collier & Thomas 2004). Biber et al. (2002: 10) state that the professionals who are working in TESOL "are aware of the special demands of academic reading and writing, especially in relation to texts books, research papers, and student essays and term papers." In South Africa the importance of language in the academic tertiary setting is not only linked to academic success and achievement, but is also seen as an important tool for transformation and social cohesion. In a report on transformation and social cohesion in public higher education institutions in South Africa, the section on language transformation opens with an acknowledgement that

language is the key to understanding oneself, to understanding others, and to achieving success in education. In essence, language is taken to affirm the individual; it serves as a means of communication and therefore facilitates social cohesion (Department Education South Africa 2008: 94). As discussed in Chapter 2, Halliday (1993: 94) argues that "language is not a domain of human knowledge"; in fact he says: "language is the essential condition of knowing, the process by which experience becomes knowledge." Thus academic discourse is perceived to be different from everyday language, not only in its structure and use, but also in terms of the different types of cognitive demands on the language user. Language use in an academic setting is also perceived to be an essential (although not the only) condition for student success and throughput. This view is also the one taken in this dissertation.

During the 1980s, language use in an academic setting, specifically in the context of bilingualism and SLA, became associated with Cummins' distinction between BICS and CALP. His point of departure that language use in an academic setting is context reduced and therefore requires more cognitive attention, has been widely followed. The present study follows a long history of research on language in an academic setting and acknowledges Cummins' contribution. However, the main premises of the theoretical framework are not built on Cummins' work; instead the dissertation tests the usefulness of 'conceptual fluency', in investigating particular aspects of academic language in a bilingual learning environment. The specific use of the notion of 'conceptual fluency' that will be proposed, is not CALP in a different guise. One fundamental difference between concepts used in understanding CALP and the notion of 'conceptual fluency' introduced by Kecskes (2003), relates to the view that 'conceptual fluency' is a key component of all effective language use. Kecskes' (2000) work on situation bound utterances which falls outside of institutional academic settings and formal language learning environments points out that 'conceptual fluency' is also required for everyday interactions. Conceptual fluency is fundamentally different from CALP, in that CALP only refers to uses of language in academic contexts, while conceptual fluency is seen as fundamental to all communicative interactions. This study supports Kecskes' position that 'conceptual fluency' is relevant for all linguistic interactions.

However, one point where I divert from Kecskes and Papp (2003) is in their proposed measurements of conceptual fluency, measurements which are also used in this

dissertation. These measures which include structural well-formedness, cognitive functioning and lexical diversity (see Chapter 5, section 5.6.2 for an explanation) will be argued to be more relevant to language use in an academic setting. This is evident of the fact that these measures for conceptual fluency were developed from Kecskes and Papp's (2000) work on written language produced in formal contexts. I want to argue that conceptual fluency in language use in other settings, such as naturally occurring spontaneous data, will not necessarily be able to be measured in the same way. To illustrate this point, the specific measure of lexical quality will be used. Lexical quality is typified by Kecskes and Papp (2003: 256) as "how varied and sophisticated the words or word types are." In more ritualised communication where the nature of the event requires repetition of certain words and phrases, this measure will not necessarily reveal whether the individual is more/less conceptually fluent. Brody (1986: 259) for example, finds that for the Tojolabal language, the most striking aspect of conversation is repetition of words, phrases and sentences. The nature of this repetition, however, is not unstructured; rather the form that each repetition takes is dependent on the function it fulfils in conversation. In order to be fluent in conversation, in Tojolabal language, repetition and the successful application of it is necessary. Brody (1986: 272) points out that repetition fulfils a number of general and language-specific functions which are revealed through an analysis of the social and discourse roles of repetition." These roles of repetition can only be ascertained by investigating the contextualised relationship between the participants involved in the communication. Clearly in this type of ritualised, conversational communication in the Tojolabal language, lexical quality, as defined above by Kecskes and Papp (2003) is not a true representation of how conceptually fluent a participant is. For this specific context, cognitive functioning, which includes metaphorical competence, might be the most important measure.

As the notion of 'conceptual fluency' is currently used the term is specifically suited to language use in an academic setting. Although research is still divided on what exactly constitutes being academically literate, and taking into account that academic literacies might be vastly different in different contexts, there is largely agreement that academic discourse is different from everyday discourse. Halliday (1993: 109) believes that becoming literate in an institutional setting means coming to grips with a new medium, but also the mastering of a new form of knowledge, and moving to a "grammatical metaphor" (see Chapter 2, section 2.3 for an exploration of what Halliday means by

grammatical metaphor). According to Horarik et al. (2006: 244) academic discourse is specialized knowledge which is related to research and which is primarily accessed through written texts, based on a theoretical argument. Biber et al. (2002) investigated diverse texts used at American universities. They found that almost all written texts at university were informational in nature and produced under circumstances in which it could be controlled and edited. This is contrasted to classroom discourse which for them seemed to have a more personally involved nature, and displayed more dimensions of involvement than detachment. "Written registers like textbooks and course packs are characterized by a dense use of relative clauses and phrasal coordination, reflecting styles of referring that are minimally dependent on the situational context" (Biber et al. 2002: 32).

I suggest that the measures of conceptual fluency put forward by Kecskes and Papp (2003) are useful in defining the linguistic features of written academic discourse and the skills and knowledge students need to be successful in producing or interpreting such discourse. I want to argue that what is currently being measured by their view of 'conceptual fluency' is the "grammatical metaphor" necessary for students to become members of an academic community. Thus the decision to use academic literacy tests to measure Kecskes and Papp's notion of conceptual fluency is justified (see Chapter 5 on Research Methodology, for more detail on TAG and TALL). However, although these measurements work well for the purposes of this study, it cannot account for all types of 'conceptual fluency'. If conceptual fluency is defined as a fundamental requirement for all fluent language use, the definition and exploration of the term as it is instantiated in this study, as well as the particular indices used to measure it, is not entirely suitable. It is important to recognise the shortcomings of measuring 'conceptual fluency' in this specific way if the concept to be applicable in different contexts and situations of language use.

Further, I believe that all language users (monolingual or multilingual), require conceptual fluency, in all language interactions, which might take on different forms depending on the situation that one finds oneself in. Conceptual fluency is not a mental capacity unique to bi/multilinguals. What is unique however is the fact that bilinguals can draw on more than one language in a given situation and this leads to the development of a unique type of conceptual fluency that results from interaction between two or more languages in the speaker's mind. Of course, interaction between two languages in the

mind of the individual bilingual is in some way mirrored in the world which the speaker inhabits and in which these languages are used. Therefore the argument will also be made that conceptual fluency has to be redefined to be applicable to all contexts and all language users (not only multilinguals), and to include a more dynamic aspect in order to account for the interaction between mind and world.

### **7.2.2 An extended view of conceptual fluency**

Considering the theoretical objections against the use of conceptual fluency, as well as considering the results of the current dissertation and the methodology used, I shall adjust the definition and use of this term. Building on the definition of 'conceptual fluency' offered by Danesi (1995) and Kecskes and Papp (2000, 2003), I wish to propose a view of conceptual fluency which is, I believe more dynamic than the existing one and that includes the situatedness of language (Lave 1991, 1996). This definition also foregrounds the fact that conceptual fluency is important for all language users, although among bilinguals it gains an additional meaning as it functions differently.

I propose the following alternative to the current use of 'conceptual fluency' (see Chapter 4, section 4.2.4 for Kecskes' definition):

*Conceptual fluency refers to the capacity of a speaker in any communicative event to draw on all the linguistic knowledge he/she has in all the languages and language variations that he/she knows. This capacity includes the ability to use concepts, knowledge and skills acquired through the channel of all and/or any of the languages that the person knows. Multilingual speakers gain in conceptual fluency as they can draw on more than one system and thus select and use what is most appropriate for the context in which they interact. A major component of conceptual fluency is the use of "language appropriate" conceptual metaphors, or successful transfer of conceptual metaphors from one language to the other. Conceptual fluency is a developmental capacity which is not equally developed in all speakers; bilinguals and multilinguals specifically; appear to develop conceptual fluency in different ways, thus different levels of conceptual fluency are manifest and measurable.*

Kecskes (2010: 106), in his most recent publication, addresses one of the criticisms that I offer against his definition of 'conceptual fluency', namely the fact that monolinguals are also conceptually fluent. He acknowledges that monolinguals also need to have a range of linguistic skills and knowledge, but believes that "dialectal differences cannot be compared to differences between language systems because dialects are the concrete

representations of the sum of language systems." Nevertheless, it must be acknowledged that monolinguals do not only have the ability to switch between different dialects, but also between different styles and registers. Kecskes (2010: 106) also address concerns that the situated nature of language is not acknowledged in his use of conceptual fluency by arguing that language usage not only interacts with the language system, but that the system also influences language usage. Thus Kecskes (2010: 106) believes that it is a "two way street" and that it is not necessary to use a usage based view of 'conceptual fluency'. However, I still believe that the usage based view should be built into a definition of conceptual fluency. The results of the dissertation reported in Chapter 6 indicate that the interaction between the L1 and L2 seems to be partly unconscious. The academic literacy tests for all the participants in the study are in Afrikaans, the English language is not explicitly activated in the writing of these academic literacy tests or completion of any of the tasks in the AL 111 module. However, for Group E, the development in Afrikaans conceptual fluency shows a relationship to English. The sample size is however small, and these findings might not be generalizable. However it is still believed that this particular interaction of Afrikaans with English develops naturally from the language contact situation in the individual.

There is also another component to this interaction of two languages in the same mind. Many of the bilingual participants in this study consciously choose which part of their fluency to activate, or which knowledge or skills to use from which particular language. Participants indicate that they make conscious choices about which language to write assignments in or to study in for various reasons. These choices might not necessarily be based on how proficient they are in the language: ("*most of the concepts are in English*"; "*Afrikaans allows me to sidestep the plagiarism detection tool*" etc.). This illustrates that students do exercise a degree of agency in their own development and use of conceptual fluency in an academic context. Within some models of academic literacy, such as the academic literacies model of Lea and Street (2006: 370) the role of language in the learning process is seen as tied up with issues of power, identity and agency. I want to argue that the theoretical construct of 'conceptual fluency' also needs to take into account the agency of individuals, and therefore one cannot ignore a 'usage based' view thereof.

Kecskes and Papp (2000, 2005) have minimally attended to agency as an important part of 'conceptual fluency' by alluding to the fact that each individual develops conceptual

fluency in a specific way due to individual variability. They state that in particular in the foreign language environment, "much depends on the individual effort of language learners. If they are willing to work on their language proficiency systematically they usually reach the threshold beyond which multi-competence begins to develop" (Kecskes & Papp 2000: 88). However, even resisting working on proficiency is a form of agency. There are of course different constraints for different individuals (be they cultural, institutional, educational, socio-economic, etc.), but at least to some extent students can decide how linguistically proficient they want to become in a particular language in an academic setting. Conceptual fluency follows as a consequence of that. Writing in the sociocultural tradition of Vygotsky, Kramsch (2000: 135) states that "individual learners always have the capacity to choose from among the increasing arsenal of signs that they acquire throughout their study those that best fit their communicative needs." The development of conceptual fluency is partly a consequence of L2 influence but there is also a conscious choice, at the hand of each individual as to what suits their purposes best, which linguistic knowledge, conceptual knowledge or subject knowledge they want to use in which language. This point is also made by Canagarajah (2006: 601–602) in his discussion on the academic writing of multilinguals. He foregrounds the agency of multilingual writers and believes that they "are not linguistically or culturally conditioned to write only in one particular way; rather they can be rhetorically creative." Other criticisms against Kecskes' use of conceptual fluency will be addressed in 7.2.3 below.

### **7.2.3 Addressing the criticism of what counts as 'conceptual'**

Jarvis and Pavlenko (2008) object against the use of "conceptual" in 'conceptual fluency'. I believe that these objections can be addressed by clarification of how the term conceptual fluency is used. I am in agreement with Kecskes and Papp (2000, 2003) that what is transferred in the interaction between two or more languages in the same mind is not only linguistic rules, but also conceptual knowledge and skills. I also believe that the specific way in which Kecskes (2000, 2003) uses "conceptual" in 'conceptual fluency' should be made more explicit, in order to clearly align with a particular theoretical orientation. Jarvis and Pavlenko's (2008) objection against the use of the term is that more attention should be paid to previous research on conceptual transfer and change and how concepts are used in cognitive science and neurolinguistics. Jarvis and Pavlenko

(2008: 113) in their framework refer to concepts as the "mental representations of classes of things" and to the term 'categories' as "the classes themselves."

This dissertation does not use conceptual in the sense of research on concepts in cognitive science, but rather in the way that it is used by Lakoff and Johnson (1980), which is also the way in which Kecskes uses the term 'conceptual' (Kecskes & Papp 2000). In particular it is used to refer to Lakoff and Johnson's (1980) assertion that most of the language used in everyday speech is metaphorical in nature. The argument can be made that part of becoming fluent in a language is the acquisition of the appropriate metaphors in the language. These metaphors are prevalent in everyday conversation and in academic language use. In the acquisition and use of an L2, the individual is not only learning a new term for a familiar concept. According to Lakoff (1992) "metaphor is not mere words", in fact he believes that "metaphor is not just a matter of language, but of thought and reason" and that language is in fact secondary. Littlemore and Low (2006: 268) argue that metaphoric competence plays an important role in all areas of communicative competence, "in other words, it can contribute centrally to grammatical competence, textual competence, illocutionary competence, sociolinguistic competence and strategic competence." Thus if the term "conceptual" is used in this specific way, lexical quality, cognitive functioning, metaphorical competence and structural well-formedness can all be used as measures of a particular type of 'conceptual fluency'. If conceptual metaphor is used in this specific tradition, the measures proposed by Kecskes and Papp can be strongly argued to be a measurement of such fluency; however the specific measures would need to be adjusted to account for different types of linguistic and contextual settings, as argued above in section 7.2.1.

The TAG and TALL test used to investigate the development of conceptual fluency in this current study uses a number of conceptual metaphors. A brief example will be used to illustrate this (see Chapter 5 for a more thorough account of what TAG and TALL tests). One metaphor that can be identified in one of the texts used is the "drought is violent/criminal" metaphor. Consider the following example from one of the TAG tests:

(10.) "Die huidige *droogte* het Suid-Afrika en groot dele van die subkontinent *aan die keel beet*, dit is 'n *monster* wat nie gou sy *greep gaan verslap* nie. In die Wes-Kaap is *talle boere* alreeds op hul *knieë gedwing* deur die droogte."

('The current drought has South Africa and a large part of the subcontinent *by the throat*; it is a *monster* which *will not loosen its grip*. In the Western Cape many farmers have already been *forced to their knees* because of the drought.')

Here students are required to process the metaphor that drought is violent, and that the "behaviour" of a drought is similar to that of a violent criminal. This is an example of the kind of conceptual metaphor that students have to interpret in order to answer particular questions that assess academic literacy. Thus the test requires students to illustrate aspects of conceptual fluency in the tradition of conceptual metaphor (see Chapter 5, section 5.6 on data collection instruments).

This section introduced the traditions in which the notion of 'conceptual fluency' has developed and the way in which it is used in this dissertation. My argument is that academic literacy tests can also be used to measure a specific type of conceptual fluency. This section also indicated ways in which the notion of 'conceptual fluency' can be extended beyond its current definitions in the work of Kecskes and Papp by addressing criticism and objections to its use in the literature as introduced in Chapter 4. For this specific dissertation the type of conceptual fluency that was measured is conceptual fluency in a formal higher education context, one specific type, but by no means the only type, of conceptual fluency. The rest of the discussion in this dissertation will refer to this particular type of conceptual fluency. Building on this clarification of 'conceptual fluency' and the use of the concept in the current dissertation, the following section will discuss how the increased use of English affected the 'conceptual fluency' in Afrikaans of the participating Afrikaans/English bilinguals.

### **7.3 THE EFFECTS OF L2 ENGLISH AS LoTL ON CONCEPTUAL FLUENCY IN L1 AFRIKAANS**

This section addresses the second research question, namely

*"What effect does the L2 as language of teaching and learning have on 'conceptual fluency' manifested and measured in the L1 when it is used in a higher-education context?"*

The hypothesis held *that increased exposure to English as language of teaching and learning will have a measurable effect on the conceptual fluency<sup>28</sup> in Afrikaans*. The effect of English was investigated both across a time period of one academic year and comparatively between a group with less exposure to English (Group A) and a group with more exposure (Group E). Both groups showed an improvement in conceptual fluency as

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<sup>28</sup> Hereafter 'conceptual fluency' refers specifically to 'academic conceptual fluency'.

measured by Test 4. The improvement was found in almost all the subsections of the test investigated in this research (only the section on scrambled text did not improve significantly for Group A, but see Chapter 6, tables 6.3 and 6.6 for an account of this result). This improvement was expected for several reasons. First, because of increased exposure generally to the kinds of tertiary-learning-specific genres and texts typically used in an academic context. Second, all the participants were enrolled for an instructed, credit bearing course in academic literacy using texts and exercises relevant to the students' learning environment, i.e. from their other subjects. Third, participants experienced a positive washback effect in that they had become more test-wise and acquired skills in doing tasks in exam settings at a tertiary level. Having established that all students had improved, the next question was whether Group E had shown greater or less improvement, to a level of statistical significance in these measurements of conceptual fluency.

The results of the study did not deliver any differences of statistical significance between Group E and Group A. Thus it cannot be claimed that the additional exposure to English in the classroom has a directly measurable effect on students' conceptual fluency, at least not to a statistically significant extent. When certain sections of the test were isolated, specifically the sections similar to the measures that Kecskes and Papp (2003) propose, no significant between-group differences were found. An interesting result is the fact that for Group E all the subsections improved to a statistically significant extent. Thus if we use Kecskes and Papp's terms, all the measures of conceptual fluency including structural well-formedness show significant improvement, which is not the case for Group A. The subsections which show the most significant improvement, ( $p < .000$ ) are the sections of text type, text comprehension and academic vocabulary. The sections on lexical quality and cognitive functioning show the most significant improvement for both groups.

The results, while not showing an advantage for Group E also showed no advantage for Group A. Further the results did not convince that education received largely through the medium of the L1 led to better conceptual fluency in an academic environment. Some explanations for this apparent lack of measurable effect can be found in the outcomes of further investigation where other factors that may have influenced cross-linguistic influence (see section 7.4 and 7.5) were considered. The results can also be interpreted against the fact that although Group E did have more contact with English in the

classroom, Group A was still exposed to English through the use of English textbooks and learning materials.

For both these groups, conceptual fluency was significantly correlated to the overall Grade 12 average. In this study, the Grade 12 marks students entered university with, is a stronger predictor of the development of conceptual fluency, than the group (exposure or control) the students belonged to. Within the context of higher education, the results of the current study point to the idea that we must move beyond simply language of instruction to explain the interaction of languages in the development of conceptual fluency. In this study the differences between the two groups are minimal, but the subtle differences that do exist, might also provide more insight into the development of conceptual fluency in the bilingual mind. This research thus investigated how other factors interact with the development of conceptual fluency. The factors investigated included conceptual fluency at entry into university as measured through TAG and TALL, academic achievement as measured by the Grade 12 overall average and Grade 12 marks for English and Afrikaans. These factors along with factors which had been pointed out in previous literature as important will be discussed in section 7.5. Firstly a discussion will follow which explores the relationship between conceptual fluency and multi-competence.

#### **7.4 'CONCEPTUAL FLUENCY' AND 'MULTI-COMPETENCE'**

This section provides answers to the third research question of this dissertation, which is *“How reliable are Grade 12 marks in Afrikaans and English as determiners in development of 'multi-competence' and 'conceptual fluency' as manifested in the L1?”* Grade 12 marks are acknowledged not to be the best indicator or the most reliable in terms of language proficiency. However, the use of this measure gave some interesting results, especially concerning language proficiency, CLI and the development of multi-competence.

The effect of the L2 on the L1 is argued to depend on the level of proficiency in both the L1 and L2. Jarvis and Pavlenko (2008: 203) believe that for reverse or backward transfer the effect of the L2 on the L1 might be the greatest at the beginning of L2 acquisition. They also point out that the influence of the L2 on the L1 is not only related to proficiency but also to the particular areas of language under investigation.

Athanasopoulos (2006: 94) in his investigation of the effect of the L2 on the L1 in terms of grammatical number, and how it might shape or alter cognitive processes, concludes "that changes in cognition may be traceable from an intermediate L2 level, but significant changes become apparent only once an advanced level of L2 proficiency has been reached." On the other hand, Brown and Gullberg (2008) report that the L2 effect on L1 gesturing can be found even at relatively low levels of L2 proficiency. It seems as if different areas of the L1 linguistic or conceptual system are affected by the L2 in varying ways and that for some areas the effect might be visible even when the L2 is still at the beginner level, while for others the L2 needs to be developed to a more advanced level.

Kecskes and Papp (2003: 248) propose that the role of language proficiency is important in the development of conceptual fluency. They believe that a certain level of L2 proficiency must be reached in order to influence conceptual fluency in the L1. They refer to it as a hypothetical threshold that has to be reached, but do not try to illustrate with empirical data exactly how proficient a person should be in the L1 or L2. This lack of concretizing the level of proficiency makes it difficult to investigate the influence of language proficiency on the development of conceptual fluency.

For this study the question arises which of the participants had or had not achieved this critical level of L2 proficiency. If their level of L2 proficiency was not high enough, it could explain why the difference between Group E and Group A was not statistically significant. However, this appears to be a doubtful explanation. One has to consider that all the participants in the study had at least eight years of instruction in English as an L2 (some even wrote the English L1 exam in Grade 12), they live in a context where English is widely used as a lingua franca and the participants who took part in the interviews self-assessed their proficiency in English highly in terms of comprehension and production.

The assumption was made that all the students, although they had differing levels of proficiency in English, had reached the hypothetical threshold where conceptual fluency in the L2 can start to develop. Pearson correlational tests were then run to establish the nature of the relationship (the correlation) between Afrikaans and English Grade 12 marks on the one hand and the development of conceptual fluency in Afrikaans on the other. The results revealed that there was no significant correlation between Afrikaans/English and TAG, Test 4 or the final results of the AL 111 module.

Afrikaans/English language proficiency did not seem to correlate with their academic literacy to start with or the subsequent development of academic literacy.

In contrast to this finding, Zulu (2005), who did a correlational study between high school performance in English and academic reading ability, found Grade 12 performance in English to be a better predictor of academic literacy reading skills than prior exposure to academic literacy. By prior exposure Zulu (2005) refers to any exposure to academic literacy through an academic literacy class or English for academic literacy, experience of prior tertiary learning, and students with intervening years between the end of Grade 12 and their first registration at the university. Similar to this study, Zulu's study was conducted in the South African higher education context, at Northwest University. Although Zulu (2005: 111-118) found a correlation between Grade 12 scores in English and academic reading ability her study also suggests that "future studies of the relationship between high school performance and university study might do well to examine other factors such as the socioeconomic background of the student as well as her or his performance in other school subjects." Zulu's study differs from the current one in a number of respects, which may account for different results in correlating Grade 12 scores with academic literacy (and thus also conceptual fluency) measures. First, Zulu looked at academic reading ability only, while the conceptual fluency in my study was measured in both written work and text comprehension. Second, the student populations investigated in the two studies are also different from each other in terms of ethnic, cultural, linguistic and educational background.

The current study thus revealed no significant correlation for either of the two groups between Afrikaans/English Grade 12 performance and academic literacy. This prompted a more fine-grained investigation into the relation between Grade 12 language grades and the development of conceptual fluency. Risk level groups were created, (see Chapter 6, section 6.2.2.1) based on their academic literacy levels at their entry into university. For each group four risk levels were identified. These are *high risk*, *medium risk*, *low risk* and *very low risk* (see Chapter 6, section 6.2.2.1 for a discussion of how these risk levels were established). Here more interesting results were achieved. Group A did not display any significant correlation in the different risk levels, between the improvement percentage<sup>29</sup> and Afrikaans/English Grade 12 marks. Group E showed a significant correlation

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<sup>29</sup> See Chapter 6, section 6.2.1.2 for information on how the improvement percentage was calculated.

between Afrikaans Grade 12 marks and the development of conceptual fluency for the high risk group only,  $r = .74$ ,  $p = .038$ . In Group E, the results of the correlational tests between English Grade 12 marks and improvement in conceptual fluency show significant correlations between English and the improvement percentage in all of the risk levels, except the very low risk group. What we find then is a clear difference between Group E and Group A, when this investigation turned to sub-groupings within the larger groups.

Jarvis and Pavlenko (2008: 203) do warn against oversimplifying the effect of proficiency in stating "...because of the complex interaction between proficiency and other variables and because of inconsistencies in the ways that proficiency is measured, any generalization about the effects of proficiency on transfer will unavoidably be an oversimplification." It is also with caution that the results from the current study are interpreted. Firstly, it is proposed that Grade 12 marks are not the most reliable predictor of the development of conceptual fluency. The unreliability of the use of Grade 12 language marks in selection criteria have been pointed out by Seelen (2002) and Koch and Dornbrack (2008). Koch and Dornbrack (2008: 347) conclude that academic literacy skills in a well developed L1 are a "better predictor of academic literacy or the ability to cope with academic work, than school achievement or test results in the language of teaching and learning." Secondly, that there might be certain groups for whom Grade 12 marks might provide a better prediction than others of their development of conceptual fluency. I want to propose that this relation between Grade 12 marks and development of conceptual fluency in Group E can be viewed as evidence of the development of multi-competence. Kecskes and Papp (2000: 120) propose that multi-competence develops only when students have successfully acquired and developed new concepts in the L2 which can be used in the L1. My proposal is that the development of multi-competence seems to be more pronounced for Group E compared to Group A due to their increased exposure to English. The conceptual fluency of Group E although not significantly different from that of Group A, differs from it in more subtle ways. The reasons for this interpretation will be discussed in section 7.4.1 below.

### 7.4.1 Possible evidence of 'multi-competence'

Firstly, a brief summary is given again of what is meant by 'multi-competence', before the contribution of the current study is considered (see Chapter 3, for a full discussion on 'multi-competence'). Cook (1999, 2003) proposes the concept 'multi-competence' as an alternative to 'interlanguage', as used by Selinker (1992). Cook (2008: 17) then defines multi-competence as "knowledge of two languages in one mind." One of the consequences of multi-competence proposed by Cook (1999: 192) includes faster and more accurate language switching. This he finds is possible, since bilinguals constantly have the L1 available to them. Cook (1999: 193) believes that codeswitching is the "most obvious achievement of the multi-competent user that monolingual native speakers cannot duplicate, as they have no language to switch into." Cook (2003: 2) further views a multi-competent speaker as having "a language super-system" at some level rather than having completely isolated systems. This view obliges one to consider questions about the relationship between different languages in use in bilinguals and how the various systems interact and are accessed or activated.

The outcomes of my study with bilingual students add to the understanding of multi-competence, as Cook has articulated it, but also raise new questions. The quantitative section of the study which provides data on how language proficiency interplays with conceptual fluency (see 7.3) seems to provide evidence of 'multi-competence' as defined by Cook and explained above. In all the risk level groups besides one within Group E the development of conceptual fluency which is tested through Afrikaans displays a significant correlation to English Grade 12 marks. The group where there is no significant correlation between English Grade 12 marks and improvement in conceptual fluency is the very low risk group, which can be argued to have reached their upper level and cannot be expected to improve much more. For the rest of the risk level groupings in Group E the rate to which they improve their conceptual fluency in the L1 is related to their high school marks in English. It suggests that because of the increased exposure to English, this particular group is required to draw on their English language proficiency to develop their conceptual fluency in the L1. This also points to Cook's assertion (1999) that both languages are constantly available: due to the fact that this group has more exposure to English, this language is more active, compared to Group A.

Evidence for the initial hypothesis of a measurable effect of the L2 on the L1 on the development of conceptual fluency was not found. The results do not show conclusively negative or positive influence. As the results stand they are in line with Cook's (2003) assertion that multi-competent speakers are different from monolinguals and that this difference cannot necessarily be evaluated as negative or positive. The interaction of English and the conceptual fluency as measured through the L1 for Group E provides evidence that this groups' relation and interaction between the two languages might be different from that of Group A as a result of their increased exposure to English. However, the sample size is too small to make generalisations and reach concrete conclusions. Future investigation in bigger samples will shed more light on the phenomenon.

The results of my study showed that for Group E almost all the groups which were organised according to risk levels, showed a statically significant correlation between English Grade 12 marks and the development of conceptual fluency in their L1. However, the group which shows the highest correlation between these two measures is the high risk group, which also shows the most improvement from TAG to Test 4. This could be read as an indication that the effect of the L2 on the L1 is more visible in the groups which display "beginner" and "intermediate" levels of conceptual fluency than at advanced levels of conceptual fluency. The argument that L2 English seems to play a role in the development of conceptual fluency, even when it is measured through Afrikaans is further strengthened by another statistical test. When a partial correlation is run and the effect of Afrikaans is partialled out the correlation between English and the improvement percentage remains significant. When English is partialled out, the correlation drops to not being significant at the  $p < .05$  level. It seems then that the relationship is indeed between English and the development of conceptual fluency, and that for this particular group development of conceptual fluency in the L1 is linked to proficiency in the L2 (that which can be measured through Grade 12 language marks), thus leading to a more pronounced form of multi-competence.

#### **7.4.2 Qualitative data and 'multi-competence'**

The results of the analysis of the qualitative data reported in this dissertation also add to the discussion of multi-competence. The students report on strategies related to the two languages at their disposal used to study or understand information, which firstly would

not have been possible if the students were monolingual, and secondly requires a level of multi-competence. The students in both groups report using the two languages that they know in creative ways, according to the context and situation, and according to which language they understand the best. The participants in the study also refer to the facilitating effects of multilingualism. Using the kind of language that is appropriate to a specific situation is however, something that monolinguals are also able to do. What makes the development of multi-competence unique is that this competence is not only developed in one language, but in more than one. Thus this development in multi-competence mirrors the point made earlier about conceptual fluency, i.e. that all individuals have conceptual fluency, but this fluency is different for bilinguals

In this specific study the participants have two languages, are able to write their assignments in any of the languages and can take notes in any of the languages as well. They can also study in either or both of the languages. These are all examples of the participants consciously drawing on their multi-competence for various reasons: to facilitate learning, to get the best possible marks and to facilitate their understanding of the work. This study do contribute to the broader issue of multi-competence by showing that studies with designs that include both quantitative and qualitative measures provide the most complete picture of the strategies that multi-competent students use (consciously and subconsciously). Although it is tempting in referring to the data to generalise on the features and enabling (or disabling) effects of multi-competence, the sample of participants used here disallows such generalisation. The participants are all bilingual South Africans. This particular group enjoys higher socio-economic status than most South Africans, receiving mostly good schooling and entering university with 12 years of instruction in their first language and at least 9 years instruction in English as a second language. The only students in South Africa, who have the benefit of L1 as LoTL across the full 12 years of primary and secondary education, are those who have either Afrikaans or English as L1. Thus the participants are representative of the best performers of these two speech communities, who make up roughly 21% of the population, and so cannot be taken as the average school leaver in the country.

This investigation into conceptual fluency and multi-competence is done in a formal academic environment. These students might be proficiently multi-competent in this specific context, but were not tested in other areas of language use, such as social

interaction. The study also relied on tests conducted in exam-like circumstances and on self-report data from students, which means that even in the formal contexts not all areas of language use are tested. The results should be interpreted bearing these limitations in mind.

The results of the interviews in the current study do indicate that members of the group that were exposed more to English report a greater awareness of their codeswitching. Neither of the two students in Group A explicitly referred to codeswitching, while both members of Group E mentioned it in connection to a negative perception of the way that their language(s) changed at university. They mention that they mix their languages a lot: they are thus aware of the fact that they use codeswitching.

### **7.4.3 'Multi-competence' and 'attrition'**

The findings of the current research also highlight some of the complicating issues that argue against multi-competence. Wong-Jing Lowe (2006) for example believes that the acceptance of the notion of multi-competence would oblige reconsideration of much received knowledge on language attrition. For example, one would have to consider whether limited evidence of 'multi-competence' indicates some form of 'language attrition'; or whether deterioration of L1 skills over time in a context where the majority language is different to the speaker's L1, indicates slow development of multi-competence rather than L1 attrition.

In the self-report data, students do report that they feel that their language(s) have changed. In some respects they feel their Afrikaans proficiency is not as good as it was previously (specifically the two participants from Group E) and even that their English might have deteriorated (one participant from Group A). Here we would have to consider whether this points to some kind of attrition in that certain skills are lost in either the L1 or L2, or whether such awareness of changes in the use of the L1 and the L2 may be markers of the onset stage in multi-competence development. Is this simply a consequence of being bilingual, rather than the loss of proficiency in one of the languages a speaker knows? Or is this indicative of development of new skills, enrichment in the sense that a bilingual speaker is learning to use all the linguistic resources available to him/her? Considering a possible conflict between notions of 'multi-competence' and

notions of 'language attrition', Schmidt and Köpke's (2009: 210) definition of L1 attrition is relevant. They (2009: 210) define L1 attrition as

a change in the native language system of the bilingual who is acquiring and using a second language (L2). This change may lead to a variety of phenomena within the L1 system, among which are interferences from the L2 on all levels (phonetics, lexicon, morpho-syntax, and pragmatics), a simplification or impoverishment of the L1, or insecurity on the part of the speaker manifested by frequent hesitations, self-repair or hedging strategies.

Schmidt and Köpke (2009: 210) consider work on 'multi-competence', pointing out the difficulties in differentiating between attrition and non-attrition. They propose that some kind of attrition or L2 effect on the L1 is "a natural consequence of the competition of more than one linguistic system in same mind/brain." Schmidt and Köpke (2009: 212) warn furthermore against interpreting any CLI as attrition.

This dissertation is interested not in the linguistic system, but in the conceptual system. Although certain linguistic elements are used as evidence of conceptual change, these elements i.e. structural well-formedness and lexical quality are seen as providing insight into the conceptual system. The relevant question is therefore whether there is a loss of conceptual fluency in the L1, which can be linked to more exposure to English. The quantitative data shows that Group E does not register such loss of conceptual fluency in comparison to Group A. The results of tests which investigated differences in means of the different subcomponents which jointly test conceptual fluency between the two groups, also did not display a significant difference (see Chapter 6, section 6.2.1).

However, contrary to the findings emanating from the quantitative analysis, some of the participants (specifically from Group E), do seem to believe that the increased use of English has had a negative effect on their Afrikaans. In particular they indicate this by reporting on their increased codeswitching. Within the framework of multi-competence Cook (2003: 6) views codeswitching as an unavoidable and natural consequence of multi-competence. The reported codeswitching of the participants in this current study is not specifically linked to only academic contexts. It can be argued that in other areas of language use, there might be a loss of proficiency but not in the area of investigation. Further, there is often a discrepancy between self-assessment and tests which measure attrition (De Bot & Hulsen 2002). The results from the TAG and AL 111 indicate that

Group E does not suffer attrition in terms of conceptual fluency in an academic context compared to Group A.

#### **7.4.4 The complexities of investigating the L2-L1 effect in the South African higher education context**

The results of the study raise interesting questions, in that the research is carried out in a different context than previous research. In contrast to Kecskes and Papp (2000) and Pavlenko (2003), this study is not conducted from the immigrant or adult learner of a FL perspective. Alptekin's (2010: 106) suggestion of a reformulation of multi-competence to include English as Lingua Franca (ELF) seems particularly relevant for a South African context. In South Africa the majority of people who use English use it as an L2 or lingua franca. Banda (2010: 224) points out that multilingualism in Africa is different from multilingualism in the west and that in most African contexts proficiency in at least two African languages (learned in natural environments) and one colonial language is needed in order to function in public spaces. Rampton (1997: 331) pointed to the increasing frequency of lingua franca encounters in late modern societies. South Africa (and Africa in general) offers an ideal place to investigate the influence of English as lingua franca in a number of different settings, including education. This study points out, as does Alpetkin (2010), that immersion into an L2 culture in the Western sense is not essential in the development of multi-competence, but that ELF (especially in education), can play a significant role in this development.

Cook's (1999, 2003, 2008) notion of 'multi-competence' and Grosjean's (1989) holistic view of bilingualism have contributed to the understanding of bilingual individuals as speakers in their own right and not as "deficient native speakers" (Cook 1999: 195). Bilingual speakers are seen as specific hearer-speakers who are able to develop and use all four of the recognised language skills. These understandings have been applied to a number of psycholinguistic studies. However, even with a more holistic view of multilingualism the research paradigm within psycholinguistic studies is still largely modernist. The post-modernist approaches found in other streams of linguistics (sociolinguistics, discourse analysis, linguistic anthropology, etc.), have not been taken up by psycholinguistic studies that investigate the multilingual individual (Firth & Wagner 1997; Rampton 1997). The comparison of bilinguals to monolinguals also still seems to dominate these types of studies. This type of study does serve various purposes.

Mack (1997: 126–130) argues that without studies which compare monolinguals to bilinguals enquiry into the critical/sensitive period hypothesis and studies on the cognitive consequences of bilingualism will not be possible. However, in a multilingual society, it is particularly difficult to investigate bilingual individuals by comparing them to monolinguals. In particular, it was extremely difficult to establish "neat and uncontaminated" groups in the particular context of South Africa. Most people are multilingual, non-native speakers of English outnumber the native speakers, and most of the interactions in English occur in an ELF context. If monolinguals are used who do not have English as L1 issues of socioeconomic status and education levels complicate the study, since all school going children in South Africa have to study two languages. Monolingual speakers of languages other than English tend to be older, have less education, and live in rural or isolated areas.

When investigating the language background data provided by participants, this study in particular points to the "messiness", as Pavlenko (2011) calls it, of investigation into bilingual individuals living in a multilingual society. Monolingual societies (of which there are very few true ones) are of course also complex, with immigrants going back to their countries of origin and new groups of people moving in. This complexity is heightened in multilingual contexts. Participants in the present study reported migrating to areas with more/less exposure to English. They also reported that although their formal instruction might be in one of the languages, they encounter both Afrikaans and English to a considerable extent outside of the classroom and the formal setting. A task such as establishing comparable groups with more or less exposure to English was thus not an easy and uncomplicated one, hence the decision to focus only on the amount of exposure to formal English as LoTL, as the determining criteria in distinguishing between the groups. This can be seen as at once a shortcoming and attribute of the thesis. It is a shortcoming in the sense that one cannot deduce with certainty that the language use in the formal learning environment has the biggest impact in the L2-L1 effect. One might argue that exposure to language outside of the formal environment might play an important role. On the other hand, it can be seen as an attribute that the study mirrors the complex multilingual interactions in South Africa, and points to a need to develop methodologies which will work in these kinds of contexts. In line with research from a postmodern perspective, and a multi-competent perspective such a comparison between monolingual and bilinguals is not only extremely difficult to achieve, but also not fair,

especially if one of the groups is judged to be "deviant" in some way. Although this study did not set out taking a postmodern account of language contact in the individual, the methodological difficulties and the results point to the "fragmentation, contingency, marginality, transition, indeterminacy, ambivalence and hybridity" of social groupings that Rampton (1997: 330) refers to.

Cook's notion of multi-competence was used as a starting point and was investigated through both quantitative and qualitative measures. This thesis intends to offer alternatives and suggestions in the way that multi-competence is viewed and argues that evidence of multi-competence is found both through the experimental part of the study, as well as in the qualitative part. In particular, multi-competent notions of the bilingual individual do not take into account the agency of bilingual speakers, most specifically as to which knowledge from which language they want to use in which circumstances. This study offers a way of viewing multi-competence not only as a psycholinguistic phenomenon tied to unconscious interaction of two languages in one mind, but also as a conscious process which is tied up with social activity and agency. The use of both quantitative and qualitative means of data collection and analysis allows for this particular view of multi-competence. These points will be taken up in the discussion of the interview data in section 7.7.

## **7.5 VARIABLES OTHER THAN LoTL THAT CO-DETERMINE CONCEPTUAL FLUENCY DEVELOPMENT**

The results discussed in sections 7.3-7.4 above show that there are not any statistically significant differences in the development of conceptual fluency in the two main groups. This points to the interaction of factors other than language(s) of instruction in the development of conceptual fluency. This section therefore is in answer to the fourth research question, namely, "*Which factors other than language of instruction are related to the development of conceptual fluency in an academic context?*" This dissertation is particularly interested in how these factors are relevant to the development of conceptual fluency in bilinguals, where cross-linguistic influence takes place as a consequence of bilingualism and by the use of an L2 as a LoTL. The theoretical discussion on factors that influence cross-linguistic influence, both on the linguistic and conceptual level is largely based on Jarvis and Pavlenko (2008).

Various factors that interact with CLI have been identified by Jarvis and Pavlenko (2008). In this dissertation a number of such factors that influence the extent to which the L2 has an effect on the L1, and are comparable to Jarvis and Pavlenko's, have been identified. Jarvis and Pavlenko (2008: 175) distinguish between learning related effects and performance related effects. Learning related effects refers to "the influence that a factor has on whether a person will form a mental association (or interlingual identification) between features of two or more languages"; while performance related effects refer to what is caused by "context-related factors that influence the amount and types of transfer that will emerge during actual language use" (Jarvis & Pavlenko 2008: 175). More specifically, they identify as factors that might influence CLI, linguistic and psycholinguistic factors, cognitive, attentional and developmental factors, factors related to cumulative language experience and knowledge, factors related to language environment, and factors related to language use. The following sections will discuss various factors, those indicated by Jarvis and Pavlenko (2008) and factors which emerged from the data analysis of this dissertation. The extent to which these factors play a role in CLI and in the development of conceptual fluency, in particular, will be discussed in view of the data and relevant literature.

### **7.5.1 Levels of academic literacy at university entrance**

Conceptual fluency in this dissertation was measured by TAG and TALL. Both the exposure group and the control group show a significant correlation between TAG and TALL results and performance in Test 4, on the one hand, and overall academic literacy as measured through the end of year results of AL 11, on the other hand. Such a correlation is expected since the conceptual fluency that a participant starts out with is expected to be a good predictor of how conceptual fluency will develop later. In this specific context then, conceptual fluency at the point of entry into university (as measured by TAG and TALL) seems to be a better predictor of the further development of conceptual fluency than Grade 12 language marks. This supports the view that academic discourse is different from everyday discourse in significant ways (Horarik et al. 2006: 244). Conceptual fluency needed for an academic environment is thus different from that which is needed to successfully interact in other settings.

### **7.5.2 Academic achievement at university entrance**

Academic achievement at university entrance is measured through Grade 12 average results. The overall average of the academic achievement after the first semester at university is also significantly correlated with the conceptual fluency as measured through Test 4 results and the AL 111 mark. Again, this is not a surprising result as students who are usually perceived as "good students" are expected to have higher conceptual fluency, which is characteristic of good students. Certain aspects of learning in an academic setting are thus transferable. Students who have a record as "good learners" can thus transfer the skills they developed in learning secondary school material, to be useful in further developing conceptual fluency. The question might be what comes first: Are good learners more conceptually fluent in an academic setting, or does improved conceptual fluency lead to students becoming better learners? A speculative answer would be that this process is bi-directional, that conceptual fluency is an ability that can be applied in all learning and thus underpins skills and competencies across modules or subjects; using the skills and competences that rely on conceptual fluency will in turn improve such conceptual fluency. If students can be assisted to successfully transfer knowledge across domains and languages, this can be utilised to improve conceptual fluency. In multilingual communities, the successful transfer of conceptual knowledge across languages will enhance the learning experience.

Research which suggests that various aspects of learning are interrelated supports the argument that this process of conceptual fluency development is bidirectional (Safran et al. 2006). A strict Fodorian (1983) account of the modularity of mind (see Chapter 2, section 2.2.2) would reject such an argument in favour of each cognitive function being isolated and independent. This dissertation, however, points to the contrary. Research in the area of situated cognition, as used by Lave 1991, 1996 as well as Vygotskian accounts of learning (see Chapter 2, section 2.3) will reject the view that this bidirectional process is simply a result of a cognitive ability which interactively connects certain areas of language use. Such approaches will point out that academic learning cannot be separated from other kinds of learning nor from the social activities that individuals are engaged in. The interpretation of the qualitative data gathered in the interviews will shed more light on how social activities that participants are engaged in interact with cognition. In spite of the varying stances scholars have on the nature of the connection between the two

phenomena, the fact that academic achievement is a good predictor of the development of conceptual fluency in an academic context does seem to indicate that there is an undeniable relationship between these two variables which would need further consideration.

### **7.5.3 Duration, frequency and intensity of language exposure**

One of the factors which seem to be particularly relevant to the findings of this study relates to *length, frequency and intensity of language exposure*. According to Jarvis and Pavlenko (2008: 199) duration and intensity of exposure is usually determined by the number of years of L2 instruction, or of the number of hours spent in language instruction. Jarvis and Pavlenko (2008: 200) believe that in the early stages of learning, transfer is likely to increase, while at a later stage, when the learners' levels of proficiency is higher, the measurable degree of transfer is likely to slow down. Thus Jarvis and Pavlenko (2008: 200) find that "the relationship between amount of L2 instruction and forward transfer (in lexis, at least) is curvilinear, initially increasing to a certain point and then decreasing." Kecskes and Papp (2000) have found positive effects as the amount and intensity of exposure increases, in terms of backward transfer.

There are a number of reasons for finding that this particular factor could have influenced the results of my investigation. All the students included as participants are learners who have had extended years of exposure to English as L2 in formal education and in other domains of public discourse. All of them went through twelve years of schooling, where English was taught as a language subject from at least the third school year. Also, they all achieved school end results that qualified them for access to higher education. Such access indicates that they had relatively good results, in amongst others, language subjects. Thus in Kecskes' (2000: 40-41) terms, a CUCB must have already developed in all of these participants, not only for Group E. Considering that English is a lingua franca in South Africa, the length and intensity of exposure of participants to English in a learning context would have been largely similar for Group E and Group A. In terms of duration and intensity of exposure to L2 English, neither could have been advantaged or disadvantaged in comparison to the other.

To compound the difficulties of distinguishing the two groups in terms of duration and intensity of exposure, the participants' academic literacy was measured across their first

year of tertiary studies only. The smaller numbers of students per module in the second year of tertiary studies ensures that the T-option is more commonly used as students progress at university. Thus it becomes increasingly difficult to isolate groups with minimal exposure to English in the tertiary learning context. All the respondents interviewed in the qualitative part of the study mentioned the prevalence of prescribed English textbooks. Thus all students had exposure to English. It might be argued that Group E did not have enough additional exposure to have a measurable effect. Further, those who had exposure to English through the T-option had a maximum of 4 modules out of 10 so that it could be argued that their exposure was not intense and long enough to have a statistically significant effect.

The participants reported a variety of different opportunities to interact in English outside of the classroom such as in contact with English L1 peers, in following television programmes or movies, the public media such as radio or newspapers, in interactions in the marketplace where many shop assistants address them in English, or in their participation in sport or religious gatherings. This points to how difficult it is to establish monolingual "control groups" in the multilingual environment of South Africa. Control groups can only really be established in strict experimental settings. This was not the goal of the research here; the goal was to establish the effect of using English in the teaching and learning of Afrikaans L1 students on their conceptual fluency in a natural setting of everyday university life (see the complexities of the South African tertiary learning context discussed in section 7.4.4 above).

Not having been able to isolate a significantly different control group in this project could be viewed as a shortcoming of the study. However, there are strong arguments against experimentally constructing a group that does not fit any naturally occurring higher education conditions. In both bilingualism and SLA research, which both inform research into CLI, the use of experimental data as primary form of data collection, has been criticised. Cook (2008) for example questions traditional forms of data collection and analysis in SLA, such as error analysis, obligatory occurrence, grammaticality judgement, elicited imitation and the use or not of the native speaker as the standard. Although he finds that there are advantages to comparative studies, he also believes that the unique nature of what constitutes L2 knowledge and use cannot be captured by a comparative approach. The same arguments are also made in bilingualism research. Bialystok (2007b)

agrees that studies that focus on naturally occurring cognitive aspects of the bilingual mind should be done, and that such studies should not be done only in experimental settings with strictly distinguishable experimental groups and control groups. It is possible that one of the reasons why this research failed to deliver a measurable difference in Group A and Group E with regards to level of conceptual fluency is that the groups were not experimental and control groups in the strict sense of the word. However, if the groups had been designed and constructed experimentally, many of the strategies used by students in everyday learning situations would not have been visible, which would have given a skewed representation of the effect of the L2 on the L1. My study shows that for the specific population of students from which the participants were drawn, increased exposure to English does not put any of the groups at a measurable learning disadvantage.

#### **7.5.4 Attention to and awareness of language**

Another factor that possibly has an effect on CLI is "attention to and awareness of language", which refers to the way in and frequency with which a person makes use of their explicit knowledge of a language and how that influences transfer (Jarvis & Pavlenko 2008: 194). In this particular study all participants were explicitly taught skills for academic purposes (academic literacy) in their L1 that depend on conceptual fluency. According to Odlin (1989) cited in Jarvis and Pavlenko (2008: 194) "explicit knowledge and conscious monitoring often decrease the occurrence of transfer." It is possible that explicit teaching of conceptual fluency needed in an academic context in the AL 111 module decreased the unintentional transfer of skills, such as would be marked in less formal acquisition where language usage is not explicitly referred to, but the particular linguistic aspect is acquired as a consequence of exposure to it. However, the explicit teaching would have aided deliberate transfer, where students saw connections between linguistic structures, subject, and conceptual knowledge between the two languages.

#### **7.5.6 Age**

Age is often a variable that is regularly considered in studies on SLA and bilingualism. In the groups of participants age was controlled in that they were all young adults between the ages of 18-22. Considering the age of the participants one can assume that they all had achieved competence in their L1. As was indicated in section 7.5.4, all participants

would have achieved advanced levels of competence in L2 English, even if this is not characterised as equal to their L1 competence (or measured against the L1 competence). Flege's speech learning model, discussed by Jarvis and Pavlenko (2008: 197), predicts that the less established the L1, the less influence it will have on the development of the L2, and the more influence the L2 will have on the L1. This would predict that among this study's participants the L2 influence on the L1 will be less than among younger learners. This can be considered as another important reason, why clearly measurable and statistically significant effects were not found. De Leeuw et al. (2010) found that even for adults certain aspects of linguistic and conceptual knowledge are not constant but likely to be influenced the possibility that with more intense exposure and more time, there would have been a marked influence cannot be completely discarded.

All these factors are likely to have influenced the degree to which L2 exposure might have affected conceptual fluency measured through the L1. Many more factors which were not investigated in this dissertation, such as the proficiency of the lecturers who conducted the T-option classes, and the typological similarity of English and Afrikaans could have influenced the outcome of the study. From the discussion above, the effects of the L2 on the L1 seem to be more subtle. The influence of the L2 on the L1 does not seem to be evident in some statistically measurable way, rather the L2 influence seems to influence *how* individuals use their languages.

## **7.6 EFFECTS OF ENGLISH AS LoTL ON ACADEMIC SUCCESS**

This section departs from what was discussed so far in this chapter. The focus thus far (from section 7.2-7.5) was on conceptual fluency. This section moves to the particular cognitive function of academic learning, and answers research question 5, "*What effect does the L2 as LoTL have on overall academic achievement during participants' first year of study at university?*" In Chapter 6, it was reported that there is no difference of statistical significance between Group E who encountered more English in their formal educational setting and Group A who encountered less English in their formal educational setting, in terms of academic achievement. It is clear that learning in an academic context depends on much more than simply the language in which subjects are taught. One has to consider that all the participants in the study had a background of almost ten years of instruction in English as an L2 as well as exposure to English as the

lingua franca in the society in which they grew up. Both groups use English in the learning process, as is clear from them both having reported the use of English textbooks.

Graham (1987: 506) found that a large number of uncontrolled variables are involved when one tries to assess the extent to which language affects academic success. Considering specifically the effect of proficiency in the language of learning, Graham (1987: 506) pointed out that using first semester grade point average (GPA) as an indicator of academic achievement is highly problematic since students do a variety of subjects which require different skills and competencies. Graham (1987: 515) explored aspects other than language that affect academic performance at tertiary level. These included general intelligence, academic skills in areas other than English language, personality, and attitude. In the case of the current study no correlations were found between Grade 12 marks in English and Afrikaans as language subjects and students' academic performance. However there were strong correlations between academic achievement during the first year at university and the following variables: academic literacy test results in English and in Afrikaans, and overall Grade 12 performance. Considering that the medium of instruction did not exhibit a measurable effect on academic achievement, it can be postulated that among this group of bilingual learners language of instruction *per se* is less important than the conceptual fluency relevant to an academic setting that students have on entering university. In addition, Graham discusses the contributing effect of personal attributes such as general levels of intelligence and other social and psychological factors which generally contribute to the academic success of "good students." Other factors mentioned in literature which are seen as important predictors of academic success are previous academic achievement, preferred learning styles and self-efficacy (Burton & Dawling 2005: 69). Although this study did not investigate personality types in relation to academic success and literacy, it did find a strong correlation between previous academic achievement in secondary school and current academic achievement at university. This factor appeared to be more important in determining academic performance for this particular group of students than the language(s) of instruction. Another possible factor is the language proficiency and teaching strategies of the lecturers. This was not actively investigated in this dissertation, but is certainly a consideration for further study.

The participants in the exposure group where there was increased use of English compared to their secondary schooling, proved not to be at a disadvantage in terms of academic achievement. As discussed earlier (see section 7.4.1.) a unique form of multi-competence apparently assists them in studying. These students use all the language resources available to them. Even so, the specific strategies and the resources that they use, shows considerable individual variation. Some students report in the interviews that they understand and prefer to study in English; others use a combination of the two languages in their repertoire, while yet others use mostly Afrikaans.

The quantitative data supports the impression gained from the interviews. At no point during their first academic year did Group E display overall academic achievement of a level which is statistically significantly lower than that of Group A. The participants articulated their beliefs that bilingualism cognitively benefits them, and is also useful in a more utilitarian sense. They reported that if they do not understand something in one language, they try and use the other language to facilitate understanding. Thus this study does not support earlier studies (see Chapter 4, section 4.3.1) which indicate that bilingualism affects school achievement negatively. However, neither does it give as conclusively positive advantage to bilinguals as in the Peal and Lambert (1966) study. In terms of good or bad effects of bilingualism, the effect of an additional language in learning would, in Bialystok's (2008) terms, probably be categorised as "indifferent". This result however, cannot be generalised to mean that language of instruction does not affect academic performance, but rather that this group had enough other advantages (discussed below in section 7.6.2) not to suffer any negative consequences.

The study did not investigate the efficacy of bilingual education, or of a particular type of bilingual education. Nevertheless, it does offer some insight into the effects that different types of bilingual education at tertiary level may have on academic achievement. Comparing the group who received instruction through the Afrikaans stream of the A/E option to the group who received instruction through the T-option, no concrete evidence was found that the one or the other option is "better" for academic achievement.

In the interviews participants reported limited detrimental effects (taking more time to study) regarding their exposure to the T-option in terms of their learning. Similarly the quantitative results also do not show any detrimental effects. The pertinent question to explore now is why in the given circumstances increased exposure to English did not

affect academic achievement in any marked and statistically significant way. Why were there no measurable attributive or detrimental effects on learning in spite of increased exposure to English in the classroom, through study and course packs and textbooks? The answer here may be found in the participants' ability to transfer not only linguistic and conceptual knowledge, but also in their ability to transfer learning skills and associated cognitive skills acquired through the L1 to the L2 and vice versa. The results of this study are of particular interest in this regard, because it contradicts findings from previous studies within the context of South African higher education.

### **7.6.1 Addressing earlier studies on L2 as LoTL in SA**

Webb (2002) and Gerber et al. (2005) have reported instances where instruction through the L2 had harmful effects on students' average academic achievement or in specific subject areas. Webb (2002: 50) introduces data from the University of Pretoria, a former Afrikaans University which now offers instruction through medium of both Afrikaans and English, through the parallel medium option. The numbers of students at this institution who receive education through the medium of an L2, i.e. English have steadily increased. In most subject areas the throughput of students who study through their L2 is much lower than that of those who study through their L1.

Although Webb (2002: 51) makes a pertinent point of the importance that language plays in academic success at tertiary level, his study does not provide the types of questions or answers that would be required in a systematic investigation of the phenomenon. His study lacks data on how proficient participants were in terms of academic literacy in their L1 and L2 to start with, and it also lacks a measure to trace students and their development through the university system. His study includes L1 speakers of African languages as well as L1 speakers of English and Afrikaans. His attempt to investigate L1 speakers of African languages is commendable as this is a seriously neglected population group in research in South Africa. However, a comparison of this group to speakers of Afrikaans is no straightforward matter. Speakers of African languages would not have received instruction in their L1 for most of their schooling and thus may not be sufficiently literate in their L1. Many will have attended schools where their L1 was offered only on an L2 or L3 level, aimed primarily at developing communicative skills of L1 speakers of the dominant languages of learning, namely English and Afrikaans. Thus not distinguishing between L1 speakers of African languages and Afrikaans L1 speakers

complicates the interpretation of Webb's (2002) data. The examples of student writing used by Webb show that, generally, the students who do not have English as L1 do not use appropriate text-conventions in English. However, the sample was too small to allow generalization, and not enough is known of the full range of variables that would have affected the performance of this sub-section in the student community. Webb (2002: 55) admits himself that his study pre-empts more comprehensive studies for which there are a great need in the current higher education environment.

Webb's (2002: 57) study also does not provide information on whether the classes attended by his participants were taught in parallel streams of either Afrikaans or English, or whether Afrikaans and English were used as media of instruction. Although Webb (2002: 58) concedes that limited research has been done on the cognitive effects of the increased use of two languages in the same classroom, he is doubtful about potentially positive effects. He points out that "the educational effect of code-switching has not been researched, and it may conceivably have important negative consequences, leading, for example, to students writing as illustrated above, and conveying the impression of being cognitively and socially underdeveloped, unprofessional persons." It is true and also pertinent that very little research has been done on the effects of dual medium education at tertiary level and on how this may impact on students' academic achievement.

Gerber et al. (2005) point to the detrimental effects of learning mathematics through an L2 at South African universities. This study found a statistically significant difference in performance of Afrikaans L1 students who received mathematics instruction in their L1 compared to the performance of those who received the same instruction through their L2 English. The L1 instruction produced better results. However, Gerber et al. (2005: 18) cautions against generalising these findings. The statistically significant difference they found is marginal, and the group size of those educated through medium of their L2 (i.e. English) was considerably smaller than that of students educated through medium of their L1, Afrikaans.

So, although Gerber et al. (2005) and Webb's (2002) studies both point out that instruction through the L2 might be detrimental to academic achievement, both studies contend that there are methodological complications, specifically with sampling, which might have influenced the findings to a significant extent. Increasingly, studies from both inside and outside of South Africa have started to investigate the ability that bilinguals

have to transfer subject knowledge between the languages they know. Cummins (2010: 222), for example, argues that when bilingual instruction is freed from monolingual norms "two-way cross language transfer can occur." This position is supported by the current study that did not find evidence of detrimental effects on academic achievement of bilingual education where the L2 of students is not at L1-proficiency level, and where many lecturers are L2 speakers of English as well.

In the current study self-assessment reports received through the interviews with the selected participants indicate that in developing knowledge in a given discipline, they transfer information, skills and concepts across languages. The quantitative data supports an assumption that such a learning strategy is used. Banda (2010: 221), investigated bilinguals primary and secondary schools in the Western Cape and found that even younger learners who know two languages, but use only one in the formal education context, use learning and understanding strategies which draw on both languages. The current study supports this finding, in that students report on using resources from both their L1 and L2. Relating this to the quantitative data, the practice of drawing on two languages in learning shows no detrimental effect on students' academic performance.

It is clear from the studies mentioned here, as well as from the current study, that one has to move beyond merely the language-of-instruction debate and consider other factors that have been indicated as ones that have measurable effects on transfer of knowledge (linguistic, conceptual, subject knowledge) and skills (linguistic, metalinguistic, general learning, writing and reading skills) when students know and use two or more languages in learning.

### **7.6.2 Strengthening of bi-directional transfer**

Studies with an interest in language of learning on primary school children seem to indicate that L1 based education, or bilingual education with an emphasis on maintaining the L1, is best, especially during the early years of schooling (Cummins 1979a, 1979b, 1981; Thomas & Collier 2002). This study of course investigated the language of learning of tertiary level students who had had 12 years of schooling in their L1. Group A who had more exposure to their L1 in lectures, and otherwise had comparable levels of academic achievement to Group E, did not perform significantly better or poorer than their counterparts who were exposed to more English in lectures. This may be accounted

for by the fact that all participants had a foundation of 12 years of learning through their L1 (Afrikaans), and that at university they all in any case experienced increased exposure to English in lectures, learning materials and text books.

### ***7.6.2.1 Years of schooling in the L1***

Collier (1995) reports on studies conducted over a range of years by herself and her colleague Thomas, which found that students generally fare best with at least 4-7 years of instruction through their L1 (or through maintenance bilingual education that uses both their L1 and L2). Young learners who had such early education through medium of their L1 did not exhibit detrimental effects in their academic performance and cognitive development when there was a shift to education through the medium of the L2. Collier (1995: 7) argues that literacy development, academic skills, concept formation, subject knowledge and learning strategies developed in the L1 will be transferred to the L2.

As noted above, the participants in this study were educated through medium of their L1 for 12 years, had considerable exposure to English as L2 in school and in community life, and then were gradually introduced to English as language of learning alongside Afrikaans. The interview data confirms that students do indeed transfer subject knowledge, not only from the L1 to the L2, but also from the L2 to the L1. They indicated for example, that if they do not understand something in English, they try and explain it to themselves in Afrikaans and vice versa. In the interviews Elton for example expressed his use of English, when studying in the following way

*(8.) Dis moeiliker want die werkslading is meer, maar dis ok makliker, want ek verstaan beter as ek deur altwee tale leer.*

(It is more difficult because the workload is heavier, but it is also easier because I understand better when I study through both languages').

Many of the other interview participants also refer to the facilitating effect of using both languages. Rikki for example feels that being bilingual affords you the opportunity to study through both languages, which allows you to understand work better. Byron talks about the use of English to find information and then the use of Afrikaans to transform it into an assignment.

*(11.) Indien jy 'n goeie taak wil ingee moet jy Engelse bronne in die hande kry, daar is min navorsing in Afrikaans en dan moet jy vertaal van Engels na Afrikaans.*

(If you want to give in a good assignment, you have to get English sources, there is little research in Afrikaans and then you have to translate from English to Afrikaans.)

These excerpts from the interview echo the findings of Cummins (2010: 236) and Banda (2010: 232) that bilingual students draw on both languages to understand and learn.

In the interviews participants reported that they use both Afrikaans and English as media when studying. The foundation of 12 years of schooling in Afrikaans reportedly enables them to transfer not only language abilities (academic literacy/conceptual fluency) but also learning strategies and subject knowledge developed in one language to be functional in the other as well. Cummins' interdependence hypothesis (1979a) proposes that by learning to read or write in a particular language, more than just the particular language is learned. Reading skills in one language, he finds, can be transferred and used in other subsequently learned languages. This ability to transfer knowledge development skills reminds strongly of what Kecskes and Papp (2000: 48) call a CUCB (see Chapter 4, section 4.2.2 for a detailed discussion on the CUCB). Their theory postulates the CUCB as the location of bidirectional transfer between language, knowledge and skills. The main difference between the concept they put forward and Cummins' interdependence hypothesis (1979a), is that in the CUCB the transfer of knowledge and skills is bidirectional, and not only unidirectional.

### ***7.6.2.2 Dominance and power of the L1***

Currently there is much debate on the use and possible loss of Afrikaans in higher functions (see e.g. Giliomee 2004; Brink 2006; Carstens 2006; Du Plessis 2006). In the Western Cape Afrikaans is the official language most widely spoken as L1, and countrywide it is used as medium of instruction in many primary and secondary schools. Thus to some extent the work done by Genessee (2004) on the position of French in Canada can be referred to comparatively. Relative to other indigenous South African languages, Afrikaans still has a position of power and dominance especially in provinces such as the Western- and Northern Cape. Genessee (2004: 552) who reports mostly on work done in a primary school context finds that "students in bilingual programs who speak a dominant societal language usually develop the same levels of proficiency in all aspects of the L1 as comparable students in programs where the L1 is the exclusive medium of instruction." In particular students who are introduced to the L2 as medium of instruction at a later stage, (e.g. after year 4) were found to show no marked effect in terms of normal L1 development, partly due to the fact that their L1 is a societal language of power. Further, Genessee (2004: 552) also finds "instruction in academic subjects

through the medium of an L2 does not usually impede acquisition of new academic skills and knowledge in comparison to that acquired by students receiving the same instruction through the medium of their L1." In the South African context Afrikaans L1 students who encounter English as medium of education, are still exposed to Afrikaans in education and in other contexts to a considerable extent. It is thus unlikely that the L2 will replace the L1 in all domains of language use; further as shown here, in higher education due to a number of factors discussed here, they are also not negatively affected by the partial switch to English.

### **7.6.2.3 Age**

According to popular belief younger learners have more success with L2 learning than older learners do (Saville-Troike 2006: 178). Many also assume that late introduction of an L2 as language of learning, will cause greater difficulties than if the student had been introduced to the use of the L2 in learning, at an earlier stage (see Cummins 1981 and Thomas & Collier 2002 for criticisms of this view). Nevertheless, this study shows that students, who start instruction through an L2 at a later stage, do show academic success. Genessee (2004: 557), writing primarily from a school and not a higher education context, has remarked on older students (mostly at secondary schooling level) with well-developed literacy skills in their L1 which can facilitate the development of L2 literacy skills. The students in Group E who started L2 acquisition early, i.e. around the age of 8 or 9, but only started using the L2 as language of learning at tertiary level gave no indication of the L2 being a serious impediment to their academic development. In this case the shift to using both the L1 and L2 in lectures and in their own work did not show any effect in terms of academic achievement. This is in agreement with Genessee's evidence from empirical investigations that older learners have better developed L1 literacy skills which support them when they start using an L2 in learning.

In all, academic achievement is determined by a number of different factors of which the effects cannot be clearly measured in isolation of each other: thus no clear conclusions can be drawn about the effect of partial instruction in the L2 on academic success. What the results clearly show, however, is that Group E is not disadvantaged compared to Group A in terms of academic success during their first year at university, nor do they have a measurable advantage.

## **7.7 SELF ASSESSMENT OF LANGUAGE USE IN HIGHER EDUCATION**

Up to this specific point, this chapter focussed on the effects of the L2 on the L1 in terms of both academic achievement and conceptual fluency. These are naturally not the only types of effects that an L2 can exert on an L1. Pavlenko (2005, 2006) and Besmeres (2004) have demonstrated additional effects such as how bilingualism and the increased use of an L2 also have effects on the self-perception of individuals. This dissertation is also interested in how the increased use of English affects how participants view their own language abilities in both their L1 and L2, in an academic setting. The possible differences in self-perception between the two groups were investigated. Interesting findings here refer to how participants' use of their languages is embedded in social activity, to the agency of the students themselves, and to the dialogic qualities of the text that was produced when participants discussed their own language abilities.

### **7.7.1 Social activity and agency**

In the discussion above (see section 7.4.2 above) on the development of multi-competence, the point was made that one component of multi-competence is developed unconsciously, while another component is more consciously developed and used. It was also clear that students chose how to use the linguistic resources at their disposal. In the interviews, the conscious choices of students represented a theme regularly introduced by students themselves in response to the interview questions.

#### **7.7.1.1 Social activity**

Particularly noticeable is how specific choices are linked to social activities. According to the socio-cultural research tradition, social activity "precedes the emergence of individual forms of consciousness" (Kramsch 2000: 133). Thus linguistic signs or psycholinguistic processes are not shaped primarily by physical context; rather they are created through social activity. Kramsch (2000: 133) subscribes to the Vygotskian tradition according to which, "... linguistic signs are never arbitrary. They are created, used, borrowed, and interpreted by the individual for the purposeful actions in which he/she is engaged. Language emerges from social and cultural activity, and only later becomes an object of reflection." The social activities which we are engaged in are mediated by symbolic signs which include language.

In this study the social activity which I am interested in, that would structure forms of language and cognition, is learning. As an encompassing social activity, learning entails a range of activities which include attending lectures, doing assignments, writing tests and exams, interacting with tutors and lecturers, interacting with other students, reading and evaluating scholarly literature, memorising, following arguments, discovering systematic patterns, developing taxonomies, studying, etc. The language choices and particular competencies that these students develop are linked to the particular social activities in which they are engaged. The experiences students have in drawing on cognitive competences while they are engaged in various learning activities, in itself shape the perceptions they have of their own competencies.

The way competencies are shaped according to the social activities which students are engaged in, in the process of learning, can be exemplified by a number of examples from the interview data. A general theme related to language, cognition and learning that emerged from the interviews was that students use both languages to differing degrees to facilitate understanding. For example Elton makes sense of new information mostly through Afrikaans, but not exclusively in Afrikaans. An interesting finding here is that for one specific subject that he does through the T-option he finds that using both languages facilitates his understanding. Similarly, Gregg makes sense of new information in Afrikaans and believes that he understands concepts better in Afrikaans, although he sometimes uses English to facilitate understanding. Understanding relatively sophisticated academic work is a central condition for performing well in tests and exams, and for writing good assignments. As can be seen a number of participants referred to this particular use of two languages as a learning strategy when they were interviewed. The fact that many of the sources of information are also in English necessitates a use of both languages. Here Byron's example used earlier is relevant again.

*(11.) Indien jy 'n goeie taak wil ingee moet jy Engelse bronne in die hande kry, daar is min navorsing in Afrikaans en dan moet jy vertaal van Engels na Afrikaans.*

(If you want to give in a good assignment, you have to get English sources, there is little research in Afrikaans and then you have to translate from English to Afrikaans.)

One example of how the social activities students are engaged in shape their language competencies comes from Jaco and Byron. This is not a common theme, only these two participants mentioned it. They report using Afrikaans deliberately to sidestep the electronic plagiarism detection tool (also see Van der Walt & Dornbrack 2011, who

report on one respondent who acknowledges that she uses this particular strategy). This is a strategy developed in response to a particular part of the social activity of learning. In particular the activity in which they are engaged is writing assignments which give evidence of the student's ability to articulate academic insight without plagiarising from received scholarly literature. Such assignment writing involves a range of skills and underlying competences. One skill would be to become familiar with scholarly work in such a way that the student can write about it without having to cite extensively from an original text by an established researcher. Then, awareness of what plagiarism in such an activity entails and how this is to be avoided, is one kind of knowledge the student has. To use a language different to the original text and thus be able to translate rather than intelligently re-articulate is a strategy that shows awareness of the difficulties of the academic assignment; however, it might be viewed as a way of avoiding the real task rather than getting it done well. This "skill" is one that will be frowned upon by many in academic circles, since the whole goal of electronic plagiarism detection tools, is to encourage students to engage with texts in an accepted scholarly manner. Chandrasoma, Thompson and Pennycook (2004: 176) however, argue that plagiarism can be better viewed as a form of transgressive literacies, in particular transgressive intertextuality.<sup>30</sup> The particular strategy employed by Byron and Jaco, can be viewed within the framework of Chandrasoma et al. (2004: 176) as a valid resource although one that transgresses accepted rules around what constitutes plagiarism or not.

The students who referred to such use of Afrikaans, gave evidence of an ability to use both languages they know in that first they could use English in accessing a scholarly text, and second they could translate sections and use these renderings in their L1 in such a way as to assure their assignment would not electronically be identified as a heavily plagiarised text. Byron, for example, mentions the use of English in order to get new information, thus he uses his English competence to access information, then uses both his languages in translating the information and finally uses Afrikaans to construct an assignment in the required textual format of which the English equivalent might have been recognised as an inauthentic piece of work. If these students had been English monolinguals this particular practice would not have been available to them. They would

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<sup>30</sup> Chandrasoma et al. (2004) argues that plagiarism is a much more complex process than currently understood by academic institutions, that all texts borrow from other texts, and that plagiarism is thus an extreme form of borrowing. It is a process that is tied up with issues around ownership, writing identity, power, knowledge and student resistance. Also see Moody (2007) for a discussion in a similar vein, but specifically within the context of EFL.

have had to develop other skills, such as paraphrasing or selecting pertinent aspects and re-articulating them in a new argument structure. The argument can be made that the student did not learn any new skills, but rather how to cheat the system. An alternative argument can however be made that translation is a complex process which in many cases is not only a word by word copying practice but a means of re-appropriating concepts (House 2011: 525–526).

Kecskes (2010: 100), believes that the fundamental difference between monolinguals and bilinguals is not what they do with language, but "how they do it". In Kecskes' (2010) terms, the two bilingual students who referred to their circumvention of possible plagiarism thus addressed the difficulties of working with well-written scholarly literature differently to the way in which monolinguals would have, because they could draw on linguistic resources of two languages and write their assignments in a different language to the one of their source. According to Kecskes (2010: 100) "whereas monolinguals rely on style switching and voicing, bilinguals employ these strategies in addition to their bilingual resources." This particular transgressive skill is thus not available to monolinguals, and even if this is frowned upon by institutional powers, it should be considered that bilinguals might use this strategy instead of accepted academic practices.

#### ***7.7.1.2 Agency***

Van Lier (2008: 162) makes the point that agency is both an individual trait and a particular way of being in the world. Agency is also seen as the ability to control one's behaviour, to engage in behaviour which affects other entities and the self and to produce actions which can be evaluated. According to Van Lier (2008: 172) "agency can be related to issues such as volition, intentionality, initiative, intrinsic motivation and autonomy." Examples of agency as defined by Van Lier (2008) are found in the responses of students in the interviews. One student, Elisna, responds to a particular Afrikaans L1 lecturer whose lecturing style she does not like, by using English in studying and in doing her assignments. Elisna consciously controls her behaviour in such a way that in a particular lecturer's class, she intentionally uses her L2 rather than her L1. Canagarajah (2006: 601) has emphasised the agency of multilingual writers, in particular pointing out that these writers are not necessarily constrained by their L1 even if it is a minority language. He illustrates how they are able to use their range of languages creatively for the purposes they want to achieve. In a sense Elisna's behaviour can be seen

as some form of rebellion or distancing herself from the particular lecturer, and is not necessarily related to her level of proficiency in either language.

Juanita emphasizes her agency when she talks about the unintentional effect of being at a university which is predominantly Afrikaans, and feeling that her proficiency in English is deteriorating. In particular she states that she chose to come to an Afrikaans university, implying that nobody but herself is to blame for her loss of proficiency. She articulates it in the following way:

*(4.) Ek het gekies om na 'n Afrikaanse Universiteit toe te kom, my tweede keuse was Vrystaatse Universiteit, nog 'n Afrikaanse Universiteit.*

(I chose to attend an Afrikaans University; my second choice was the University of Free State, another Afrikaans university.)

Here she clearly asserts her own agency in the situation she finds herself in. To return to the previously discussed example of Byron and Jaco, this is not only a strategy developed from a particular social activity, other strategies could be used, it is also a form of agency. Their actions evoke evaluation. This particular use of the L1 can be seen as "wrong" or alternatively as an effective strategy to sidestep the system.

Interview participants also revealed that there are occasions when they do not seem to be able to change any event or situation, in that sense they report a lack of agency. Three of the participants referred to the prevalence of English in the academic environment. This they seem to believe is something that they cannot control in any way. For example Jaco expresses himself in the following way:

*(9.) Afrikaanssprekendes weet dat hulle in 'n Engelse wêreld leef.*

(Afrikaans speakers know that they are living in an English world.)

While Rikki expresses this powerless feeling as

*(6.) Ek voel dat my Afrikaans ietwat negatief verander het. Dit is jammer dat ek meer my tale meng en dat Afrikaans effens onderdruk word, maar ons moet Engels ook kan gebruik.*

(I feel that my Afrikaans has changed in a negative way. It is sad that I mix my languages more and that Afrikaans is somewhat oppressed, but you have to use English as well).

Gregg feels that

(12.) *Afrikaans raak verlore in al die Engels*

('Afrikaans gets lost in all the English').

They feel powerless to change this linguistic eventuality, but then they do develop various strategies in using the two languages they know to negotiate meaning in the learning context. Thus not only the social activities in which they engage create their perceptions of themselves; other broader societal structures and events, and their life histories, affect self-perception as well. Further, societal and institutional structures can also encourage or impede agency related to language use to various extents. Pavlenko and Lantolf (2000: 155) point out that "individuals have intentions, agency affect and above all histories." In effect, when students talk about their own language experiences they draw on their histories, prior texts and discourses and in that way shape future discourses.

### **7.7.2 Dialogic qualities of student accounts**

In a critique of stylistic analysis of the novel Bakhtin (1981) pointed to the dialogic qualities of texts. He (1981: 262) referred to the novel as "... a diversity of social speech types (sometimes even diversity of languages) and a diversity of individual voices artistically organised." Although his theory was originally developed to discuss the novel, Bakhtin (1981: 279) already pointed to the dialogic nature of all discourse.

But as we have already said, every extra- artistic prose discourse- in any of its forms, quotidian, rhetorical, scholarly, - cannot fail to be oriented toward the 'already uttered', the 'already known,' the 'common opinion' and so forth. The dialogic orientation of discourse is a phenomenon that is, of course, a property of any discourse. It is the natural orientation of any living discourse.

Bakhtin's work was further extended by other literary theorists, such as Kristeva, who coined the term intertextuality. In linguistics and particularly in discourse- and critical discourse analysis the notion of intertextuality and interdiscursivity have been expanded to refer not only to novels and literary art, but to all texts and discourses (Fairclough 2003). The notion that Fairclough (2003) introduces is that all texts and discourses are linked to prior texts, discourses and voices. Every text thus always contains multiple voices, both explicitly and implicitly, and shapes further texts and discourses. No text or discourse is thus an isolated, independent and unique structure.

Bakhtin (1981: 276) believes that any discourse produced at a particular historical moment, in a particular social context "cannot fail to brush up against thousands of living

dialogical threads, woven by socio-ideological consciousness around the given object of an utterance, it cannot fail to become an active participant in social dialogue." This position is particularly pertinent in this study when one has to understand how students position themselves in terms of broader discourses about language and bilingualism.

### *7.7.2.1 Discourses on prior experiences in learning*

All the participants in the study were bilingual, L1 speakers of Afrikaans and L2 speakers of English, so that in their daily lives they were already confronted with a particular kind of duplicity. In their interviews they also referred to various previously uttered discourses around language- and language use in higher education. According to Fairclough (2003: 39) the range of intertextuality and interdiscursivity ranges from the more implicit to the most explicit forms. The most explicit form is represented in direct quoting or using a previously uttered utterance from one language verbatim in the course of speaking another. There are, however, many less explicit forms of intertextuality and interdiscursivity. Juanita, who belongs to Group A, in reporting that her English had deteriorated since leaving school, presupposes a time when her English was better, thus prior lived experiences and not specifically prior words or discourses, determine her perception of the status of her English competence and performance.

Byron also uses past and future (imagined experiences) to view his change and adaption to English in a learning context. He expresses his experience in the following way:

*(7. ) Aan die begin was die aanpassing om deur Engels te leer moeilik, dit het al hoe makliker geraak en nou selfs verkies ek dat Afrikaans en Engels in dieselfde klas gebruik word, Afrikaans help met die verstaan van die werk, terwyl meeste van die informasie in Engels is.*

*('At the beginning I found the adjustment to learning through English difficult, but it became easier. Now I would actually choose to have Afrikaans and English used in the same class. Afrikaans helps with my understanding of the work, while most of the information is in English')*

He started off by struggling with the increased use of English in a learning context (thus referring to prior experiences), eventually he found that it had gotten better, and by the time of the interview (thus after around 18 months; recall that Byron is one of the senior students) he would even choose the T-option. Thus he draws on previous discourses about language in education and his own position within the discourse. Holquist (1981: 427) makes the point that Bakhtin distinguished between internal and external dialogue. Internal dialogue can refer to an earlier self. Byron's example above is thus an example of internal dialogue, not only does he refer to an earlier self but also an imagined self, a self

who can choose which language he wants to be educated in. This is also an example of what Kramsch (2005) calls information about "remembering how" and "imagining how", remembering past experiences and imagining future scenarios.

Elisna's choice of writing assignments in English for a particular module is a particular form of dialogue. Her choice "talks back" to another discourse (on her views regarding the competence of a particular lecturer). According to Bakhtin (1981: 276), words which enter the dialogic environment, have complex interrelationships with this environment, it "... merges with some, recoils from others, intersects with yet a third group and all this may crucially shape discourse." Elisna's educational expectations "recoil" from what the lecturer offers, thus she responds by deliberately choosing another language in the learning environment. It is exactly the previous discourse which shapes her current discourse.

#### ***7.7.2.2 Discourses on language proficiency***

All the participants in the interviews were required to answer questions about their proficiency and use of two languages in the learning context. Thus they had to engage in discourses surrounding learning and what being bilingual contributes to the discourse about learning and the learning experience itself. A difference was observed between Group E and Group A. Group E, who had experienced, on average, 8 months of the T-option in lectures; believe that codeswitching is a bad habit and also a sign of deteriorating proficiency in one or both of the languages. They subscribe to a widely held, popular view that bilinguals should distinguish clearly and be able to keep their two languages separate. According to this view, mixing the two languages, whether by introducing the odd word from the L2, or more elaborately code-switching, is seen as an improper linguistic practice which signals incompetence of the speaker.

In Grosjean's (1989: 4) terms, a take on code-switching or code-mixing as an unacceptable practice to be discouraged and corrected, is one that ascribes to monolingualism as the rule and bilingualism as exceptional. Such a view measures bilingual practices against monolingual norms and discards much of the practices that typify bilingual language use as dysfunctional. Participants in this study seem to be shaping their discourses about their own codeswitching around such a monolingual view of bilingualism. As shown in the literature (e.g. Grosjean 1989; Cook 2003; Pavlenko

2005a) and in the theoretical chapters (see Chapter 3, section 3.3.1), this is still a prevailing view of bilingualism. In Bakhtin's (1981: 279) terms the participants draw on the "common opinion" that sees code-switching as a failure, as deteriorating monolingualism. These students also view their language abilities and use as assets on a balance sheet, where gains in one particular area (improving English), constitute losses in another area (deteriorating Afrikaans).

Participants' negative perceptions of their own codeswitching is interesting if one considers that there is no objective, quantitative evidence of deteriorating language proficiency in either the L1 or the L2 of the participants in this study, regardless of the kind of language-of-learning group they were part of. This indicates that participants, who refer to their codeswitching as evidence of deteriorating L1 proficiency, have "bought into" the discourse of monolingual norms without reflecting on an alternative discourse that normalises various bilingual practices, which would include a reasonable amount of code-switching.

### 7.7.2.3 *Discourses on inclusion and exclusion*

A number of the participants gave indications in the interviews that they draw on larger societal discourses about the status and use of English and Afrikaans. They refer to the discourses of Anglicisation ("*verengelsing*"). Jaco feels that

(9.) *Afrikaanssprekendes weet dat hulle in 'n Engelse wêreld leef.*

('Afrikaans speakers know that they are living in an English world.')

Additionally, there is evidence that some participants draw on larger societal discourses of oppression. They voice the opinion that Afrikaans is being relegated from a prime position in the public space to a secondary position, thus becoming oppressed, its speakers being disenfranchised and disempowered in favour of English. They believe that the prevalence of English in public life has a decisive effect on their personal knowledge and use of both languages. Here Rikki's observation is pertinent.

(6.) *Ek voel dat my Afrikaans ietwat negatief verander het. Dit is jammer dat ek meer my tale meng en dat Afrikaans effens onderdruk word, maar ons moet Engels ook kan gebruik.*

('I feel that my Afrikaans has changed in a negative way. It is sad that I mix my languages more and that Afrikaans is somewhat oppressed, but you have to use English as well').

The dialogic nature of the participants' discourses is underscored by the fact that the same participants who refer to the Anglicisation of the South African society and the world,

also attest to the inclusive qualities of English. This is displayed in Rikki's observation that one has to use English as well. Gregg for example mentions that in especially the T-option classes English takes preference and that Afrikaans gets lost. He later talks of the inclusive properties of English and says that the use of English carries benefits because

(13.) *Engels maak kommunikasie makliker soos gespreksvoering*

('English makes communication easier like conversation')

Bakhtin (1981: 276) mentions that any word or utterance a speaker chooses to use "enters a dialogically agitated and tension-filled environment..." The discourse of the participants in this study displays this tension by simultaneously referring to the oppressive qualities and inclusive qualities of English. Refer back to Rikki's observation: she feels sad that Afrikaans is oppressed but says that you have to be able to use English as well. In particular, here the participants draw on South African discourses of transformation and inclusion. Then, English is seen as facilitating inclusion and as a compromise in a multilingual society. These are discourses also found in the larger debate around higher education in South Africa. These discourses clearly relate not only to the experience of individuals and to the individual's language abilities; they are also connected to other social activities, to the specific South African language and social dispensation, to the particular disciplines where students are enrolled and to the language policy debate at Stellenbosch.

## 7.8 SUMMARY

In answering the question as to what effects the increased use of English has on participants' self-perception of their conceptual fluency, a number of new questions arise. The answers from students who were interviewed show that it is not so easy to pinpoint the exact effect that English has. If there are apparent effects of the L2 on the L1, it is not clear whether these are brought about by English *per se*, or are related to larger societal questions. It does seem though, that the two participants from Group E particularly is struggling with what it means to be bilingual and what it means to be an L1 speaker of Afrikaans. In order to find their own answers and to construct their own self-perception, students use their own prior experiences, they draw on outside voices, highlight their agency, but also their struggle and feelings of powerlessness in some cases. It appears that having linguistic resources available to use two languages in higher education does cause ambivalence and uncertainty. However, in some cases there is testimony that the

uses of the two languages they already know at varying levels of proficiency provide them with more resources also in exercising their agency in particular ways.

The student responses emphasise that individuals rarely shape their opinions and act alone. Rather, they are related to other individuals and to the world that they inhabit. The really interesting question in the South African higher education context is not simply what the effect of the individual's L2 may be on his/her L1, but rather how these effects are motivated and facilitated among Afrikaans-English bilinguals who continuously negotiate, manage conflict, and use the resources available to them. The 'ambivalence and tension' that Rampton (1997) discusses in a post-modern account of language in public spaces seems to be pertinent in this situation. It is possible that some of the ambivalence is endemic to the higher academic context only. The participants of this study may indeed feel less ambiguous about language in other contexts of their lives. The shaping role of context (both immediate and larger societal context) is also illustrated in this case in that students report on the outside pressures on Afrikaans. These issues are not easily isolated from the language policy debate at SU and the perception of L1 speakers of Afrikaans regarding the legacy of apartheid. The students who took part in this study seem to feel threatened, at least to some extent, by the increased use of English and also attribute what they see as their "deteriorating" proficiency of Afrikaans to the increased exposure to English.

The conclusions drawn in this chapter are in line with Lave's (1991: 67) view of situated learning and situated social practice. This view emphasizes "the relational interdependency of agent and world, activity, meaning, cognition, learning and knowing." Psycholinguistic concepts such as 'multi-competence' and 'conceptual fluency' have been shown to be grounded in the activities in which participants engage their agencies. However, a theory which focuses too much on social formative aspects of bilingualism and discounts the cognitive processes involved, is also unsatisfactory. A situated notion of cognition that truly explores the relations of the different aspects listed by Lave will provide a more complete account of how bilingualism is shaped and how the bilingual person uses cognitive resources. Further, Lave (1991: 67) argues for an orientation that recognises that "learning, thinking, and knowing are relations among people engaged in activity in, with, and arising from the socially and culturally structured world." This view is aligned to Whorf's belief that cognition is shaped, pointed and influenced by the world

that individuals inhabit, a world which is partly constructed through language, and partly reflected in language.

## CHAPTER 8

# CONCLUSIONS AND RECOMMENDATIONS: LANGUAGE, BILINGUALISM, AND COGNITION IN HIGHER EDUCATION

### 8.1 INTRODUCTION

The primary aim of this study was to investigate pertinent aspects of the effect of an L2 (English) as medium of instruction on conceptual fluency in the L1 (Afrikaans). Considering the different approaches taken in different disciplines, it was clear that the theoretical framework for the study needed to be elaborately explained. Working with a relatively small data-set in the empirical part of the study, there was no evidence of a statistically significant positive or negative effect of the L2 on the L1. Instead, the findings from the study have illustrated how complex questions related to language contact are in a multilingual context such as the educational scene in South Africa. The results of the study contribute to our understanding of the complexities of bilingualism in the individual and in society, particularly referring to higher education where two languages are used in developing knowledge.

The theoretical premise on which the study was initially based namely that the L2 can lead to changes in the L1 had to be expanded. Notably, the notions of 'conceptual fluency' and 'multi-competence' that are central concepts were reformulated to be useful to the specific questions of this dissertation. The reformulation of these two concepts linked cognition to the way language is used in context, with the social activities that people engage in. The study set out to investigate Kecskes and Papp's (2000, 2003) claim that increased exposure to the L2 in an academic setting has a positive effect on conceptual fluency in the L1. Rather than only testing this hypothesis, the study used the theory largely as a point of departure, eventually investigating other theoretical positions as well. Further, the study questions some definitions and measurements of conceptual fluency, and suggests some alternatives (see Chapter 7, section 7.2.2).

Referring to 'multi-competence', I argue in this dissertation that this is a psychologically and empirically real phenomenon. Using complementary sets of data, proved to be

helpful in finding evidence of multi-competence. The study illustrates that multi-competence can vary among individuals showing differential development. Individuals develop different kinds of competencies depending on the context, the activities they engage in and their own agency. The implications of these and other findings of the dissertation will be framed below in terms of the theoretical and practical considerations.

This dissertation also investigated the influence of increased learning through an L2 on the cognitive function of academic learning. I found that where the L1 was well-established and a relatively powerful language and the L2 had reached a fair level of proficiency, this cognitive ability was not hampered by the use of the L2 in the learning environment. Instead I found that the level of conceptual fluency in an academic context, as measured in calibrated texts, played a more important role than language of instruction in the further development of academic achievement.

Lastly, although to a limited extent, the study illustrated how individual perceptions of language abilities are connected to and often determined by societal pressures, outside forces, and previous discourses about selves and others.

## **8.2 THEORETICAL IMPLICATIONS OF THE STUDY**

### **8.2.1 Language contact in the individual**

The study investigated particular aspects of language contact in the individual in a number of ways. Firstly, many earlier studies focus on contexts of either early simultaneous L1 acquisition of two languages or the acquisition of an L2 as a second or foreign language. This study does neither. All the participants started to acquire English at a relatively early age, mostly in a formal schooling environment. They regard Afrikaans only as their L1 and at university are increasingly exposed to English, their L2, as medium of instruction. Secondly, although English is an L2 for a large majority, it plays an important role as lingua franca in South African society. Although this study investigated contact in one specific context of language use, the findings of the study contribute to our understanding of language contact in the individual, having considered this context which previous studies did not attend to.

In particular, the results of this study seem to support Peal and Lambert (1962), and more recently Bialystok (2009); finding that bilingualism can have as many positive effects as

negative ones. Often it is not possible to detect marked differences between bilinguals and monolingual in measurable cognitive processes. In fact the results here revealed that there were no statistically significant differences between the two groups who had more and less bilingual learning experiences, in terms of conceptual fluency and academic achievement. Rather the study pointed to the complex interaction of two languages in the same mind. It showed how knowledge and skills acquired through one language can be drawn on when information is received through another language channel, thus how skills acquired through one language can be transferred and used effectively in another. This lends support to Cummins' (1979b) interdependence hypothesis, and to Kecskes and Papp's (2000) notion of a common underlying conceptual base (CUCB). Bilingualism experts working in the cognitive tradition have pointed to this complex interaction and have warned against a simple dichotomy of negative vs. positive consequences of bilingualism (Grosjean 1989; Bialystok 2009). This study shows that more knowledge about how the bilingual mind operates can be gained by moving away from the simple *is bilingualism good or bad* dichotomy. The fact remains that being bilingual is an entirely normal and common state of many individuals and societies worldwide. The focus of enquiry should be on how bilinguals negotiate between the two language systems and not only what the effects are of their being bilingual. Grosjean indicated this in 1989, but the idea was only taken up in research about 10 years later. Studies on CLI in both language and cognition are significant in considering regular patterns and processes of bilingualism.

## **8.2.2 Language and cognition**

### **8.2.2.1 *The Whorfian hypothesis***

This study refers strongly to the Whorfian hypothesis, in particular its weaker version. However, it did not set out to challenge or confirm the implications the Whorfian hypothesis may have for bilingualism research. Even so, what an orientation which includes consideration of the Whorfian hypothesis, does allow is a view of language which acknowledges interaction in the brain, between language and other cognitive functions.

The current study presented a new context for investigating the hypothesis. As mentioned earlier, in the South African context English is the lingua franca in a multilingual society.

This study contributes to unfolding the linguistic relativity theory by providing evidence regarding interaction between two languages in the mind. This adds to mounting evidence that neither L1 knowledge nor certain cognitive processes reach an ideal position and then remain stable throughout a person's life. The study cannot provide answers on the exact role of English in L1 development among the participants it can however tentatively propose that increased exposure to an L2 in teaching and learning can lead to the development and improvement of multi-competence. This points to an area of potential further research, with the African context being a particularly rich place for investigation. Languages and contexts previously unexplored in terms of the Whorfian hypothesis could be investigated, especially with already existing evidence that increased exposure to two languages does alter the way in which the two languages are used for the cognitive function of academic learning and building new knowledge.

#### **8.2.2.2 Sociocultural theory**

Findings of this study support some of the foundations of sociocultural theories of cognition. In particular there is evidence that cognition in part relies on cultural factors such as social activities and artefacts (Lantolf 2006: 69). This is particularly evident in findings on the development of multi-competence. Both from the quantitative and qualitative section of the study, it is clear that the activities that students engaged in were partly responsible for the development of multi-competence. Taken as an artefact with mediating qualities, language was found to play an important role in the development of multi-competence. Thus this development is not only an unconscious psychological process, it is also a product of the interaction between languages in the mind, and of subjects' social activities in the real world. Linguists working from a psycholinguistic perspective should recognise that psychological and cognitive processes are partly shaped by the world and by mediating tools such as language. In this respect the theory of linguistic relativity and sociocultural theory have shared interests; both propose that language as a mediating tool can alter cognitive processes. In the sociocultural tradition, human agency is strongly emphasised, this however is not the case with studies in the Whorfian tradition. This study illustrates in accordance with Whorfian perspectives how students use their linguistic resources in varying degrees, and how, in accordance with sociocultural theory, agency plays a significant role in use of linguistic resources.

### 8.2.3 Language and academic achievement

Language of instruction and academic achievement are very often linked. Which language is used in instruction is seen as an essential component of success in education. Most of the research with an interest in the latter has been done in primary schools in bilingual communities (Cummins 1979; Genesee 2004; Thomas & Collier 2004). Much less has been dedicated to uses of various languages at secondary school and tertiary level. In South Africa a number of studies of this nature have been done (Webb 2002; Paxton 2009; Van der Walt & Dornbrack 2011), but this study is the first to systematically compare language experiences of students with different language(s) of instruction within the same higher education institution and within the same faculty. In this case, the particular language of instruction and students' language performance in Grade 12 seem to be less significant than other factors, in achieving academic success. These factors which include overall Grade 12 performance and the level of conceptual fluency which students had reached on entering university seem to be more reliable as indicators of future academic success. The study shows that what is measured by Grade 12 language tests and exams is not to be equated with conceptual fluency; the latter appears to be a requirement for success in academic contexts. More research needs to be conducted on these factors as the existing literature alludes to them only superficially. In particular, studies that will investigate the combination of factors most likely to ensure academic success in particular contexts are needed.

The study also points to the fact that if a certain level of proficiency is reached in the L1, L2 education is not necessarily harmful to academic success. The notion of "thresholds" used by Cummins (1979) and Kecskes (2000) is not universally accepted and needs to be re-examined. One of the reasons proposed in this study for the fact that language of instruction did not markedly impact negatively on students in Group E, is that they may have reached the hypothetical threshold level in both their L1 and L2. These students had 12 years of instruction in their L1, and at least eight years of L2 development in an environment where, the L2 is strongly present. It could account for the limited impact of language of instruction among these students. Currently in South Africa many students with an L1 other than Afrikaans do not have partial or simultaneous instruction in their L1 alongside the lingua franca. It is possible that among such students, language proficiency in English or the language of instruction would be more significant in

determining academic achievement. Studies of a similar nature with students from other language backgrounds, is an important and as yet unexplored area of research. Part of the reason why such studies have not been conducted more systematically in South Africa, is the fact that African languages have not been developed as scientific languages, and that literacy in the L1 is not encouraged, with English being introduced as soon as possible. A confounding reality here is that African languages officially have not been used as LoTL beyond grade 3, and so have not developed as scientific languages. Literacy in the L1 is limitedly encouraged and English is introduced very early in the curriculum. Studies investigating the effect of the L2 on African language speakers' conceptual fluency in the L1 therefore would have to design a different procedure to produce comparable results. A possibility would be to investigate the effect of the increased use of the L2 on other aspects of conceptual fluency, outside of academic contexts. I would also suggest future studies to investigate the increased use of Afrikaans as LoTL on the conceptual fluency of L1 speakers of English or other SA languages, in a population of students having had English as LoTL during primary and secondary schooling entering Stellenbosch University.

#### **8.2.4 Bilingual self-perception**

One of the key findings of this study is the indication of how participants' knowledge of English and Afrikaans interacted, in particular in the exposure group, to aid the development of multi-competence. It adds to the growing body of work which indicates that CLI not only occurs from L1 to L2, but also from L2 to L1. In fact it confirms hypotheses of bidirectional transfer, suggested by Cook (2003) and Jarvis and Pavlenko (2008). A further important finding refers to agency of students in the development of their own multi-competence. This has not been attended to in other studies on multi-competence. The participants in this study chose to activate particular aspects of their language proficiency in particular situations. This shows how language is not to be isolated from the social activity in which the user is engaged.

The interview data pointed to different aspects of language contact in the individual. It highlighted how the participants had entered university with different experiences in terms of language and language contact. Another finding that emerged from the interview data is how often individuals incorporate outside voices and discourses in their own recounting and discussion of the languages they use. They related strongly to larger

societal discourses, even if inadvertently, to how other people in the learning environment construct their use of language and to former and even future perceptions of themselves and their language abilities and proficiencies. This aspect of the study added invaluable information which would not have been available if the study relied on quantitative research methods only. The study in particular showed that the bilingual individual has a choice about how to use various linguistic resources; it also confirms that these choices are formed and constrained by situational context, power relations and larger societal structures.

The bilingual participants in this study gave evidence of the ability to transfer linguistic knowledge, subject matter knowledge and knowledge about the world between the two languages they know. This bears evidence to the bidirectional nature of transfer which Jarvis and Pavlenko (2008) refer to. The results indicate that transfer of this nature is not necessarily negative, as earlier perspectives on bilingualism in education suggested (Macnamara 1966; Tsushima & Hogan 1975). Further, students' own agency in the nature and extent of transfer has been highlighted.

### **8.3 PRACTICAL RECOMMENDATIONS**

#### **8.3.1 Methodology for future studies**

The study points to the methodological challenges researchers encounter when they are interested in bilingual contexts other than ones characterized by immigration and assimilation, where L2s are learnt as foreign languages. This research wants to offer an alternative point of view on these challenges. My viewpoint is that these methodological challenges can be turned into resources to gain more insight into the bilingual. Triangulation has been a common research method in linguistic anthropology and ethnographic research, but is rarely used in psycholinguistic research. For this study, it was necessary to supplement a traditional method using language tests with methods from the narrative tradition.

This dissertation had the task of comparing a group of bilinguals with considerable exposure to English (their L2) in a leaning context, to a group with limited exposure to English in this context. In testing the effect of increased use of English in education, one ideally would have wanted to compare responses of Afrikaans/English bilinguals to those

of Afrikaans monolinguals, as that would assure less complicating variables. However, in the South African context it is exceptionally difficult to find a monolingual person. Urban African language speakers mostly grow up with two or three African languages simultaneously acquired from an early age. English is widely used as lingua franca, and in African language communities schooling is largely through medium of English. Afrikaans L1 speakers, although they are typically less multilingual than African language speakers, also widely use English as lingua franca. A comparison of the two groups, contrasting monolinguals and bilinguals in the tradition of most psycholinguistic studies, was not possible. Instead, students with more exposure to English were compared to those with less exposure, according to an approach which is also advocated by Cook (2003), who acknowledges that "true bilinguals" are hard to find.

Even this was not a simple task, as all students in higher education are increasingly exposed to English with e.g. the use of English textbooks. The SU yearbooks give a reasonable indication which modules are presented in which language(s), and student enrolment was used to determine who attended which, still there was no guarantee that students attended the classes that had been assigned to. The interview data, however gave more clarity in that regard. Most students did indeed attend the classes they were assigned to. This points to the value of supplementing traditional psycholinguistic research methods with more qualitative methods. The interview data also offered answers to questions not only of what the effect is of the increased use of English, but also how the languages interact in the mind and for which purposes the participants use their languages.

This study has implications for the theoretical and methodological aspects of research in language and cognition, but also provides some interesting practical implications.

### **8.3.2 Teaching 'conceptual fluency' in an academic context**

An obvious question that arises from the study relates to the most effective way of developing conceptual fluency in an academic context. The study showed that the conceptual fluency with which students enter university correlates significantly with academic achievement at university. The university under investigation here currently has a policy of testing academic literacy before a student enters university. This gives an indication of students who may be at risk and need further development of these

particular skills. Courses in academic literacy are offered as compulsory, credit bearing modules in selected programmes in all faculties. The study shows that of the students who follow these courses academic literacy levels do improve. A recommendation of this study would be to introduce explicit teaching of academic literacy that stimulates conceptual fluency more widely and systematically. Such courses should be made relevant to the particular programmes enrolled for so that prerequisite skills in their specific context will be better developed. The study has indicated that even very low risk students benefit from these courses and can improve their conceptual fluency.

Another recommendation arises from the results of the interview data. Currently the participants of the study who are all L1 speakers of Afrikaans receive their academic literacy classes in Afrikaans only. In interviews all the students, but in particular advanced students who do modules conducted through the T-option draw not only on Afrikaans in studying, writing assignments or tests, or when explaining information to themselves; they use and rely on knowledge of both languages. All the students referred to the fact that all textbooks are in English and that they need to access information in/through English to write good assignments. This suggests that both languages be used more systematically and explicitly in the teaching of academic skills related to conceptual fluency. Further research is needed to determine the most effective way in which this could be implemented.

Some options which this study can propose are given here. One could teach academic literacy through the T-option, or teach part of the academic literacy course in Afrikaans and part in English. Another option would be to do some assignments in English and some in Afrikaans. Cummins (2010: 234) proposes that the structured use and focus of two languages in the classroom can improve literacy skills in both languages. He refers to this procedure as "teaching for transfer." Part of Cummins' "teaching for transfer" is the use of explicit translation exercises. For example students can be required to access texts in English but write an assignment in Afrikaans. Canagarajah (2006: 602-603) believes that all the resources that a multilingual writer possesses can and should be used, and that this should be encouraged. In particular, Canagarajah (2006) believes that by using all their linguistic resources, students will become more critical readers and writers.

The recommendation although supported by the theory, is made largely because the students already use all the linguistic resources at their disposal. They standardly use two

languages in their everyday life at university. Teaching skills related to conceptual fluency and multi-competence explicitly, can assist students in developing skills they already possess. Those interested in bilingual leaning should observe how bilingual individuals negotiate between two languages conceptually and in building new knowledge. Investigating how bilingual voices are represented in higher education offers insight into the strategies they use, their successes, their failures and their bilingual lives.

### **8.3.3 Policies on language of instruction**

The language policy at SU was not explicitly investigated. However, language policy in higher education institutions is pertinent in multilingual contexts. Bilingual higher education institutions elsewhere in Europe and Canada have different forms of bilingual learning, ranging from institutional bilingualism to where individual bilingualism is required (Anckar 2000; Beillard 2000). The increasing use of English makes bilingual higher education in some form or another more common at universities globally. At SU there is an on-going debate on the language policy of the University. The recommendation currently is that the parallel medium option, i.e. separate classes for English and Afrikaans groups, should be used more extensively. There is also an initiative to investigate the use of simultaneous interpreting in lectures. The parallel medium option is regarded as a more inclusive option, to attract students who are not sufficiently fluent in Afrikaans. It is also regarded as a way of ensuring that Afrikaans maintains its status as a scientific language in higher education. However there are many reservations as to the use of the parallel medium option. One of them relates to the history of other universities which previously used this option. The University of the Western Cape (UWC) shifted from being an Afrikaans medium university (1960s to 1980s) to parallel medium. Currently this university uses English only as medium of instruction. Although the history and context of UWC is different, specifically with regard to how it positioned itself during the struggle against apartheid, a similar shift to English only has taken place elsewhere, as at University of Johannesburg, formerly the Rand Afrikaans University and the University of Pretoria which is reportedly steadily shifting towards English (Webb 2002). Additionally, the parallel medium also has cost, financial and time implications; to ensure resources are available equally and completely in both languages is costly. There have been concerns that the use of the T-option will be cognitively and linguistically detrimental (Webb 2002). This study counters such a concern as it has shown that the T-

option does not disadvantage the students who are taught through this option. In terms of the students' self-perception of their language abilities, however, we do find that those who are exposed to English more do feel more doubtful about their Afrikaans language abilities. A bigger sample size might have rendered different information (students interviewed in Group E n=2). This perception has to be read against larger societal discourses. Although these students feel that their Afrikaans is deteriorating, they also report on finding creative ways of using all the linguistic resources at their disposal for academic success.

A simple recommendation that the T-option or A/E option should be used more extensively cannot be made on the basis of the results of the study. The language policy debate at Stellenbosch University refers to more than just the effects of the L2 on academic success of the bilingual individual. In fact, mostly consideration of possible effects of the L2 on the bilingual individual has been minimal in debate. It has mostly focussed on the tension between aims to maintain Afrikaans as scientific language, aims to make Stellenbosch University a more inclusive institution. From this point of view it is clear why the A/E option seems appealing. Apart from the misgivings about the parallel medium option provided above, the results of this study offer another one. A parallel medium option subscribes to a decidedly monolingual view of language in society; where different languages are kept apart as if minimal interference is regular and ideal. The results of the study indicate clearly that this is not the way that linguistic resources operate within individuals or within society. Bilinguals constantly use languages in meaning making and in fact do negotiate and manage both. Code-switching, asking questions in different languages, rephrasing and re-emphasizing things in different languages are bound to happen in a multilingual classroom.

The language policy debate at tertiary level in SA is currently only confined to former Afrikaans universities. Historically white English universities are hardly participating in this debate, although these universities also serve multilingual, and not only English monolingual students. Also rarely addressed in this debate, is the position of African languages. There has been support for developing African languages to be used in higher education (Alexander 2006), although there seems to be limited political will to do so, starting at the limited support of African languages in primary and secondary education.

Studies like the current one could be done in these contexts to widen the debate about language use in education at the tertiary level in South Africa.

## BIBLIOGRAPHY

- Abutalebi, J., Tettamanti, M. & Perani, D. (2009). Editorial: The bilingual brain: Linguistic and non-linguistic skills. *Brain & Language*. 109, 51–54.
- Adhikari, M. (2005). *Not white enough, not black enough: racial identity in the South African coloured community*. Athens: Ohio University Press.
- Ahukanna, G. W., Lund, N. J. & Gentile, R. (1981). Inter-and intra-lingual interference effects in learning a third language. *The Modern Language Journal*. 65(3), 281–287. Available <http://www.jstor.org/stable/324154>. Retrieved 18 June 2008.
- Alexander, N. (2006). The African Renaissance and the use of African languages in tertiary education. *PRAESA Occasional Papers*. 13, 2–42.
- Al-Issa, A. (2003). Sociocultural transfer in L2 speech behaviours: evidence and motivating factors. *International Journal of Intercultural Relations*. 27, 581–601.
- Alonso, M. R. (2002). *The role of transfer in second language acquisition*. Vigo: University of Vigo Press.
- Alptekin, C. (2010). Redefining multi-competence for bilingualism and ELF. *International Journal of Applied Linguistics*. 20(1), 95–110.
- Ameel, E., Malt, B. C., Storms, G. & Van Assche, F. (2009). Semantic convergence in the bilingual lexicon. *Journal of Memory and Language*. 60, 270–290.
- Anckar, O. (2000). University education in a bilingual country: The case of Finland. *Higher Education in Europe*. XXV(4), 499–506.
- Appleton, J. V. (1995). Analysing qualitative interview data: addressing issues of validity and reliability. *Journal of Advanced Nursing*. 22, 993–997.
- Aronin, L. & Singleton, D. (2008). Multilingualism as a new linguistic dispensation. *International Journal of Multilingualism*. 5(1), 1–16.
- Athanasopoulos, P. (2006) Effects of the grammatical representation of number on cognition in bilinguals. *Bilingualism: Language and Cognition* 9(1), 89–96.

- Athanasopoulos, P. (2007). Interaction between grammatical categories and cognition in bilinguals: The role of proficiency, cultural immersion, and language of instruction. *Language and Cognitive Processes*. 22(5), 689–699.
- Athanasopoulos, P. (2009). Cognitive representation of colour in bilinguals: The case of Greek blues. *Bilingualism: Language and Cognition*. 12(1), 83–95.
- Athanasopoulos, P. (2011). Cognitive restructuring in bilingualism. In A. Pavlenko (Ed.), *Thinking and speaking in two languages*. Bristol, Buffalo, Toronto: Multilingual Matters.
- Athanasopoulos, P. & Kasai, C. (2008). Language and thought in bilinguals: The case of grammatical number and nonverbal classification preference. *Applied Psycholinguistics*. 29, 105–123.
- Bachman, L. F. & Palmer, A. S. (1996). *Language testing in practice*. Oxford: Oxford University Press.
- Baker, C. (2003). Education as a site of language contact. *Annual Review of Applied Linguistics*. 23, 95–112.
- Bakhtin, M. M. (1981). *The dialogic imagination. Four essays*. In M. Holquist (Ed.), translated Emerson, C & Holquist, M. Austin: University of Texas Press.
- Balcom, P. (2003). Cross-linguistic influence of L2 English on middle constructions in L1 French. In V. Cook (Ed.), *Effects of the second language on the first*. Clevedon: Multilingual Matters.
- Banda, F. (2007). Study groups and peer roles in mediated academic literacy events in multilingual educational contexts in South Africa. *Stellenbosch Papers in Linguistics*. 37, 1–21.
- Banda, F. (2010). Defying monolingual education: alternative bilingual discourse practices in selected coloured schools in Cape Town. *Journal of Multilingual and Multicultural Development*. 31(3), 221–235.
- Bassetti, B. & Cook, V. (2011). Relating language and cognition: The second language user. In V. Cook & B. Bassetti (Eds.), *Language and bilingual cognition*. New York, Hove: Psychology Press.

- Beillard, J. (2000). Bilingualism in a Canadian context: The case of the University of Ottawa. *Higher Education in Europe*. XXV (4), 469–476.
- Bereiter, C. (1990). Aspects of an educational learning Theory. *Review of Educational Research*. 60 (4), 603–624. <http://www.jstor.org/stable/1170508>. Retrieved 30 September 2010.
- Ben-Zeev, S. (1977). The influence of bilingualism on cognitive strategy and cognitive development. *Child Development*. 48 (3), 1009–1018. Available <http://www.jstor.org/stable/1128353>. Retrieved 18/02/2010.
- Besemeres, M. (2004). Different languages, different emotions? Perspectives from autobiographical literature. *Journal of Multilingual and Multicultural Development*. 25(2-3), 140–158.
- Bialystok, E. (1991). Metalinguistic dimensions of bilingual proficiency. In E. Bialystok (Ed.), *Language processing in bilingual children*. Cambridge: Cambridge University Press.
- Bialystok, E. (2001a). *Bilingualism in development. Language, literacy, & cognition*. Cambridge: Cambridge University Press.
- Bialystok, E. (2001b). Metalinguistic aspects of bilingual processing. *Annual Review of Applied Linguistics*. 21, 169–181.
- Bialystok, E. (2005). Consequences of bilingualism for cognitive development. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of Bilingualism. Psycholinguistic Approaches*. Oxford: Oxford University Press.
- Bialystok, E. (2007a). Cognitive effects of bilingualism: How linguistic experience leads to cognitive change. *The International Journal of Bilingual Education and Bilingualism*. 10 (3), 210–223.
- Bialystok, E. (2007b). Language acquisition and bilingualism: Consequences for a multilingual society. *Applied Psycholinguistics*. 28, 393-397.
- Bialystok, E. (2009). Bilingualism: The good, the bad, and the indifferent. *Bilingualism: Language and Cognition*. 12(1), 3–11.
- Biber, D. (1986). Spoken and written textual dimensions in English: Resolving the contradictory findings. *Language*. 62(2), 384–414.

- Biber, D., Conrad, S., Reppen, R., Byrd, P. & Helt, M. (2002). Speaking and writing in the university: A multidimensional comparison. *TESOL Quarterly*. 36(1), 9–48. <http://www.jstor.org/stable/3588359>. Retrieved 8 August 2010.
- Bloom, P. & Keil, F. C. (2001). Thinking through language. *Mind & Language*. 16(4), 351–367.
- Bloomfield, L. (1933). *Language*. London: George Allen & Unwin Ltd.
- Bohn, O.S. (1995). Cross-language speech perception in adults: first language transfer doesn't tell it all. In Strange, W. (ed). *Speech perception and linguistic experience: Theoretical and methodological issues*. Timonium, MD: York.
- Boroditsky, L. (2001). Does language shape thought? Mandarin and English speakers' conception of time. *Cognitive Psychology*. 43, 1–22. Available <http://www.idealibrary.com>. Retrieved 18 February 2008.
- Brink, C. (2006). *No lesser place. The taaldebat at Stellenbosch*. Stellenbosch: Sun Press.
- Brody, J. (1986). Repetition as a rhetorical and conversational device in Tojolabal (Mayan). *International Journal of American Linguistics*. 52(3), 255–274.
- Brown, A. (2008). Gesture viewpoint in Japanese and English. Cross-linguistic interactions between two languages in one speaker. *Gesture*. 8(2), 256–276.
- Brown, A. & Gullberg, M. (2008). Bidirectional cross-linguistic influence in L1-L2 encoding of manner in speech and gesture: A study of Japanese speakers of English. *Studies in Second Language Acquisition*. 30(2), 225–251.
- Brown, D. & Hudson, T. (1998). The alternatives in language assessment. *TESOL Quarterly*. 32(4), 653–675.
- Butler, H. G. (2006). *A framework for course design in academic writing for tertiary education*. Unpublished Thesis. (PhD). Pretoria: University of Pretoria.
- Bylund, E. (2009). Effects of age of L2 acquisition on L1 event conceptualization patterns. *Bilingualism: Language and Cognition*. 12, 305–322.
- Burck, C. (2005). *Multilingual living*. London: Palgrave Macmillan.
- Burr, v. (1995). *An introduction to social constructionism*. London: Routledge.
- Burton, L. J & Dowling, D. G. (2005). In search of the key factors that influence student success at university. *HERDSA*.

- Camarazza, A. & Brones, I. (1980). Semantic classification by bilinguals. *Canadian Journal of Psychology*. 34, 77–81.
- Canagarajah, S. (2002). Multilingual writers and the academic community: towards a critical relationship. *Journal of English for Academic Purposes*. 1, 29–44.
- Canagarajah, S. (2006a). Towards a writing pedagogy of shuttling between languages: learning from multilingual writers. *College English*. 68(6), 589–604. <http://www.jstor.org/stable/25472177>. Retrieved 20 August 2010.
- Canagarajah, S. (2006b). Negotiating the local in English as lingua franca. *Annual Review of Applied Linguistics*. 26, 197–218.
- Cardini, F. (2010). Evidence against Whorfian effects in motion conceptualisation. *Journal of Pragmatics* 42, 1442–1459.
- Carlisle, J. F., Beeman, M., Davis, L.H. & Spharim, G. (1999). Relationship of metalinguistic capabilities and reading achievement for children who are becoming bilingual. *Applied Psycholinguistics*. 20, 459–478.
- Carnie, A. (2006). *Syntax. A generative introduction. Second Edition*. Oxford: Blackwell
- Carruthers, P. (2002). The cognitive functions of language. *Behavioral and Brain Sciences*. 25, 657–726.
- Carstens, W. (2006). Praktiese meertaligheid in Suid-Afrika- feit of fiksie? *Journal of Language Teaching*. 40(1), 1–19.
- Casasanto, D. (2008). Who's afraid of the big dad Whorf? Cross-linguistic Differences in Temporal Language and Thought. *Language Learning*. 58(1), 63–79.
- Cenoz, J. (2001). The effect of linguistic distance, L2 status and age on cross-linguistic influence in third language acquisition. In J. Cenoz, B. Hufeisen & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives*. Clevedon: Multilingual Matters.
- Cenoz, J. & Genesee, F. (1998). Psycholinguistic perspectives on multilingualism and multilingual education. In J. Cenoz & F. Genesee (Eds.), *Beyond bilingualism. Multilingualism and multilingual education*. Clevedon: Multilingual Matters.

- Chafe, W. & Tannen, D. (1987). The relation between written and spoken language. *Annual Review of Anthropology*. 16, 383–407. <http://www.jstor.org/stable/2155877>. Retrieved 17 May 2010.
- Chandrasoma, R., Thompson, C. & Pennycook, A. (2004). Beyond plagiarism: Transgressive and nontransgressive intertextuality. *Journal of Language, Identity and Education*. 3(3), 171–193.
- Chomsky, N. (1959). A review of B.F Skinner's Verbal Behavior. *Language*. 35 (1), 26–58. Reprinted in L. A. Jakobvits & S. M. Murray (Eds.), (1967). In *Readings in the Psychology of Language*.
- Coetzee-Van Rooy, S. (2010). Evaluation of the Cummins theoretical framework for higher education in South Africa. *Southern African Linguistics an Applied Language Studies*. 28(1), 25–38.
- Coleman, J. A. (2006). English-medium teaching in European higher education. *Language Teaching*. 39(1), 1–14.
- Collier, V. P. (1995). Acquiring a second language for school. *Directions in Language and Education*. 1 (4). <http://www.ncbe.gwu.edu/ncbbepubs/directions/04.htm>. Retrieved 17 May 2010.
- Collier, V. P. & Thomas, W. P. (2004). The astounding effectiveness of dual language for all. *NABE Journal of Research and Practice*. 2(1), 1–20.
- Cook, V. (1991a). *Second language learning and language teaching*. London. Edward Arnold.
- Cook, V. (1991b). The poverty-of- the- stimulus argument and multi-competence. *Second Language Research*. 7(2), 103–117.
- Cook, V. (1992). Evidence for multi-competence. *Language Learning*. 42(4), 557–591.
- Cook, V. (1999). Going beyond the native speaker in language teaching. *TESOL Quarterly*. 3(2), 185–209.
- Cook, V. (2002). *Portraits of the L2 user*. Clevedon: Multilingual Matters.
- Cook, V. (Ed.). (2003). *Effects of the second language on the first*. Clevedon: Multilingual Matters.

- Cook, V. (2005). Written language and foreign language teaching. In V. Cook & B. Bassetti (Eds.), *Second language writing systems*. Clevedon: Matters.
- Cook, V. (2008). Multi-competence: Black hole or wormhole for second language acquisition research? In Han, Z. (Ed.), *Understanding second language process*. Clevedon: Multilingual Matters.
- Cook, V. & Bassetti, B. (Eds.). (2005). An introduction to researching second language writing systems. In *Second language writing systems*. Clevedon: Multilingual Matters.
- Cook, V. & Bassetti, B. (Eds.). (2011). *Language and bilingual cognition*. New York, Hove: Psychology Press.
- Corder, S. P. (1967). The significance of learners' errors. *International Review of Applied Linguistics*. 5, 161–170.
- Corder, S. P. (1992). A role for the mother tongue. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning*. Amsterdam/Philadelphia: Benjamins Publishing.
- Corson, D. (1993). *Language minority education and gender: Linking social justice and power*. Clevedon: Multilingual Matters.
- Corson, D. (1997). The learning and use of academic English words. *Language Learning*. 47(4), 671-718.
- Coxhead, A. (2000). A new academic word list. *TESOL Quarterly*. 34(2), 213-238.
- Cromdal, J. (1999). Childhood bilingualism and metalinguistic skills: Analysis and control in young Swedish-English bilinguals. *Applied Psycholinguistics*. 20, 1–20.
- Cummins, J. (1979a). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*. 49(2), 222–251.
- Cummins, J. (1979b). Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters. *Working Papers on Bilingualism*. 19, 121–129.
- Cummins, J. (1980). The crosslingual dimensions of language proficiency: Implications for bilingual education and the optimal age issue. *TESOL Quarterly*. 14(2), 175–187.

- Cummins, J. (1981). Empirical and theoretical underpinnings of bilingual education. *Journal of Education*. 163(1), 16–29.
- Cummins, J. (1991). Interdependence of first and second language proficiency in bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children*. Cambridge: Cambridge University Press.
- Cummins, J. (2000). Putting language proficiency in its place: Responding to critiques of the conversational/ academic language distinction. In Cenoz, J. & Jessner, U. (Eds.), *English in Europe: The acquisition of a third language*. Multilingual Matters. Clevedon, Buffalo, Toronto. <http://www.iteachilearn.com/cummins/converacademlangdisit.html>. Retrieved 8 November 2009.
- Cummins, J. (2009). Pedagogies of choice: challenging coercive relations of power in classrooms and communities. *International Journal of Bilingual Education and Bilingualism*. 12(3), 261–271.
- Cummins, J. (2010). Rethinking monolingual instructional strategies in multilingual classrooms. *CJAL*. 10(2), 221–240.
- Danesi, M. (1995). Learning and teaching languages: the role of "conceptual fluency". *International Journal of Applied Linguistics*. 5(1), 3–20.
- Davidoff, J., Davies, I. & Robertson, D. (1999). Colour categories in a stone-age tribe. *Nature*. 398(6724), 203–204.
- De Angelis, G. (2005). Interlanguage transfer of function words. *Language Learning*. 55(3), 379–414.
- De Angelis, G., & Selinker, L. (2001). Interlanguage transfer and competing linguistic systems in the multilingual mind. In Cenoz, J., Hufeisen, B., & Jessner, U. (eds). *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives*. Clevedon, UK: Multilingual Matters.
- De Bot, K. & Hulsen, H. (2002). Language attrition: Tests, self-assessments and perceptions. In V. Cook (Ed.), *Portraits of the L2 user*. Clevedon: Multilingual Matters.
- De Groot, A. M. B. (2000). On the source and nature of semantic and conceptual knowledge. *Bilingualism: Language and Cognition*. 3(1), 7–9.

- De Leeuw, E., Schmid, M. S. & Mennen, I. (2010). The effects of contact on native language pronunciation in an L2 migrant setting. *Bilingualism: Language and Cognition*. 13(1), 33–40.
- Department Education. Republic of South Africa. (2008). *Final Report of the Ministerial Committee on Transformation and Social Cohesion and the Elimination of Discrimination in Public Higher Education Institutions*.
- Diaz, R. M. (1983). Thought and two languages: The impact of bilingualism on cognitive development. *Review of Research in Education*. 10, 23-54. <http://www.jstor.org/stable/1167134>. Retrieved 15 December 2010.
- Diaz, R. M. (1985). Bilingual cognitive development: Addressing three gaps in current research. *Child Development*. 56(6), 1376–1388.
- Dufva, H. (2004). Language, thinking and embodiment: Bakhtin, Whorf and Merleau-Ponty. In F. Bostad, C. Brandist, S. Evensen & H. C. Faber (Eds.), *Bakhtinian perspectives on language and culture. Meaning in language, art and new media*. Hampshire & New York: Palgrave Macmillan.
- Du Plessis, T. (2006). From monolingual to bilingual higher education: The repositioning of historically Afrikaans-medium universities in South Africa. *Language Policy*. 5, 87–113.
- Escudero, P., & Boersma, P. (2004). Bridging the gap between L2 speech perception research and phonological theory. *Studies in Second Language Acquisition*. 26, 551–585.
- Evans, N. & Levinson, S. C. (2009). The myth of language universals: Language diversity and its importance for cognitive science. *Behavioral and Brain Sciences*. 32, 429–492.
- Evans, V. (2011). Language and cognition: The view from cognitive linguistics. In V. Cook & B. Bassetti (Eds.), *Language and bilingual cognition*. New York, Hove: Psychology Press.
- Everett, D. L. (2005). Cultural constraints on grammar and cognition in Pirahã. Another look at the design features of human language. *Current Anthropology*. 46(4), 621–646.

- Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research*. London: Routledge.
- Fairclough, N. (2004). Semiotic aspects of social transformation and learning. In R. Rogers (Ed.), *An introduction to critical discourse analysis in education*. Mahwah, London: Lawrence Erlbaum.
- Finkbeiner, M., Gollan, T. H. & Caramzza, A. (2006). Lexical access in bilingual speakers: What's the (hard) problem? *Bilingualism: Language and Cognition*. 9(2), 153–166.
- Firth, A. & Wagner, J. (1997). On discourse, communication and (some) fundamental concepts in SLA Research. *The Modern Language Journal*. 81 (iii), 285–300.
- Flege, J.E., Bohn, O.S., & Jang, S. (1997). Effects of experience on non-native speakers' production and perception of English vowels. *Journal of Phonetics*. 25, 437–470.
- Flege, J.E. & Eefting, W. (1987). Cross-language switching in stop consonant perception and production by Dutch speakers of English. *Speech Communication*. 6, 185–202.
- Fodor, J. A. (1975). *The language of thought*. Cambridge, Massachusetts: Harvard University Press.
- Fodor, J. A. (1983). *The modularity of mind*. Cambridge, MA: MIT Press.
- Forster, K. I. & Jiang, N. (2001). The nature of the bilingual lexicon: Experiments with the masked priming paradigm. In J. L. Nicol (Ed.), *One mind, two languages. Bilingual language processing*. Oxford: Blackwell Publishing.
- Fries, C. C. (1945). *Teaching and learning English as a foreign language*. Ann Arbor: University of Michigan Press.
- Frith, C., & Dolan, R. (1998). The role of prefrontal cortex in higher cognitive functions. *Cognitive Brain Research*. 5(1-2), 175–181.
- Fuchs, C. (1999). Diversity in linguistic representations. A challenge for cognition. In C. Fuchs & S. Robert (Eds.), *Language diversity and cognitive representations*. Amsterdam, Philadelphia: John Benjamins Publishing Company.

- Galambos, S. J. & Hakuta, K. (1988). Subject-specific and task specific characteristic of metalinguistic awareness in bilingual children. *Applied Psycholinguistics*. 9, 141-162.
- Gass, S.M. (1983). Language transfer and universal grammatical relations. In Gass, S. M. & Selinker, L. (1983). (Eds.). *Language transfer in language learning*. Rowley. MA: Newbury House.
- Gass, S. M. & Selinker, L. (1983). (Eds.). *Language transfer in language learning*. Rowley. MA: Newbury House.
- Genesee, F. (2004). What do we know about bilingual education for majority-language students? In Bhatia, T. K. & Ritchie, W. C. (Eds.), *Handbook of bilingualism and multiculturalism*. London: Blackwell.
- Genesee, F. (2008). Dual language in the global village. In T. Williams Fortune & D. J. Tedick (Eds.), *Pathways to multilingualism. Evolving perspectives on immersion education*. Clevedon: Multilingual Matters.
- Gerber, A., Engelbrecht, J., Harding, A. & Rogan, J. (2005). The influence of second language teaching on undergraduate mathematics performance. *Mathematics Education Research Journal*. 17(3), 3–21.
- Giliomee, H. (2004). The rise and possible demise of Afrikaans as public language. *Nationalism and Ethnic Politics*. 10, 25–58.
- Goldin, I. (1987). *Making race: The politics and economics of coloured identity in South Africa*. Cape Town & Johannesburg: Maskew Miller Longman.
- Gomez, C. & Reason, R. (2002). Cross-linguistic transfer of phonological skills: A Malaysian perspective. *Dyslexia*. 8, 22–33.
- Gopnik, A. (2001). Theories, language and culture: Whorf without wincing. In M. Bowerman & S. C. Levinson (Eds.), *Language acquisition and conceptual development*. Cambridge: Cambridge University Press.
- Gopnik, A. (2003). The theory theory as an alternative to the innateness hypothesis. In Antony, L. M. & Hornstein, N. (Eds.), *Chomsky and his critics*. Oxford: Blackwell publishing.

- Gopnik, A., Choi, S. & Baumberger, T. (1996). Cross-linguistic differences in early semantic and cognitive development. *Cognitive Development*. 11, 197–227.
- Graham, J. G. (1987). Language proficiency and the prediction of academic success. *TESOL Quarterly*. 2(3), 505-521. Available <http://www.jstor.org/stable/3586500>. Retrieved 15/02/2010
- Grosjean, F. (1982). *Life with two languages. An introduction to bilingualism*. London, Cambridge, Massachusetts: Harvard University Press.
- Grosjean, F. (1989). Neurolinguists, Beware! The bilingual is not two monolinguals in one person. *Brain and Language*. 36, 3–15.
- Grosjean, F. (1994). Individual bilingualism. In *The Encyclopedia of Language and Linguistics*. Oxford: Oxford University Press.
- Grosjean, F. (1998). Studying bilinguals: Methodological and conceptual issues. *Bilingualism: Language and Cognition*. 1, 131–149.
- Gutierrez, K. D. (1994). How talk, context and script shape contexts for learning: A cross-case comparison of journal sharing. *Linguistics and Education*. 5, 335–365.
- Halliday, M. A. K. (1993). Towards a language-based theory of learning. *Linguistics and Education*. 5, 93–116.
- Hamers, J. F. & Blanc, M. H. A. (2000). *Bilinguality and bilingualism. Second Edition*. Cambridge: Cambridge University Press.
- Han, Z. & Cadierno, T. (2010). (Eds.). *Linguistic relativity in SLA. Thinking for speaking*. Bristol, Buffalo, Toronto: Multilingual Matters.
- Hartmann, D. P., Gotrman, J. M., Jones, R. R., Gardner, W., Kazdin, A. E. & Vaught, R. S. (1980). Interrupted time-series analysis and its application to behavioural data. *Journal of Applied Behavior Analysis*. 133, 543-559.
- Hauser, M. D., Chomsky, N. & Fitch, T. (2002). The faculty of language: What is it, who has it, and how did it evolve? *Science*. 298, 1569–1579.
- Hockett, C.F. (1960). The origin of speech. *Scientific American*. 203(3), 88–89.
- Hockett, C.F., & Altmann, S. (1968). A note on design features. In Sebeok, T. A., (ed). *Animal communication; techniques of study and results of research*. Bloomington: Indiana University Press

- Hoffmann, C. (1991). *An introduction to bilingualism*. London & New York: Longman.
- Holquist, M. (1981). Glossary. In M. M. Bakhtin (1981). *The dialogic imagination. Four essays*. Holquist, M. (Ed.), translated Emerson, C. & Holquist, M. Austin: University of Texas Press.
- Horarik, M. M., Devereux, L., Trimmingham-Jack, C. & Wilson, K. (2006). Negotiating the territory of tertiary literacies: A case study of teacher education. *Linguistics and Education*. 17, 240–257.
- House, J. (2006). Text and context in translation. *Journal of Pragmatics*. 38, 338–358.
- House, J. (2011). Translation and bilingual cognition. In V. Cook & B. Bassetti (Eds.), (2011). *Language and bilingual cognition*. New York, Hove: Psychology Press.
- Hugo, P. (1998). Transformation: The changing context of academia in post-apartheid South Africa. *African Affairs*. 97, 5–27. Available <http://www.jstor.org/stable/723472>. Retrieved 26 October 2010.
- Hulk, A. & Van Der Linden, E. (1998). Evidence for transfer in bilingual children? *Bilingualism: Language and Cognition*. 1(3), 177–180.
- Jameson, D. & Hurvich, L. (1978). Dichromatic color language: "reds" and "greens" don't look alike but their colors do. *Sensory Processes*. 2, 146–155.
- Jarvis, S. (2000). Semantic and conceptual transfer. *Bilingualism: Language and Cognition*. 3(1), 19–21.
- Jarvis, S. & Odlin, T. (2000). Morphological type, spatial reference, and language transfer. *Studies in Second Language Acquisition*. 22, 535–556.
- Jarvis, S. (2002). Topic continuity in L2 English article use. *Studies in Second Language Acquisition*. 24, 387–418.
- Jarvis, S. (2003). Probing the effects of the L2 on the L1: A case study. In Cook, V. (ed). *Effects of the second language on the first*. Clevedon: Multilingual Matters.
- Jarvis, S. & Pavlenko, A. (2008). *Cross-linguistic influence in language and cognition*. NY & London: Routledge.
- Jessner, U. (1999). Metalinguistic awareness in multilinguals: Cognitive aspects of third language learning. *Language Awareness*. 8(3&4), 201–209.

- Jessner, U. (2003). A dynamic approach to language attrition in multilingual systems. In V. Cook (Ed.), *Effects of the second language on the first*. Clevedon: Multilingual Matters.
- Jessner, U. (2008). Multi-competence approaches to language proficiency. Development in multilingual education. In J. Cummins & N. Hornberger (Eds.), *Encyclopedia of Language and Education*. (2<sup>nd</sup> edition). Volume 5: Bilingual Education 1-13. London: Springer.
- Kaplan, R. (1966). Cultural thought patterns in inter-cultural education. *Language learning*. 16, 1–20.
- Kecskes, I. (2000). Conceptual fluency and the use of situation-bound utterances in L2. *Links & Letters*. 7, 145–161.
- Kecskes, I. (2007). Synergic concepts in the bilingual mind. In I. Kecskes & L. Albertazzi (Eds.), *Cognitive aspects of Bilingualism*. London: Springer.
- Kecskes, I. (2010). Dual and multilanguage systems. *International Journal of Multilingualism*. 7(2), 91–109.
- Kecskes, I. & Cuenca, S. (2005). Lexical choice as a reflection of conceptual fluency. *International Journal of Bilingualism*. 9(1), 49–67.
- Kecskes, I. & Papp, T. (2000). *Foreign language and mother tongue*. Mahwah, NJ, London: Lawrence Erlbaum.
- Kecskes, I. & Papp, T. (2003). How to demonstrate the conceptual effect of L2 on L1? Methods and techniques. In V. Cook (Ed.), *Effects of the second language on the first*. Clevedon: Multilingual Matters.
- Kellerman, E. (1995). Cross-linguistic influence: Transfer to nowhere? *Annual Review of Applied Linguistics*. 15, 125–150.
- Kellerman, E. (1999). A break with tradition. In Foster-Cohen, S., & Perdue, C. (eds). *Proceedings of the 8th EUROSLA conference, Paris. Vol 2. From word to structure*. Paris: British Institute of Paris.
- Kharkhurin, A. V. (2007). The role of cross-linguistic and cross-cultural experiences in bilinguals' divergent thinking. In I. Kecskes & L. Albertazzi (Eds.), *Cognitive aspects of bilingualism*. London: Springer.

- Kharkhurin, A. V. (2008). The effect of linguistic proficiency, age of second language acquisition, and length of exposure to a new cultural environment on bilinguals' divergent thinking. *Bilingualism: Language and Cognition*. 11(2), 225–243.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement*. 56, 746–759.
- Kirshner, D. & Whitson, J. A. (1998). Obstacles to understanding cognition as situated. *Educational Researcher*. 27(8). 22–28.
- Klein, W. (2008). Time in language, language in time. *Language Learning* 58(1), 1–12.
- Knickerbocker, H. & Altarriba, J. (2011). Bilingualism and the impact of emotions: The role of experience, memory, and sociolinguistic factors. In V. Cook & B. Bassetti (Eds.), *Language and bilingual cognition*. New York & Hove: Psychology Press.
- Kock, E. & Dornbrack, J. (2008). The use of language criteria for admission to higher education in South Africa: issues of bias and fairness investigated. *Southern African Linguistics and Applied Language Studies*. 26(3), 333–350.
- Kramsch, C. (2000). Social discursive constructions of self in L2 learning. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning*. Oxford: Oxford University Press.
- Kramsch, C. (2004). Language, thought, and culture. In A. Davies & C. Elder (Eds.), *The Handbook of Applied Linguistics*. Malden, Oxford & Carlton: Blackwell Publishing.
- Kramsch, C. (2005). The multilingual experience: Insights from language memoirs. *Transit* 1 (1). Retrieved from <http://www.escolarsip.org/uc/item/9h79g172>
- Kroll, J. F. & Tokowicz, N. (2001). The development of conceptual representation for words in a second language. In J. L. Nicol (Ed.), *One mind, two languages. Bilingual language processing*. Oxford: Blackwell Publishing.
- Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago: University of Chicago Press.
- Lakoff, G. (1992). The contemporary theory of metaphor. In A. Ortony, (Ed.) *Metaphor and thought*. (2<sup>nd</sup> edition). Cambridge: Cambridge University Press.

- Lakoff, G. & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Lambert, W. E. & Anisfeld, E. (1969). A note on the relationship of bilingualism and intelligence. *Canadian Journal of Behavioral Science*. 1 (2), 123–128.
- Langer, M. & Imbach, R. (2000). The University of Freiburg: A model for a bilingual university. *Higher Education in Europe*. XXV (4), 461–468.
- Lantolf, J. P. (2000). Introducing sociocultural theory. In J. P. Lantolf (Ed.), *Sociocultural Theory and Second Language Learning*. Oxford: Oxford University Press.
- Lantolf, J. P. (2006). Sociocultural theory and L2. State of the Art. In *SSLA*. 28, 67–109.
- Lave, J. (1991). Situating learning in communities of practice. In J. L. Resnick, J. Levine & S. Teasley (Eds.), *Perspectives on socially shared cognition*. Washington DC. American Psychological Association.
- Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture and Activity*. 3 (3), 149–164.
- Lea, M. R. & Street, B. V. (2006). The "academic literacies" model: Theory and applications. *Theory into Practice*. 45(4), 368–377.
- Lee, P. (1996). Cognitive development in bilingual children: A case for bilingual instruction in early childhood education. *The Bilingual Research Journal*. 20(3, 4), 499–522.
- Lee, S. H. & Muncie, J. (2006). From receptive to productive: Improving ESL learners' use of vocabulary in a postreading composition task. *TESOL Quarterly*. 40(2), 295–320.
- Leibowitz, B. (2005). Learning in an additional language in a multilingual society: A South African case study on university level writing. *TESOL Quarterly*. 39(4), 661–678.
- Leibowitz, B. (2006). *Survey of the Experience of the Implementation of the Stellenbosch University Language Policy and Plan. Executive summary*. [http://www.sun.ac.za/university/Taal/Hersiening/docs/exec\\_summary\\_of\\_language\\_survey\\_7\\_Sept\\_2006.pdf](http://www.sun.ac.za/university/Taal/Hersiening/docs/exec_summary_of_language_survey_7_Sept_2006.pdf).

- Leopold, W. F. (1939-1949). *Speech development of a bilingual child: A linguists' record* (4 volumes). Evanston, IL: Northwestern University Press.
- Levinson, S. C. (2003). Language and mind: Let's get the issues straight! In D. Getner & S. Goldin-Meadow (Eds.), *Language in mind. Advances in the study of language and thought*. Cambridge, London: MIT Press.
- Levinson, S. C., Kita, S. I., Haun, D. B. M. & Rasch, B. (2002). Returning the tables: language affects spatial reasoning. *Cognition* 84, 155–188.
- Li, P. & Gleitman, L. (2002). Turning the tables: language and spatial reasoning. *Cognition* 83, 265–294.
- Lillis, T. & Scott, M. (2008). Defining academic literacies research: issues of epistemology, ideology and strategy. *Journal of Applied Linguistics*. 4(1), 5–32.
- Lindholm-Leary, K. & Howard, E. R. (2008). Language development and academic achievement in two-way immersion programs. In T. W. Fortune & D. J. Tedick (Eds.), *Pathways to multilingualism*. Clevedon: Multilingual Matters.
- Littlemore, J. & Low, G. (2006). Metaphoric competence and communicative language ability. *Applied Linguistics*. 27(2), 268–294.
- Lucy, J. A. (1992). *Language diversity and thought. A reformulation of the linguistic relativity hypothesis*. Cambridge: Cambridge University Press.
- Lucy, J. A. (1996). The scope of linguistic relativity: An analysis and review of empirical research. In J. J. Gumperez & S. C. Levinson (Eds.), *Rethinking linguistic relativity*. Cambridge: Cambridge University Press.
- Lucy, J. A. (1997). Linguistic relativity. *Annual Review of Anthropology*. 26, 291–312.
- Mabokela, R. O. (2001). Selective inclusion: Transformation and language policy at the University of Stellenbosch. In R. O. Mabokela & K. L. King (Eds.), *Apartheid no more: case studies of Southern African universities in the process of transformation*. Westport: Greenwood Publishing.
- Mack, M. (1997). The monolingual native speaker: not a norm, but still a necessity. *Studies in Linguistic Sciences*. 2 (2), 113–146.
- Macnamara, J. (1966). *Bilingualism and primary education*. Edinburgh: Edinburgh University Press.

- Macnamara, J. & Kushnir, S. L. (1971). Linguistic independence of bilinguals: The input switch. *Journal of Verbal Learning and Verbal Behavior*. 10, 480–487.
- Maldonado, N. I. (2000). The teaching of English in Puerto Rico: One hundred years of degrees of bilingualism. *Higher Education*. XXV(4), 488–497.
- Marian, V. & Kaushanskaya, M. (2007). Cross-linguistic transfer and borrowing in bilinguals. *Applied Psycholinguistics*. 28, 369–390.
- Martin, J. (2009). Genre and language learning: A social semiotic perspective. *Linguistics and Education*. 20(1), 10–21.
- Miles, M.B., & Huberman, A. (1984). *Qualitative data analysis. A sourcebook of new methods*. London: Sage.
- Mitchell, A. J. (1937). The effect of bilingualism in the measurement of intelligence. *The Elementary School Journal*. 38(1), 29–37. Retrieved from <http://www.jstor.org/stable/3202599>. Accessed 18/02/2010.
- Moody, J. (2007). Plagiarism or intertextuality? Approaches to teaching EFL academic writing. *The Asian EFL Journal Quarterly*. 9(2), 195–210.
- Morgan, C. (2006). What does social semiotics have to offer mathematics education research? *Educational Studies in Mathematics*. 61, 219–245. <http://www.jstor.org/stable/25472066>. Retrieved 30 September 2010.
- Morton, J. B. & Harper, S. N. (2007). What did Simon say? Revisiting the bilingual advantage. *Developmental Science*. 10(6), 719–726.
- Munnich, E., Landua, B. & Doshier, B. A. (2001). Spatial language and spatial representation: a cross-linguistic comparison. *Cognition*. 81, 171–207.
- Muljani, D., Koda, K., & Moates, D. (1998). The development of word recognition in a second language. *Applied Psycholinguistics*. 19, 99–113.
- Müller, N. (1998). Transfer in bilingual first language acquisition. *Bilingualism: Language and Cognition*. 1(3), 151–171.
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. Rowley, MA: Newbury House.
- Nicoladis, E. (2003). Cross-linguistic-transfer in deverbal compounds of preschool bilingual children. *Bilingualism: Language and Cognition*. 6(1), 17–31.

- Odlin, T. (1989). *Language transfer: Cross-linguistic influence in language learning*. Cambridge: Cambridge University Press.
- Odlin, T. (2005). Cross-linguistic influence and conceptual transfer: What are the concepts? *Annual Review of Applied Linguistics*. 25, 3–25.
- Paradis, M. (1997). The cognitive neuropsychology of bilingualism. In A. de Groot & J. Kroll (Eds.), *Tutorials in bilingualism: psycholinguistic perspectives*. Mahwah, NJ: Erlbaum.
- Pavlenko, A. (2000). New approaches to concepts in bilingual memory. *Bilingualism: Language and Cognition*. 3(1), 1–4.
- Pavlenko, A. (2000). What's in a concept? (Author's response). *Bilingualism: Language and Cognition*. 3(1), 31–36.
- Pavlenko, A. (2002). Whose Story is it anyway? *TESOL Quarterly*. 36(2), 213–218.
- Pavlenko, A. (2003). "I feel clumsy speaking Russian": L2 influence on L1 in narratives of Russian L2 users of English. In V. Cook (Ed.), *Effects of the second language on the first*. Clevedon: Multilingual Matters.
- Pavlenko, A. (2005a). *Emotions and multilingualism*. Cambridge: Cambridge University Press.
- Pavlenko, A. (2005b). Bilingualism and thought. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of Bilingualism. Psycholinguistic Approaches*. Oxford: Oxford University Press.
- Pavlenko, A. (2006). *Bilingual minds. Emotional experience, expression and representation*. Clevedon: Multilingual Matters.
- Pavlenko, A. (2007). Autobiographic narratives as data in applied linguistics. *Applied Linguistics*. 28(2), 163–188.
- Pavlenko, A. (2008). Emotion and emotion-laden words in the bilingual lexicon. *Bilingualism: Language and Cognition*. 11(2), 147–164.
- Pavlenko, A. (2010). Verbs of motion in L1 Russian of Russian English bilinguals. *Bilingualism: Language and Cognition*. 13(1), 49–62.
- Pavlenko, A. (Ed.), (2011). *Thinking and speaking in two languages*. Clevedon: Multilingual Matters.

- Pavlenko, A. & Jarvis, S. (2002). Bidirectional transfer. *Applied Linguistics*. 23, 190–214.
- Pavlenko, A. & Lantolf, J. P. (2000). Second language learning as participation and the (re)construction of selves. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning*. Oxford: Oxford University Press.
- Paxton, M. I. J. (2009). 'It's not easy to learn when you using your home language but with English you need to start learning language before you get to the concept': bilingual concept development in an English medium university in South Africa. *Journal of Multilingual and Multicultural Development*. 30(4), 345–359.
- Peal, E. & Lambert, M. (1962). The relation of bilingualism to intelligence. *Psychological Monographs*. 76(546), 1–23.
- Pinker, S. (1994). *The language instinct*. New York: Haper Collins.
- Pinker, S. (2007). *The stuff of thought: Language as a window into human nature*. New York: Viking.
- Purser, L. (2000). The bilingual university - General Reflections on its origins, mission and functioning. *Higher Education in Europe*. XXV(4), 451–459.
- Radford, A., Atkinson, M., Britain, D., Clashen, H. & Spencer, A. (2009). *Linguistics: an introduction*. Cambridge: Cambridge University Press.
- Rampton, B. (1997). Second language research in later modernity: A response to Firth and Wagner. *The Modern Language Journal*. 8 (iii), 329-333.
- Ransdel, S. & Arecco, M. R. (2001). Bilingual long-term working memory: The effects of working memory load on writing quality and fluency. *Applied Psycholinguistics* 22, 113–128.
- Ransdel, S., Barbier, M. L. & Toomas, N. (2006). Metacognitions about language skill and working memory among monolingual and bilingual college students: When does multilingualism Matter? *The International Journal of Bilingual Education and Bilingualism*. 9(6), 728–741.
- Richards, J.C. (1976). The role of vocabulary teaching. *TESOL Quarterly*. 10, 77–89.
- Ringbom, H. (1987). *The role of the first language in foreign language learning*. Clevedon: Multilingual Matters.

- Ringbom, H. (2001). Lexical transfer in L3 production. In Cenoz, J., Hufeisen, B., & Jessner, U. (eds). *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives*. Clevedon, UK: Multilingual Matters.
- Sachs, O. S. & Coley, J. D. (2006). Envy and jealousy in Russian and English: Labelling and conceptualization of emotions by monolinguals and bilinguals. In A. Pavlenko (Ed.), *Bilingual minds. Emotional experience, expression and representation*. Clevedon: Multilingual Matters.
- Saffran, J. R., Pollak, S. D. & Seibel, A. S. (2006). Dog is a dog is a dog. Infant rule learning is not specific to language. *Cognition*. 105, 669–680.
- Samuelson, L.K. & Smith, L.B. (2000). Grounding development in cognitive processes. *Child Development*. 71(1), 98–106.
- Saville-Troike, M. (1984). What really matters in second language learning for academic achievement? *TESOL Quarterly*. 18(2), 199–219.
- Saville-Troike, M. (2006). *Introducing second language acquisition*. Cambridge: Cambridge University Press.
- Schlemmer, L. (2008). *Voorgraadse Studente op die Universiteit van Stellenbosch en die Taalbeleid. 'n Strategiese Meningsopname*.  
<http://www.sun.ac.za/university/Taal/Hersiening/docs/Verslag%20Raadsondersoek%20na%20voorgraadse%20studente%20en%20die%20Taalbeleid.pdf>.
- Schmid, M. S. & Köpcke, B. (2009). L1 attrition and the mental lexicon. In A. Pavlenko (Ed.), *The bilingual mental Lexicon. Interdisciplinary approaches*. Bristol, Buffalo, Toronto: Multilingual Matters.
- Seelen, L. P. (2002). Is performance in English as second language a relevant criterion for admission to an English medium university? *Higher Education*. 44, 213–232.
- Selinker, L. (1969). Language transfer. *General Linguistics*. 9, 67–92.
- Selinker, L. (1992). *Rediscovering Interlanguage*. London and NY: Longman.
- Sharwood Smith, M. (1991). Language modules and bilingual processing. In E. Bialystok (Ed.), *Language processing in bilingual children*. Cambridge: Cambridge University Press.

- Shuell, T. J. (1986). Cognitive conceptions of learning. *Review of Educational Research*. 56 (4), 411–436. <http://www.jstor.org/stable1170340>. Retrieved 6 October 2010.
- Silva, R. S. (2000). Pragmatics, bilingualism, and the native speaker. *Language & Communication*. 20, 161–178.
- Slobin, D. I. (1996). From "thought and language" to "thinking for speaking". In J. J. Gumperez, & S. C. Levinson (Eds.), *Rethinking linguistic relativity*. Cambridge: Cambridge University Press.
- Slobin, D. I. (2003). Language and thought online: Cognitive consequences of linguistic relativity. In D. Getner & S. Goldin-Meadow (Eds.), *Language in mind. Advances in the study of language and thought*. Cambridge. London: MIT press.
- Sperber, D. & Wilson, D. (1986). *Relevance. Communication and Cognition*. Oxford: Blackwell.
- Stellenbosch University. (2006). *Survey of the Experience of the Implementation of the Stellenbosch University Language Policy and Plan. Executive summary*. [http://www.sun.ac.za/university/Taal/Hersiening/docs/exec\\_summary\\_of\\_language\\_survey\\_7\\_Sept\\_2006.pdf](http://www.sun.ac.za/university/Taal/Hersiening/docs/exec_summary_of_language_survey_7_Sept_2006.pdf).
- Stellenbosch University (2011). *Feiteboek*. ([http://sun025.sun.ac.za/portal/page/portal/Administrative\\_Divisions/INB/Tuisblad/Statistiek](http://sun025.sun.ac.za/portal/page/portal/Administrative_Divisions/INB/Tuisblad/Statistiek)).
- Street, B. V. (1995). *Social literacies: Critical approaches to literacy development, ethnography and education*. London: Longman.
- Stubbs, M. (1997). Whorf's Children: Critical comments on critical discourse analysis (CDA). In A. Ryan & A. Wray (Eds.), *Evolving models of language*. Clevedon: Multilingual Matters.
- The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*. 66(1).
- Thomas, W. & Collier, V. (2002). *A national study of school effectiveness for language minority students' long-term academic achievement. Final Report*. Washington, DC: Center for Research on Education, Diversity and Excellence. <http://escholarship.org/uc/item/65j213pt>. Retrieved 10 November 2010.

- Tomasello, M. (1995). Language is not an instinct. *Cognitive Development*. 10, 131–156.
- Tshshima, W. T. & Hogan, T. P. (1975). Verbal ability and school achievement of bilingual and monolingual children of different ages. *The Journal of Educational Research*. 68(9), 349–353.
- University of Pretoria. ([http://web.up.ac.za/sitefiles/file/academic-year-2011/Study\\_Programme\\_Information\\_2012pdf](http://web.up.ac.za/sitefiles/file/academic-year-2011/Study_Programme_Information_2012pdf).)
- Van der Walt, C. (2004). The challenge of multilingualism: in response to the language policy for higher education. *SAJHE*. 18(1), 140–152.
- Van der Walt, C. & Dornbrack, J. (2011). Academic biliteracy in South African higher education: strategies and practices of successful students. *Language, Culture and Curriculum*. 24(1), 89–104.
- Van Dyk, T. (2010). *Konstitutiewe voorwaardes vir die ontwerp van 'n toets van akademiese geletterdheid*. Ongepubliseerde doktorsale tesis. Bloemfontein: Universiteit van die Vrystaat.
- Van Dyk, T. & Kistner, L. (2008). *Verslag oor akademiese geletterheidsvlakke van eerstejaarstudente aan die Universiteit Stellenbosch: 2005-2008*. Stellenbosch.
- Van Dyk, T. & Weideman, A. (2004). Switching constructs: on the selection of an appropriate blueprint for academic literacy assessment. *Journal for Language Teaching*. 38(1), 1–13.
- Van Dyk, T. & Weideman, A. (2004). Finding the right measure: from blueprint to specification to item type. *Journal for Language Teaching*. 38(1), 15–24.
- Van Lier, L. (2008). Agency in the classroom. In J. P. Lantolf & M. E. Poehner (Eds.), *Sociocultural theory and the teaching of second languages*. London: Equinox.
- Vygotsky, L. (1978). Interaction between learning and development. In *Mind and Society*. Cambridge. Harvard University Press. Reprinted in M. Gauvain & M. Cole (Eds.), (1997) *Readings on the Development of Children*. New York: W. H. Freeman and Company.
- Wade-Woolley, L. (1999). First language influences on second language word reading: All roads lead to Rome. *Language Learning*. 49, 447–471.

- Watson-Gegeo, K. A. (2004). Mind, language, and epistemology: Toward a language socialization paradigm for SLA. *The Modern Language Journal*. 88(iii), 331–350.
- Wardaugh, R. (1970). The contrastive analysis hypothesis. *TESOL Quarterly*. 4, 123–130.
- Weinrich, U. (1953). *Languages in contact*. The Hague: Mouton.
- Webb, V. (2002). English as a second language in South Africa's tertiary institutions: a case study at the University of Pretoria. *World Englishes*. 21(1), 49–61.
- White, L. (1985). The pro-drop parameter in adult second language acquisition. *Language Learning*. 35, 47–62.
- White, L. (1989). *Universal grammar and second language acquisition*. Amsterdam: Benjamins.
- Whorf, B. L. (1956). In Carroll, J. B. (Ed.), *Language, thought and reality: Selected writings of Benjamin Lee Whorf*. New York: John Wiley.
- Wierzbicka, A. (2004). Preface: Bilingual lives, bilingual experience. *Journal of Multilingual and Multicultural Development*. 2(2&3), 94–104.
- Williams Fortune, T. & Tedick, D. J. (2008). One-way, two-way and indigenous immersion: A call for cross-fertilization. In T. Williams Fortune & D. J. Tedick (Eds.), *Pathways to multilingualism. Evolving perspectives on immersion education*. Clevedon: Multilingual Matters.
- Won-Jing Lowe, E. (2006). Multi-competence and first language Attrition: Where do we draw the line? *Teachers College Columbia University Working Papers in TESOL and Applied Linguistics*. 6(1), 1–3.
- Wortham, S. (2000). Interactional positioning and narrative self-construction. *Narrative Inquiry*. 10, 157–184.
- Zobl, H. (1992). Prior linguistic knowledge and the conservatism of the learning procedure: Grammaticality judgements of unilingual and multilingual learners. In Gass, S. M. & Selinker, L. (Eds.). *Language transfer in language learning*. Rowley, MA: Newbury House.

Zulu, C. (2005). Academic reading ability of first-year students: what's high school performance or prior exposure to academic reading got to do with it? *South African Linguistics and Applied Language Studies*. 23(1), 111–123.

# APPENDICES

## APPENDIX A: INTERVIEW SCHEDULE

1. Participants selected on the basis of selection criteria set out in 6.1 of the ethical clearance form were approached by e-mail to request their participation in the project. A brief description of the research aims was given.
2. Participants who responded positively to the e-mailed request were contacted to make an appointment for a 30-minute interview.
3. The interview was semi-structured in that students were asked questions as set out below. However, if they volunteered more or different information to what was specifically asked, this was allowed. Participants were asked which language they prefer to use during the interview. Questions were also sometimes rephrased to make the meaning clearer.
4. The interviewer (primary researcher) took notes of the interview.

### Section 1: Language background

1. Name/Naam
2. Date of birth/ Geboortedatum
3. Which language do you count as your first language? Watter taal beskou jy as jou eerste taal?
4. At what age did you start to learn English? Op watter ouderdom het jy begin om Engels aan te leer? Who taught you English? Hoe het jy Engels aangeleer? Please choose one of the following
  - Ouers/voogde/ Parents guardians
  - Vriende/Friends
  - Laerskool/Primary school
  - Hoërskool/High school
  - Privaat lesse/Private lessons

Engelse media/English media

5. In watter taal het jy matriek geskryf? In watter taal het jy jou eksamens geskryf? In which language(s) did you do your matric? In which language(s) did you write your exams?

6. Dink jy dat jy matriek skoolpunte vir jou tale 'n redelike aanduiding gee van hoe goed jou taalvaardigheid aan die einde van matriek was? Do you think that your matric language marks give a reasonable indication of your language proficiency at the end of matric?

7. In vergelyking met jou kennis van Afrikaans, op 'n skaal van 5 waar 1 die beste is, hoe sou jy jou kennis van Engels beoordeel? In comparison to your Afrikaans, on a scale of 5 to 1, where 5 is the best, how would you rate your proficiency in English in terms of the following?

- Praat/Speak
- Lees (verstaan geskrewe tekste)/Read (understand written texts)
- Skryf/Write
- Verstaan (gesproke taal)/ Understand (spoken language)

**Section 2: Current language use in academic setting***Afrikaans*

1. Vir watter van jou eerstejaars modules het jy lesings bygewoon wat in die T- of E-opsie aangebied word?

2. In watter taal/tale skryf jy jou werkopdragte en toetse of eksamens?

3. Voel jy dat jou Engels verbeter het sedert jy universiteit toe gekom het?

Indien ja, waaraan sou jy die verbetering toeskryf? Indien nee, sou jy daarop wou uitbrei?

4. Voel jy dat jou eerste taal (Afrikaans) op enige manier verander het sedert jy universiteit toe gekom het? Gee asseblief 'n bietjie toeligting.

5. Indien ja, dink jy dat die verandering positief of negatief was – of voel jy daaroor neutraal? Verduidelik asseblief jou antwoord.

6. Wanneer jy met nuwe inligting werk en jy probeer daaruit sin maak (of probeer om dit vir jouself te verduidelik), in watter taal/tale doen jy dit?

7. Is daar begrippe in jou studieveld wat jy voel dat jy beter verstaan in Engels/Afrikaans? Verduidelik asseblief.

8. Was groter blootstelling aan Engels in lesings of in studiemateriaal beduidend in jou begrip van die werk, of in die leerproses op universiteit. Verduidelik asseblief.
9. Daar is 'n hipotese wat die aanname maak dat tweetaligheid/meertaligheid sekere kognitiewe voordele vir individue inhou? Uit jou eie ondervinding, dink jy dat jou tweetaligheid enige kognitiewe voordele vir jou inhou?
10. Dink jy dat ten opsigte van taal, jou universiteitsopleiding jou voorberei het vir die werksplek?

### *English*

1. For which modules/subjects did you attend T-option or E-option classes during your first year?
2. In which language(s) do you do your assignments and write tests or exams?
3. Do you think that your English has improved since you have been at university?  
If yes, what do you attribute the improvement to? If no, would you like to elaborate?
4. Do you think that your first language (Afrikaans) has changed in any way since you have been at university? Please give some explanation.
5. If yes, do you think that this was a positive, negative or neutral change? Please explain your answer.
6. When you process new information, and you try to make sense of it (or try to explain it to yourself) in which language(s) do you do it?
7. Are there any concepts in your study field which you think you understand better in English/Afrikaans? Please explain your answer.
8. Has greater exposure to English in lectures or in study material been significant in your understanding of work, or in the process of learning at university? Please explain.
9. There is a hypothesis which suggests that bi/multilingualism offers certain cognitive benefits for individuals. From your own experience do you think that bilingualism holds any cognitive benefits for you?
10. Do you think that your university training is preparing you for the working world in terms of language?

## APPENDIX B: COURSE OUTLINE AL 111

First Semester

STUDIEKOMPONENT 1.

KRITIEKE UITKOMSTE

In hierdie module sal jy met behulp van relevante akademiese taal-/denkstrategieë taalmatig én kognitief bemagtig word om 'n strategiese denker te word wat op kritiese (besinnende) wyse met jou mede-studente, dosente en jouself kan kommunikeer oor gelese en geskrewe tekste waarin jy probleme identifiseer en oplos, inligting versamel, analiseer, orden en evalueer.

2. KURSUSUITKOMSTE LEEREENHEID 1: Inleiding tot akademiese leesvaardighede

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese leestaak strategies aan te pak, omdat jy

- oor die nodige kennis sal beskik om te verduidelik wat met die term akademiese geletterdheid bedoel word.
- sal kan demonstreer dat die akademiese leesproses nie in isolasie plaasvind nie, maar altyd in wisselwerking met ander kontekste geskied.
- die noodsaaklikheid van 'n strategiese leeskursus aan 'n universiteit sal kan beredeneer.
- sal kan illustreer hoe 'n bekwame leser die akademiese leestaak anders as ander leestake moet benader.

LEEREENHEID 2: Die kenmerke van 'n akademiese teks en die invloed daarvan op die strategiese leestaak

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese leestaak strategies aan te pak, omdat jy

- sal kan verklaar waarom skrywers verskillende tipes tekste gebruik om bepaalde doelwitte daarmee te bereik en dit self ook te kan toepas.
- sal kan verduidelik waarom akademiese tekste 'n deeglik gestruktureerde teksbou het en aan bepaalde voorwaardes moet voldoen: die stylvoorwaarde ('n wetenskaplike styl en register), die taalvoorwaarde ('n deursigtige en eksakte teks met 'n korrekte sinsbou en woordkeuse), en die ver-ant-woord-baar-heids-voor-waarde (literatuurverwysings en 'n bronnelys) en dit op skryfwerk te kan toepas.

LEEREENHEID 3: Die invloed van leserskemata en konteks op die akademiese leestaak

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese leestaak strategies aan te pak, omdat jy

- die onbewuste leesreaksies (antisipasie, voorspelling, assosiasie, verbandlegging en afleiding) bewustelik as denkvaardighede kan gebruik terwyl hulle deurentyd bewus bly van die aktiewe rol van leserskemata en die bepalende invloed daarvan op hul teksinterpretasie.
- aan die hand van relevante konteks vrae 'n akademiese teks uiteindelik vir beter begrip voorlopig sal kan analiseer en ontsluit.

#### LEEREENHEID 4: Die ontwikkeling van 'n akademiese leesstrategie

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese leestaak strategies aan te pak, omdat jy

- die kohesiewe strekking van 'n teks kan volg met behulp van hul kennis van diskoersmerkers (sleutelwoorde vir tematiese samehang op makrovlak).
- die koherente strekking van 'n teks kan volg met behulp van hul kennis van diskoersmerkers (skakelwoorde vir samehang op mikrovlak).
- sal kan verduidelik wat met die term voorkennis bedoel word en met hierdie kennis 'n teks sal kan begin ontsluit.
- op doelgerigte wyse 'n teks kan analiseer en ontsluit.
- 'n oorhoofse leesstrategie sal ontwikkel, naamlik om uit die leestegnieke (soeklees, vluglees, begripslees en kritieslees) die gepaste een of 'n kombinasie daarvan te gebruik – soos bepaal deur die leesdoel – ten einde die teks se betekenis op sins-, paragraaf- en voltekstvlak sinvol te interpreteer.

#### LEEREENHEID 5: Die ontwikkeling van 'n akademiese argument

Na afloop van hierdie leereenheid behoort jy in staat te wees om 'n akademiese argument logies te konstrueer, omdat jy

- tekste krities sal kan analiseer en daarom sal kan verduidelik hoe kritieslees van begripslees verskil.
- tekste krities sal kan analiseer by wyse van bepaalde stappe, naamlik om die profiel van 'n skrywer in ag te neem, die logika van die skrywer se argumente te ondersoek en terselfdertyd te let op die skrywer se styl en taalgebruik.
- tekste krities sal kan analiseer en evalueer by wyse van bepaalde stappe, naamlik om die skrywer se manipulasietegnieke en die skrywer se onderliggende ideologie in die teks te kan identifiseer en 'n oordeel daaroor te kan uitspreek.

- na afloop van 'n gelese teks, aktief as kritiese denkers, krities oor die teksinhoud sal kan besin en dit beredeneer in 'n evaluerende styl, omdat hulle die koherente strekking van 'n argument sal kan volg met behulp van hul kennis van tema- en steunsinne.

Second semester:

## STUDIEKOMPONENT 1.

### KRITIEKE UITKOMSTE

In hierdie module sal jy met behulp van relevante akademiese taal-/denkstrategieë taalmatig én kognitief bemagtig word om 'n strategiese denker te word wat op kritiese (besinnende) wyse met jou mede-studente, dosente en jouself kan kommunikeer oor gelese en geskrewe tekste waarin jy probleme identifiseer en oplos, inligting versamel, analiseer, orden en evalueer.

2. KURSUSUITKOMSTE Die kursus is in twee leereenhede verdeel. Leereenheid 1 fokus op die beplanningsfase van die skryfproses terwyl leereenheid 2 die skryf- en redigeerfase aanspreek. Aangesien die module egter 'n prosesbenadering tot skryf volg, word die fases deurlopend geïntegreerd met mekaar aangebied en moet dit nie as afsonderlike eenhede gesien word nie.

### LEEREENHEID 1: Die skryfproses - die beplanningsfase

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese skryftaak strategies aan te pak, omdat jy

- sal kan verduidelik waarom skryf 'n proses is wat uit drie stadia bestaan (beplan, skryf, redigeer);
- as kritiese denkers bewys sal kan lewer van die volg van 'n heilbreinbenadering tot die skryfproses;
- van verskillende tegnieke en denkmiddele gebruik sal maak om 'n effektiewe skryfstrategie te ontwikkel en dit aan die hand van praktiese skryfwerk sal kan demonstreer;
- sal kan verduidelik waarom idee-generering stappe soos vrye denke, assosiasie en voorkennis betrek;
- die kenmerke van 'n akademiese teks sal kan weergee, dit kan identifiseer in 'n teks en ook daarmee sal kan eksperimenteer;
- die doelwit, teikenleser en styl van 'n akademiese teks sal kan bepaal en 'n teks sodanig organiseer en struktureer dat dit hierdie aspekte aanspreek;

- sal weet hoe om die opdrag in sy dele op te breek en te analiseer;
- voorkennis oor die opdragonderwerp met verskillende tegnieke en denkmiddele sal kan bepaal en uitruil;
- 'n raamwerk van die makro-struktuur reeds in die beplanningsfase gedoen sal kan word;
- geskikte bronne vir 'n akademiese skryftaak sal kan identifiseer en selekteer en dit vir skryfwerk sal kan gebruik; en
- korrek na bronne in die teks en bronnelys kan verwys.

#### LEEREENHEID 2: Die skryfproses - die skryf- en redigeerfase

Na afloop van hierdie leereenheid behoort jy in staat te wees om die akademiese skryftaak strategies aan te pak, omdat jy

- die makro-struktuur van 'n akademiese skryfstuk sal kan opstel;
- sal kan verduidelik waarom die inleiding verkieslik uit meer as een paragraaf bestaan (inleidings- en oorsigparagraaf) en dit te kan produseer;
- begrip vir die funksie en vorm van die inleidings- en oorsigparagraawe korrek in hul eie skryfwerk sal kan demonstreer;
- tema, steun en oorgangsinne sal kan gebruik om die tema van die skryftaak doeltreffend oor te dra;
- kennis van argumentasiestruktuur sal kan toepas deur self logiese argumente te skep;
- diskoersmerkers doeltreffend sal kan gebruik om samehang te bewerkstellig;
- begrip vir die funksie en vorm van die slotparagraaf korrek in hul eie skryfwerk sal kan demonstreer;
- sal weet hoekom dit belangrik is om skryfwerk te redigeer;
- in die redigeringsfase (formulering, taalgebruik, gepaste styl, argumentasie, samehang, ens.) op die korrekte aspekte sal fokus deur geskrewe werk te beoordeel en daarop kommentaar te lewer; en
- 'n eie teks sal kan skep deur inligting uit ander bronne tot 'n geheel saam te voeg.

## APPENDIX C: INFORMED CONSENT

### STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

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#### Effects of the Second Language on the First: Investigating the development of 'conceptual fluency' of bilinguals in a tertiary education context

You are asked to participate in a research study conducted by Marcelyn Oostendorp, BA(Hons), MA, from the Department of General Linguistics at Stellenbosch University. The results will be used in a PHD thesis. You were selected as a possible participant in this study because you fit the criteria of students, with Afrikaans as L1 and English as L2.

#### 1. PURPOSE OF THE STUDY

This research will attempt to provide more insight into the L2 →L1 effect in Afrikaans/English bilingualism. The specific aim is to test the extent to which the introduction of a second language as Language of Instruction and Learning affects the conceptual fluency and meaning structure of selected concepts in the first language.

#### 2. PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

Take part in a semi-structured interview, which will last approximately 30 min.

#### 3. POTENTIAL RISKS AND DISCOMFORTS

Participation in this study will not put you into any risks or discomfort you in any way.

#### 4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The research might aid the scientific community in answering questions on bilinguals, bilingual minds and bilingual education, which might have practical implications in the implementation of policies and practices in multilingual education.

#### 5. PAYMENT FOR PARTICIPATION

No payment can be offered for participation in this project.

#### 6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of the use of pseudonyms in the transcription of data, data will be kept electronically which will be protected by pass words and to which only the main researcher, supervisor and examiners of the project have access.

## 7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

## 8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact the principal investigator, ms M Oostendorp, or the supervisor, prof C. Anthonissen.

Contact details: MCA Oostendorp  
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P/bag X1 Matieland, Stellenbosch 7601  
Room 516, Arts Building.

## 9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact ms Maryke Hunter-Husselmann, ([mh3@sun.ac.za](mailto:mh3@sun.ac.za)) at the Unit for Research Development.

**SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE**

The information above was described to *me* by ms M Oostendorp in *Afrikaans/English* and [*I am* in command of this language. *I* was given the opportunity to ask questions and these questions were answered to *my* satisfaction.

*I hereby consent to participate in this study.*

\_\_\_\_\_  
**Name of Participant**

\_\_\_\_\_  
**Signature of Participant**  
**Date**

**SIGNATURE OF INVESTIGATOR**

I declare that I explained the information given in this document to \_\_\_\_\_ [*name of the subject/participant*]. [*He/she*] was encouraged and given ample time to ask me any questions. This conversation was conducted in *Afrikaans* and *no translator was used*.

\_\_\_\_\_  
**Signature of Investigator**

\_\_\_\_\_  
**Date**

## APPENDIX D: PERMISSION TO USE TAG AND TALL



UNIVERSITEIT  
STELLENBOSCH  
UNIVERSITY



TAALSENTRUM  
LANGUAGE CENTRE  
IZIKO LEELWIMI

25 May 2009

Dear Prof Anthonissen

### PERMISSION TO USE TAG AND TALL RESULTS: M. OOSTENDORP

Thank you for your e-mail dated 20 May 2009. Permission is hereby given that Ms M. Oostendorp may use the TAG and TALL results for her research as set out in her research proposal and application for ethical clearance. This is subject to the proviso that all reference to the tests and the interpretation of results be cleared with the Language Centre on a continuous basis.

Tobie van Dyk  
Head: Unit for Afrikaans and English  
Language Centre

## APPENDIX E: ETHICAL CLEARANCE



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY  
Jou kennisvenoot • your knowledge partner

27 October 2009

Tel.: 021 - 808-4622  
Enquiries: Sidney Engelbrecht  
Email: [sidney@sun.ac.za](mailto:sidney@sun.ac.za)

Reference No. 175/2009

Ms M Oostendorp  
Department of Linguistics  
University of Stellenbosch  
**STELLENBOSCH**  
7602

Ms M Oostendorp

### APPLICATION FOR ETHICAL CLEARANCE

With regards to your application, I would like to inform you that the project, *Effects of the Second Language on the First: Investigating the development of 'conceptual fluency' of bilinguals in tertiary education context*, has been approved on condition that:

1. The researcher/s remain within the procedures and protocols indicated in the proposal;
2. The researcher/s stay within the boundaries of applicable national legislation, institutional guidelines, and applicable standards of scientific rigor that are followed within this field of study and that
3. Any substantive changes to this research project should be brought to the attention of the Ethics Committee with a view to obtain ethical clearance for it.

We wish you success with your research activities.

Best regards



  
.....  
**MRS. MALÈNE FOUCHÉ**  
Manager: Research Support

Afdeling Navorsingsontwikkeling • Division of Research Development  
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