

LINGUISTIC DISTANCES IN BILINGUALS: VERBAL FLUENCY AND EPISODIC MEMORY

Pia Elbe¹, Daniel Sörman^{1,2}, & Jessica K. Ljungberg^{1,2}

¹Department of Psychology, Umeå University, Sweden; ² Division of Human Work Science, Luleå University of Technology, Sweden

The study of linguistic distances, or how closely two languages are related in terms of their various properties, is a well-established area of linguistics. However, its relationship with episodic memory and verbal fluency has not previously been studied. We employ the concept of linguistic distances to study higher cognitive functioning in Swedish-Finnish and Swedish-English bilinguals.

AIM

The aim was to reveal the possible impact of the characteristics in terms of near and far linguistic distance of the languages spoken on memory tasks with high cognitive control, motivated by the many confounding factors that may have flawed this research area (see e.g. Bak 2016).

METHODS

PARTICIPANTS

78 individuals from the Betula prospective cohort study were selected using a group matching procedure. For an overview of the three groups, see Figure 1.

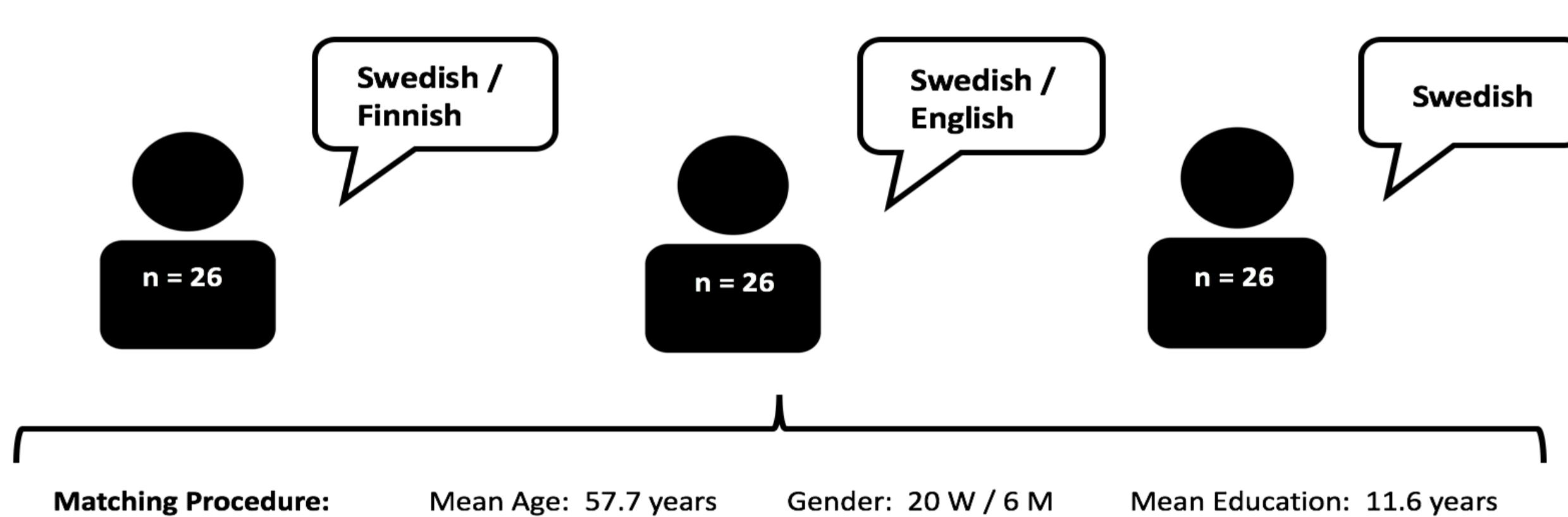


Figure 1. An illustration of the matching procedure used to select participants into 3 groups. Participants were matched in age, gender, formal education, and language background.

EPISODIC MEMORY: RECALL

A composite score of four episodic recall tasks was used. For task descriptions, see Table 1.

1) subject-performed task	2) verbal task	3) category-cued recall	4) free recall
free oral recall enacted by the participant (e.g., lift the book).	16 sentences read aloud by the experimenter were recalled orally.	3 minute timed recall of nouns from sentences and nouns from actions.	12 nouns that were read aloud in pace and recalled to a metronome.

Table 1. Descriptions of the four episodic memory recall tasks. A unit-weighted (z) score was computed based on these tasks

VERBAL LETTER FLUENCY

The task measuring verbal letter fluency consisted of the participant being asked to name as many words as possible starting with the letter A during a period of one minute (Nilsson et al, 1997, 2004). For the analysis, the total number of words recalled was used as the score.

GLOBAL COGNITIVE FUNCTIONING

Mini Mental State Examination (MMSE) was included to screen for cognitive impairment.

RESULTS

Results from a one-way between-subjects ANOVA revealed that there was a significant effect of group on episodic recall at the $p < .01$ level ($F(2, 75) = 5.45$, $p = .006$, $\eta^2 = .13$, $d = .77$), and post-hoc comparisons revealed that the mean score for the monolingual group was significantly lower than for the English-Swedish group, but not for the Finnish-Swedish group.

For verbal letter fluency, there was a significant effect of group at the $p < .05$ level ($F(2, 75) = 4.52$, $p = .014$, $\eta^2 = .11$, $d = .70$), and post-hoc comparisons showed that the mean score for the monolingual group was lower than the English-Swedish, but not the Finnish-Swedish group. The two bilingual groups did not significantly differ from each other in episodic recall or verbal letter fluency.

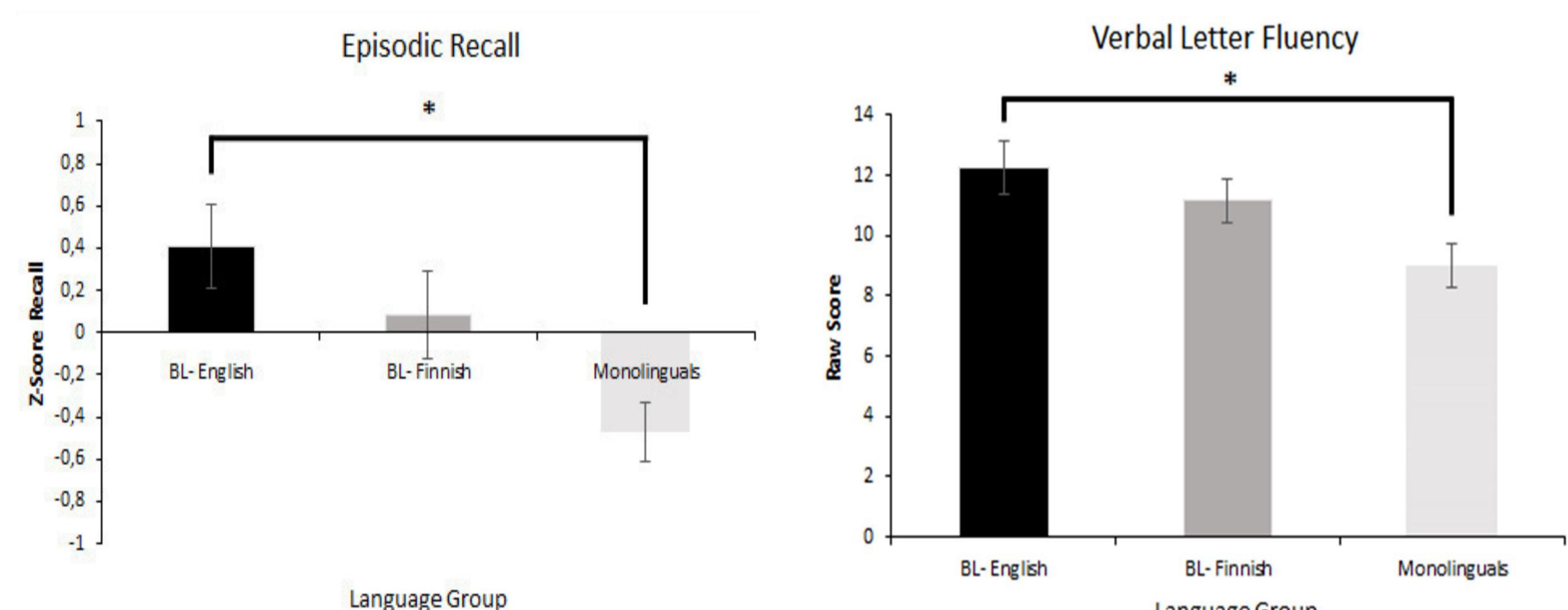


Figure 3. Performance in Verbal Letter Fluency as a Function of Language Group. Error Bars Represent One Standard Error of the Mean. *Significant Difference Between Groups.

No significant effect of global cognitive functioning (measured using MMSE) was found ($F(2, 75) = 0.36$, $p = .701$, $\eta^2 = .01$, $d = .20$), indicating that the previous results were not influenced by cognitive impairments.

CONCLUSIONS

The findings imply that linguistic distances can differentially impact higher cognitive functioning. It is not known how generalizable these findings are to speakers of other languages, since linguistic distances have not been studied in other bilingual groups in studies of higher cognitive functioning. Replication of our study with larger sample sizes and other languages are needed to investigate this further. Applying other concepts from the field of language studies could shed light on the question of bilingual advantages in cognitive tasks.

This study was supported by a grant from the Knut and Alice Wallenberg foundation [grant number KAW 2014.0205].



UofG

Arts

Code-switching and its function in Saudi Bilingual Classrooms

Eman Abdulrahman Alzahrani, University of Glasgow
e.alzahrani.1@research.gla.ac.uk

University
of Glasgow
VIA VERITAS VITASchool of
Critical Studies

Introduction

What is the effect of CS on different age groups?

Does CS benefit the same across various level ages?

Background

- Code switching (CS) occurs when a bilingual speaker uses more than one code within the same discourse.

- Here, I focus on the use of CS in the EFL classroom.

- The effect of teacher's CS is not clear. Some studies show that CS facilitates learning (Cook 2001, Jingxia 2010, Modupeola 2013) while others don't (Wong-Fillmore 1985, Chaudron 1988, Batt& Bolonyai 2011).

- These differences may arise from the types and purposes of CS that teachers use. Thus, here I test the effect of three different types of CS on students learning: (FCS), (PCS), (FPCS), see the following table.

Functional CS (FCS)	Interpersonal CS (PCS)	FuncPer CS (FPCS)
A teacher alters between languages for linguistic, class management, and social purposes.	A teacher changes the language for personal purposes.	A combination of the two.

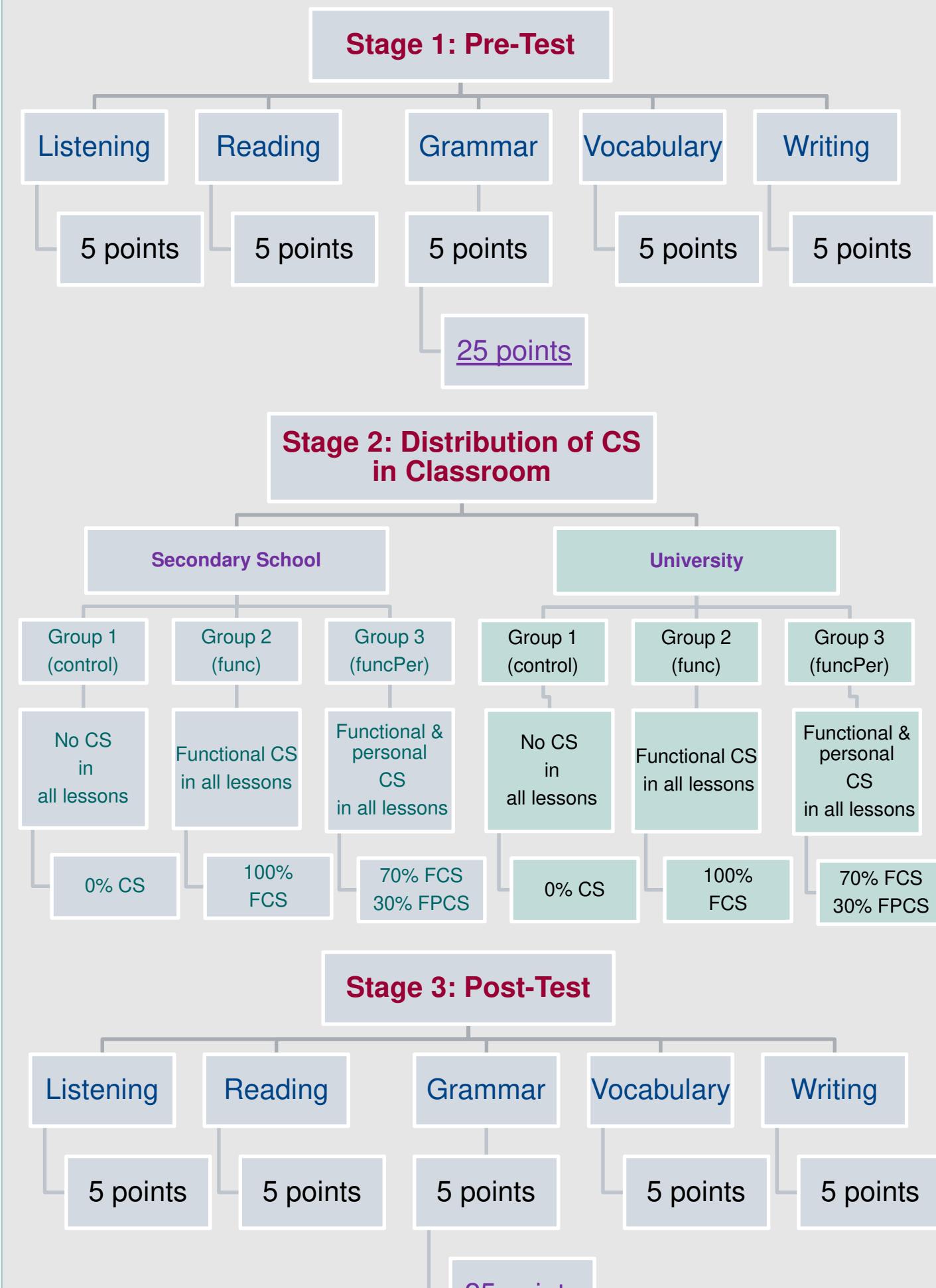
- The study also tries to look at the effect of FCS as well as the FPCS on different groups and between various age-sets.

Methodology

* Samples:

Stages	University	Secondary
Participants' number	156 students	90 students
Participants' age	From 16 to 18 years old	From 19 to 21 years old
Participant' native tongue	Arabic	Arabic

* The three main steps that I followed during data collection:

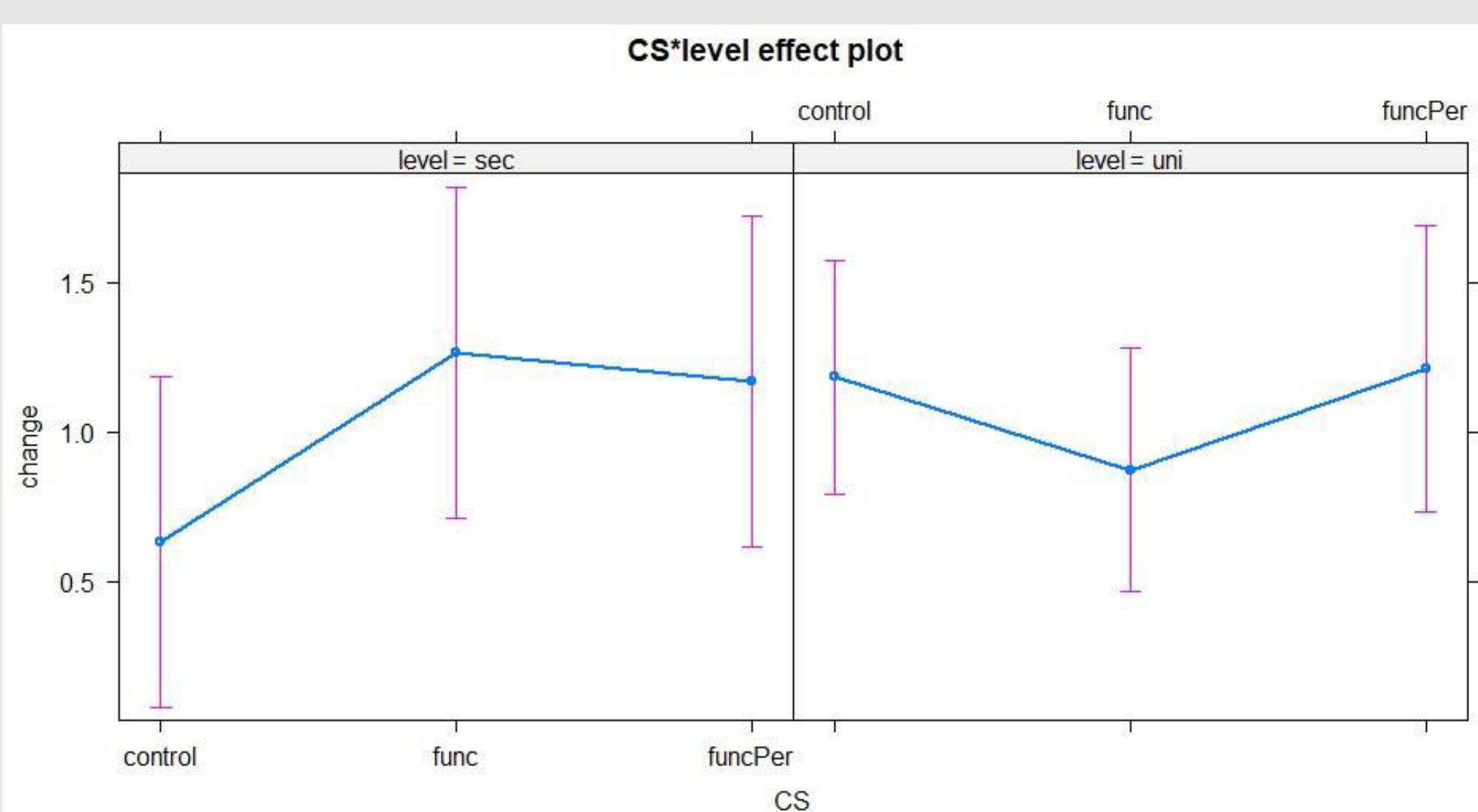


* The implementation of CS:

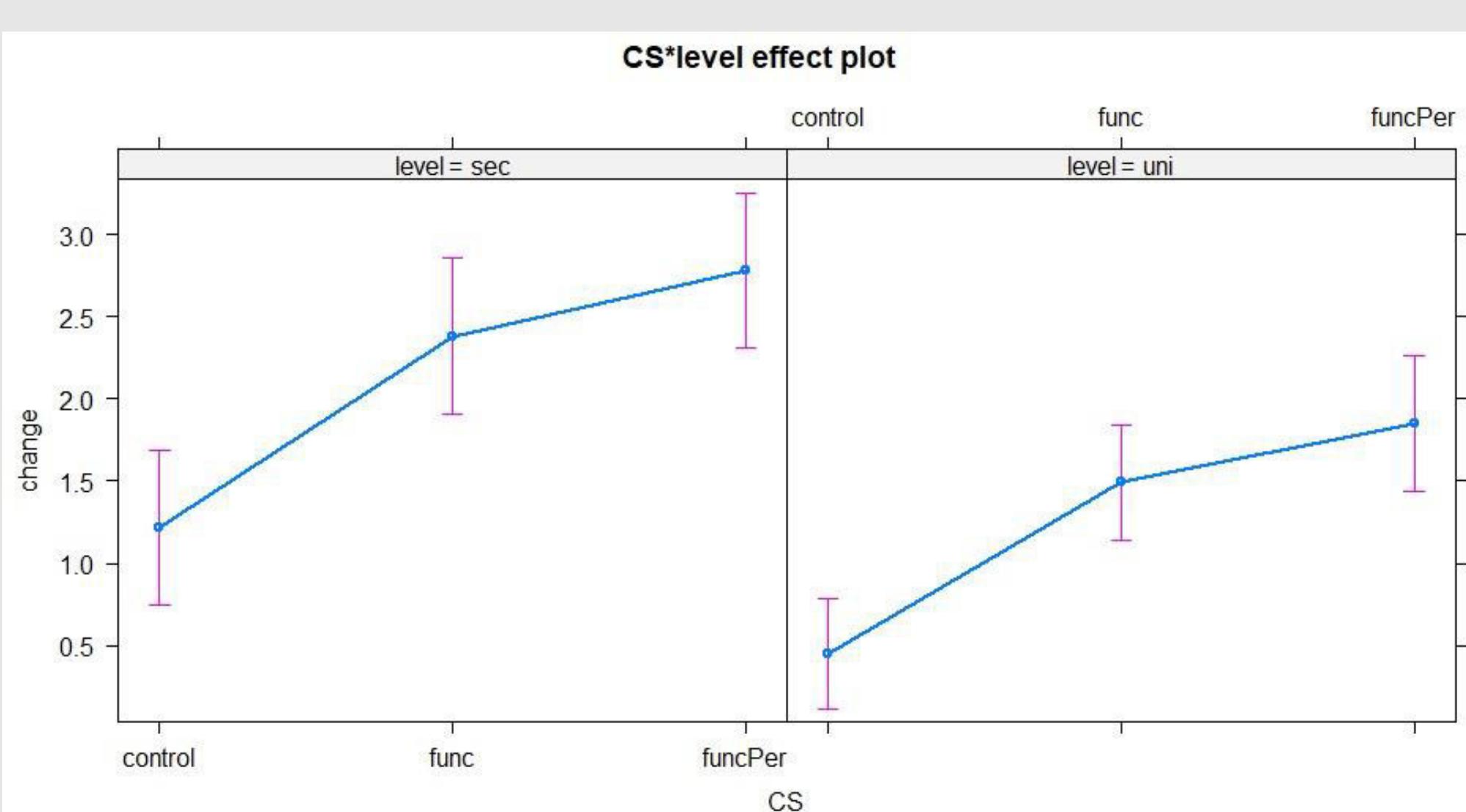
Groups	University			Secondary		
	Group 1 (control)	Group 2 (func)	Group 3 (funcPer)	Group 1 (control)	Group 2 (func)	Group 3 (funcPer)
Number of Students	50	46	60	30	30	30
Number of taught units	One	One	One	One	One	One
Number of lessons	Three	Three	Three	Eight	Eight	Eight
Period of a lesson	Two hours (120 minutes)	Two hours (120 minutes)	Two hours (120 minutes)	50 minutes	50 minutes	50 minutes
Number of switches in a lesson	0 switch	105 switches	105 switches	0 switch	49 switches	49 switches
Types of switching in a lesson	0 CS	105 FCS	73 FCS 31 P/CS	0 CS	49 FCS	34 F/CS 15 P/CS
Percentage	0% CS	100% FCS	70% FCS 30% PCS	0% CS	100% FCS	70% FCS 30% PCS

Results

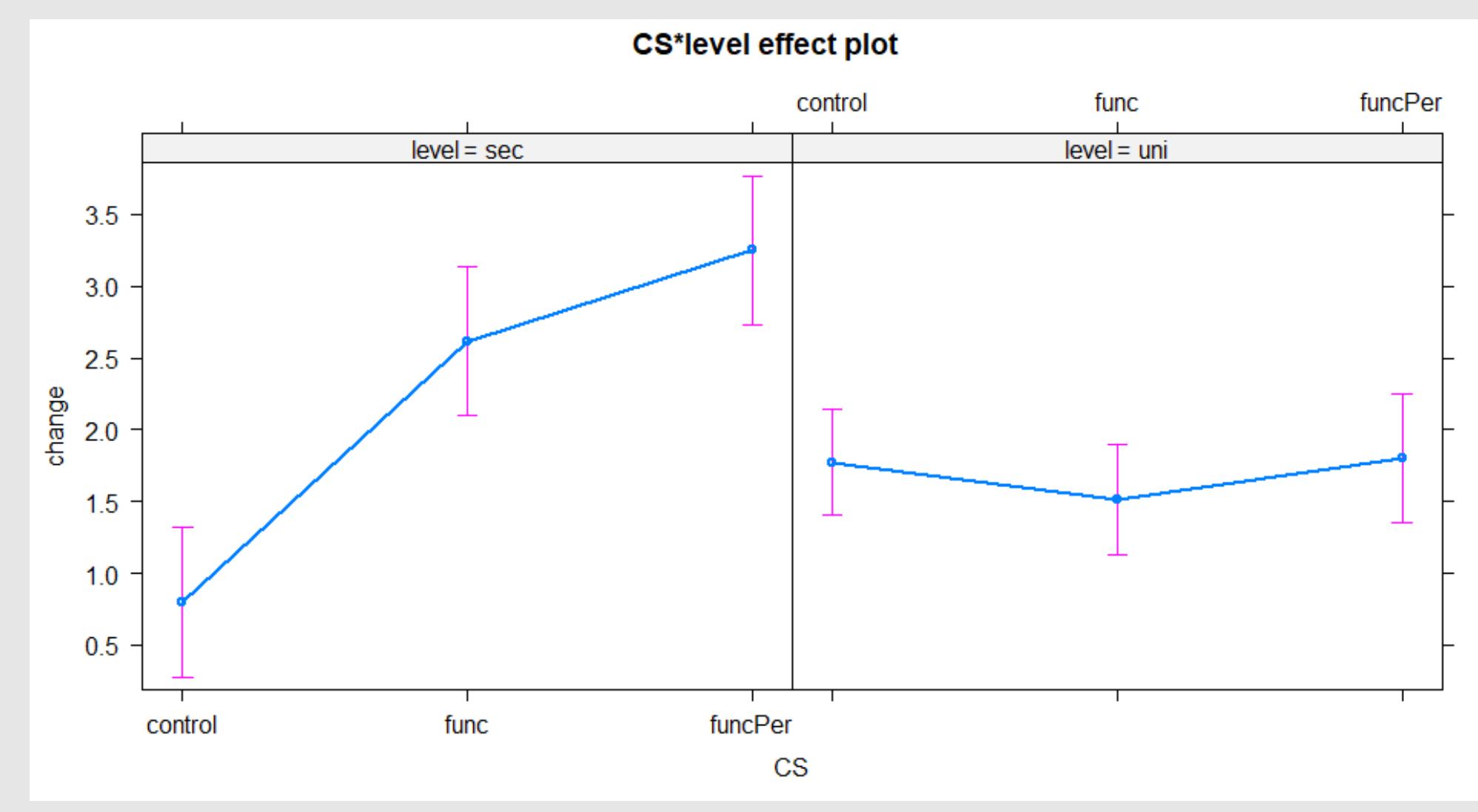
The results of **listening skill** for pre- and post tests in Secondary and University stages



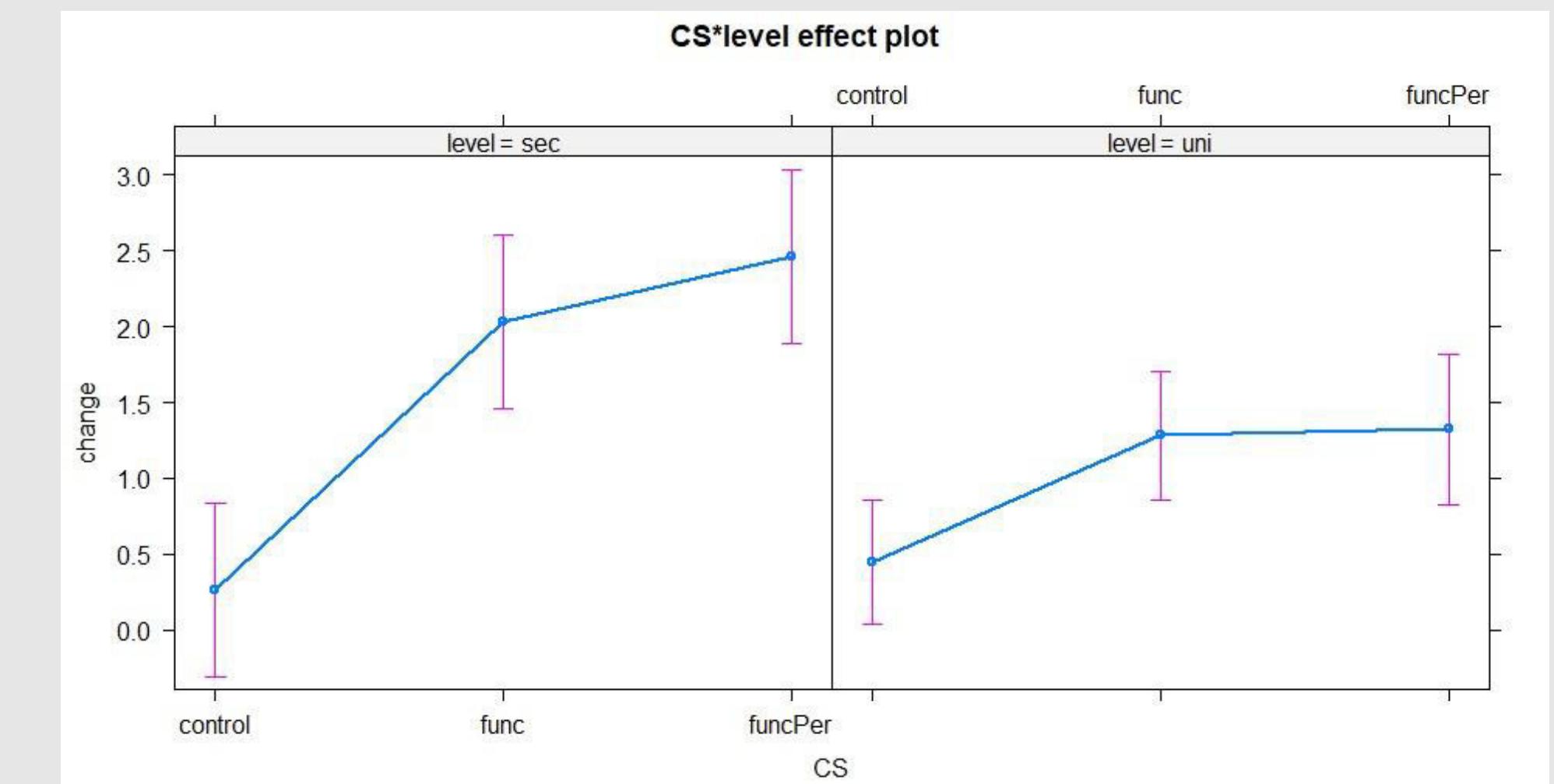
The results of **reading skill** for pre- and post tests in Secondary and University stages



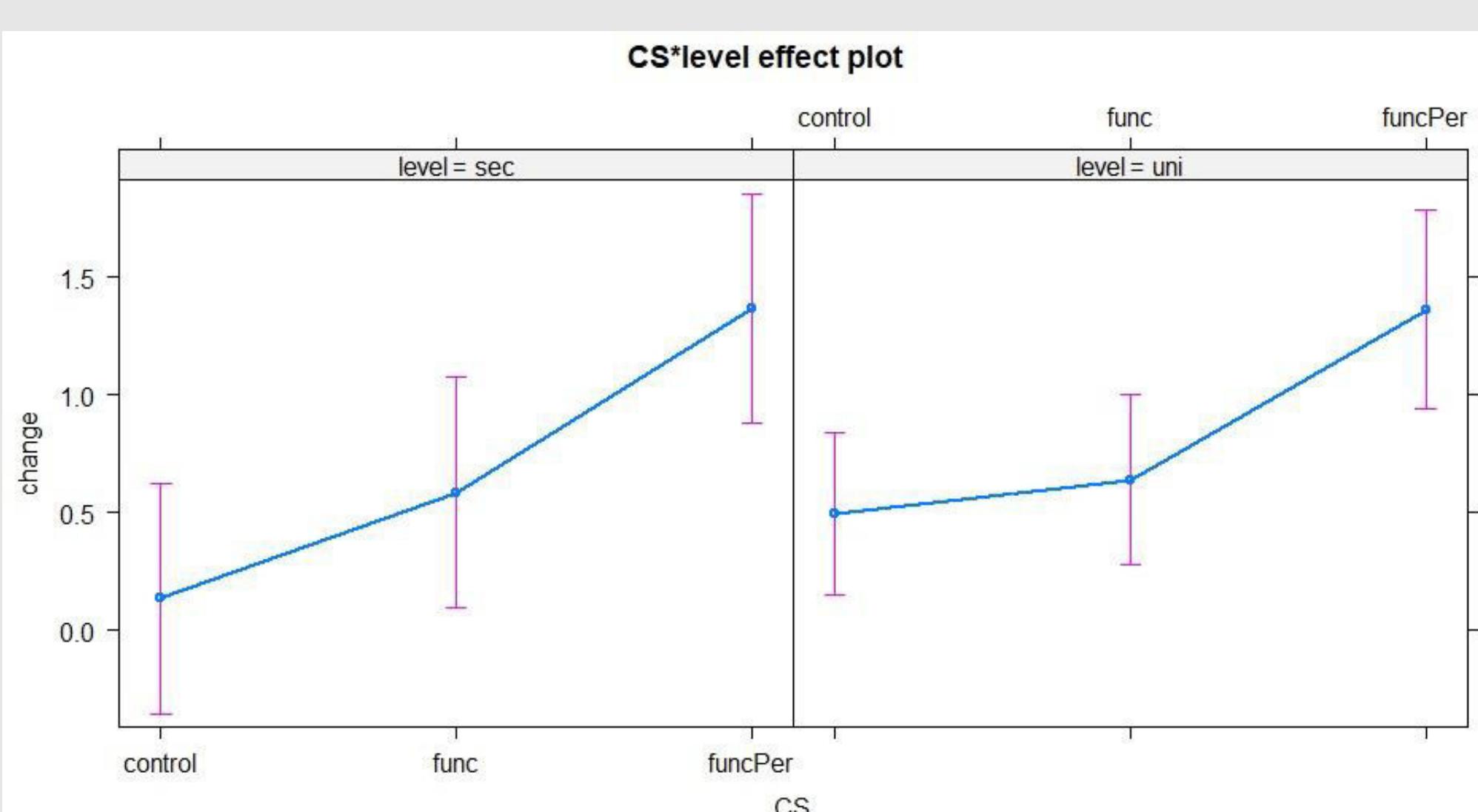
The results of **grammar skill** for pre- and post tests in Secondary and University stages



The results of **vocabulary skill** for pre- and post tests in Secondary and University stages

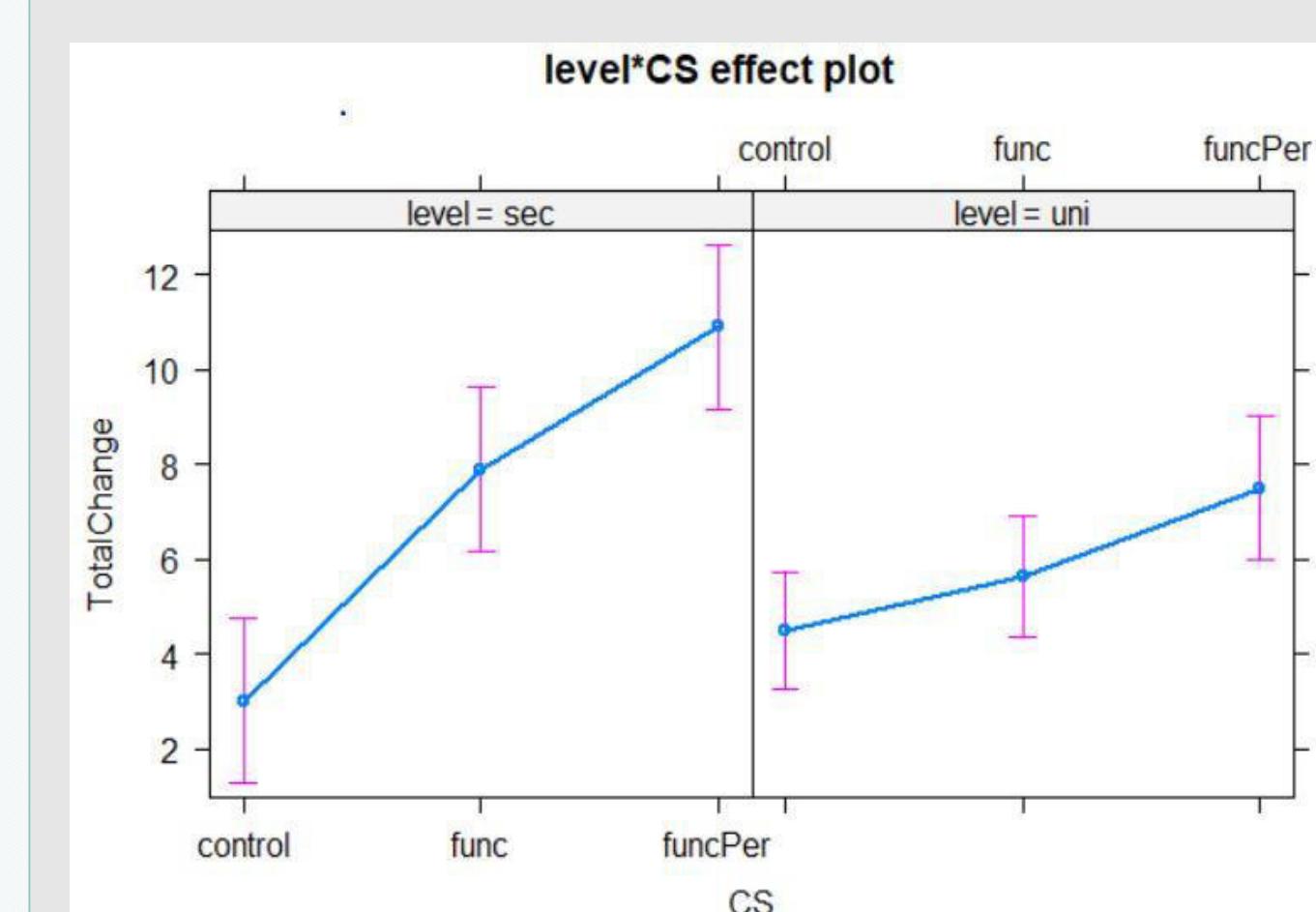


The results of **writing skill** for pre- and post tests in Secondary and University stages



A linear regression model of the differences between the pre and post-test exam scores revealed that students' performance improved regardless of CS type. However, an interaction between age and CS type showed that the largest improvements were in the groups where FPCS is used, especially with younger students.

The total change of the tests in both stages



Conclusion

The results indicate that the effect of CS is positive and students have got better education especially in these classes that teacher use FPCS. All tested skills in English are influenced by the using of the mother tongue. In sum, the findings suggest that a rich CS environment facilitates learning in the EFL classroom, particularly with classrooms of younger students.

References

- Bhatt, R. M., & Bolonyai, A. (2011). Code-switching and the optimal grammar of bilingual language use. *Bilingualism*, 14(4), 522-546.
- Chaudron C. Second language classrooms: research on teaching and learning. Cambridge: Cambridge University Press 1988.
- Cook, V.J. (2001), 'Using the first language in the classroom', *CMLR*, 57, 3, 402-423.
- Jingxia, L. (2010). Teachers' code-switching to the L1 in EFL classroom. *The Open Applied Linguistics Journal*, 3, 10-23.
- Modupeola, O.R. (2013). Code switching as a teaching strategy: Implication for English Language teaching and learning in a multilingual society. *IOSR Journal of Humanities and Social Science*, 14(3), 92-49.
- Wong-Fillmore, L. (1985). When does teacher talk work as input? In S. M. Gass & C. M. Madden (Eds.), *Input in second language acquisition* (pp. 17-50). MA: Newbury House.



Multilingualism in the Linguistic Landscape of Tehran in Iran



Abstract

Recent studies in sociolinguistics have shown an exponential growth in the number of publications in the field of Linguistic Landscape (LL) in different contexts. In Iran, some previous research has focused on different aspects of LL including the presence of minority languages in the landscape (Rezaei & Tadayyon, 2018). This paper seeks to explore the representation of different languages in the LL of the city of Tehran. The focus will be on how multilingualism is represented in the landscape of Tehran as the capital of Iran. The data includes ethnography along with photographs capturing the visual displays, facades, placards, notices, banners etc. The location is Tajrish square as one the main squares in the city of Tehran and as one of the contexts in which multilingual landscape is more dominant. Qualitative results from both ethnography and photographs have shown that three main languages are salient in the landscape: Persian as the national language, English as the language of modernity and prestige, and Arabic as the language for religious practices. Each of these languages have their own sociolinguistic, political and historical motives. Multilingual signs will be analyzed through a sociolinguistic perspective (Bourdieu, 1991).

Keywords: Linguistic Landscape, Multilingualism, Sociolinguistics

1. Introduction

With the establishment of Linguistic Landscape as an independent academic conference and also the publication of Linguistic Landscape Journal, as an independent publication platform, this line of research has become to a large extent configured. LL is principally premised upon interdisciplinary theoretical and methodological frameworks among which sociolinguistics and discourse analysis are of more significance in linguistic studies.

2. Research Background

Previous research on the LL of Iran can be traced to some pioneer studies conducted by Mirvahedi (2016), Izadi and Parvaresh (2016) and Rezaei and Tadayyon (2018). Mirvahedi explored the discursive formation of Tabriz as a multilingual but dominantly and linguistically-landscaped monolingual Persian. Izadi and Parvaresh did photography and ethnographic fieldwork at Persian shops in the city of Sydney to explore how Persian language, culture and identity are framed in Persian-in-diaspora ethnic shops. Following these two studies, Rezaei and Tadayyon explored LL in the multilingual-multicultural Julfa neighborhood in the city of Isfahan. Their results, among some others, showed how the minimal presence of the minority Armenian language showcases the recognition of this language in the fast-changing city of Isfahan.

Against this LL research backdrop, the present research planned to explore how multilingual signage and facade in the city of Tehran form the sociolinguistic ecology of the city and how these languages are discursively rendering certain forms and levels of identity and ideology. Therefore, the main research question was:

- What are the dominant identities and ideologies rendered through the LL of the city of Tehran?

3. Methodology

This is a qualitative ethnographic research situated within the theoretical framework of language policy (Spolsky, 2004), language, power, ideology and identity (Bourdieu, 1991) in discourse and sociolinguistic research. Below, the main parts of this research are introduced.

3.1. Research Setting: Tehran

Tehran as the capital of Iran is home to diverse linguistic and ethnic communities. The dominant languages spoken in this city are Persian (national and official language) along with Azeri (Turkish) and Kurdish among some other dialects.

3.2. Data Collection Procedure

The data collection took place between June and July 2014. The main data collection site was Tajrish square as a hub showing the hustle and bustle of the city of Tehran. The report in this research is limited to this square but the whole research included data from different parts of Tehran—central, east, west, north and south. All shops and locales (mainly their visible signs and language representation) around the square were photographed to later explore the linguistic diversity in the space. This further equipped the researchers with the ability to later cross-check with one another what and how identities and ideologies are represented. The final results were based on the researchers' own interpretation and the theoretical framework adopted.

Presenters:

Saeed Rezaei¹

Sharif University of Technology
Tehran, Iran

Mohammad Mahdi Hajmalek²

Khatam University
Tehran, Iran



4. Results and Discussion

The photographs were scrutinized and analyzed discursively, the results of which showed the saliency of four types of languages, namely Arabic, Persian, English and multilingual. Below, the identity and ideology behind those signs are presented.

4.1. Arabic for religious practices

One of the main languages seen in the LL of a shrine around Tajrish square was Arabic for religious practices (See Photo 1)



Photo 1: Arabic inscription on the wall of the Shrine



Photo 2: A Persian sign for the municipality office

4.2. Persian for national consumption

The second salient language was Persian as the national language. It was mainly used in shop signs (See Photo 2)

4.3. English as the sign of prestige and internationalization

The third language belonged to English for both international (tourists of foreign residents) and local visitors. For international visitors to boost comprehension and accessibility. And for the locals mainly for the sake of prestige (See Photo 3).



Photo 3: An English sign



Photo 4: A trilingual sign (Persian, English, Arabic)

4.4. Multilingual Signs

Some of the signs were sprayed with many languages as they targeted people with different first languages. For instance, the sign below (Photo 4) shows a NO SMOKING sign in three languages. Persian for Iranian pilgrims and English and Arabic for foreigners.

5. Conclusion

The discursive analysis of both top-down and bottom-up signage in the LL of Tarish square showed that Persian, English and Arabic are the three most salient and visible languages. Persian is the national language and used mainly in top-down signs (e.g., the municipality). English was used more in bottom-up signage to attract customers. And Arabic was used as the religious language in mosques and holy places.

References

- Bourdieu, P. (1991). *Language and symbolic power*. Harvard: Harvard University Press.
 Izadi, D. & V. Parvaresh. (2016). The framing of the linguistic landscapes of Persian shop signs in Sydney. *Linguistic Landscape*, 2(2), 182–205.
 Mirvahedi, S. H. (2016). Linguistic landscaping in Tabriz, Iran: A discursive transformation of a bilingual space into a monolingual place. *International Journal of the Sociology of Language* 42, 195–216.
 Rezaei, S., & Tadayyon, M. (2018). Linguistic landscape in the city of Isfahan in Iran: The representation of languages and identities in Julfa. *Multilingua*, 37(6), 701-720.
 Spolsky, B. (2004). *Language policy*. Cambridge: Cambridge University Press.



Multilingualism and the role of English.

What English should be taught?

Anna Valerio

Leiden University. UCLA

Introduction

Multilingualism and language diversity

Multilingualism refers to the 'coexistence, contact and interaction of different languages' at the societal or individual level (Wei 2013). Hence, multilingualism has become the backbone of our new societies and has increased their members' need of interaction and intelligibility among each other. In Europe there are 288 languages of which 24 are official. In some regions where multilingualism is deeply rooted, or where the different cultures have more or less recently started to coexist, the learning and use of a second or foreign language seem to evolve more naturally, whereas in some other countries such as Italy with its 35 living languages, of which six are institutional, multilingualism is a reality which involves only a minority of its inhabitants. For the rest of the population languages are acquired at school as foreign languages. As a matter of fact, being English a case in point, rather than the *when* and the *how* to learn a foreign language, a further question needs to be addressed about which *English* should be taught. I believe that its investigation could be decisive in leading our learners to be active members of a newly defined multilingual society.

European Scenario

EU language policy

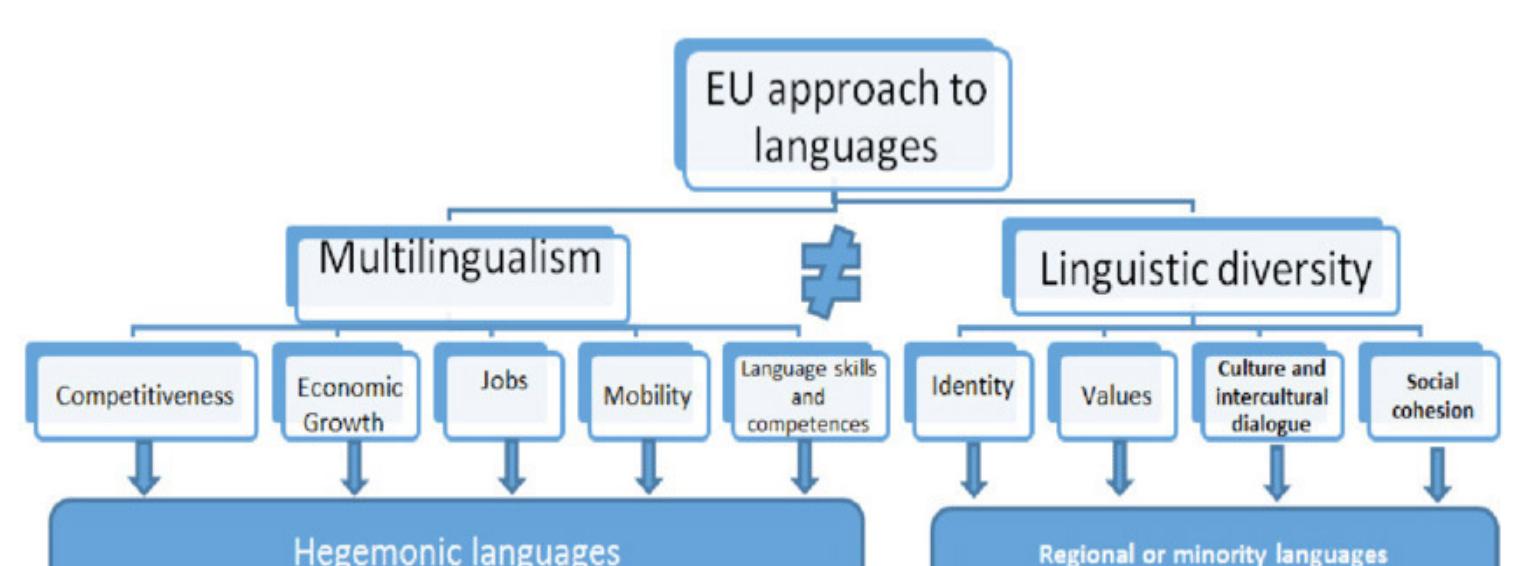
Since Mid-1990s until 2005

MULTILINGUALISM

has been a recognized part of European policy. In those years the European Commission's long-term objective was 'to increase individual multilingualism until every citizen had practical skills in at least **two** languages in addition to his/her first language. "*United in diversity*" is the motto supported by the **protection of minority languages, promotion of diversity** together with the **importance of multilingualism for intercultural dialogue**.

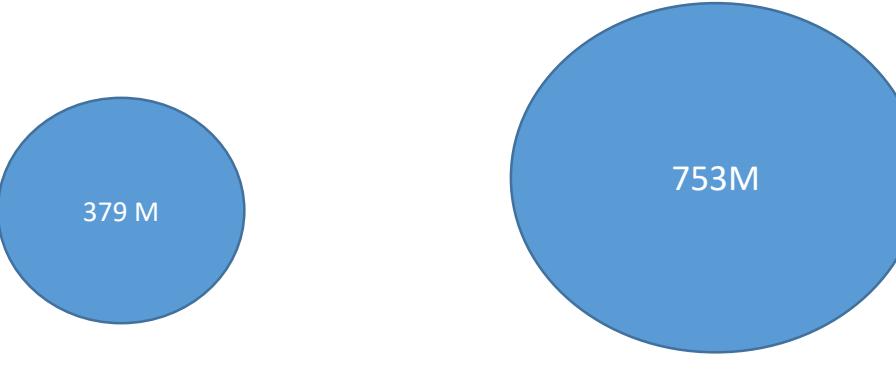
HOWEVER

In a twenty-year time span and particularly since 2014, when multilingualism as a specific responsibility passed from the Directorate General for Education to the Directorate General for Employment, the European language policy has shifted from language competence as a **right** or a **basic skill** to language competence as an "**added value**" for small and medium-sized enterprise and an important factor in economic growth.

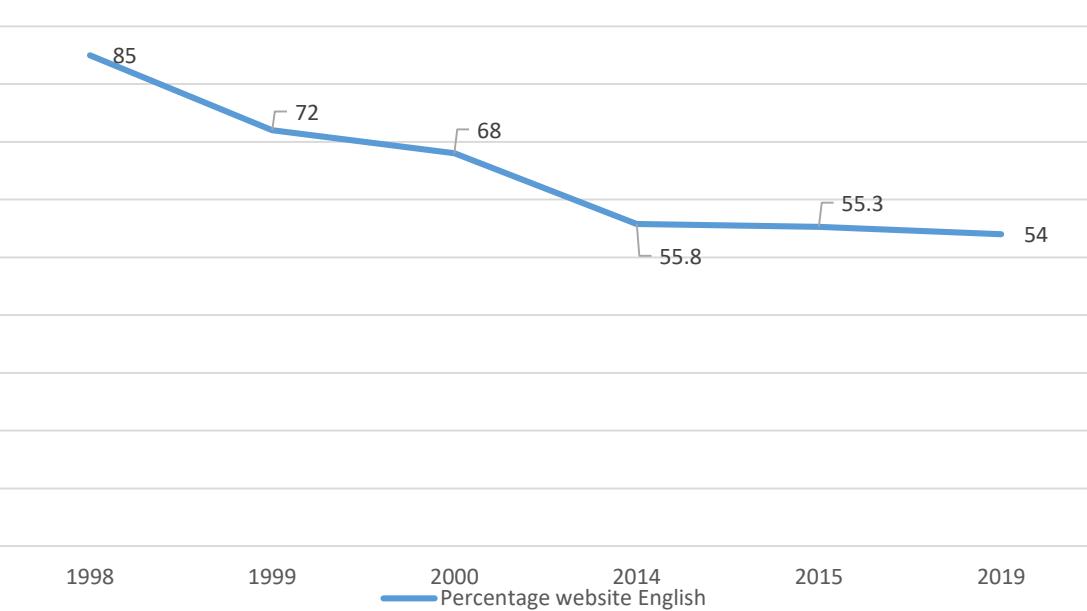
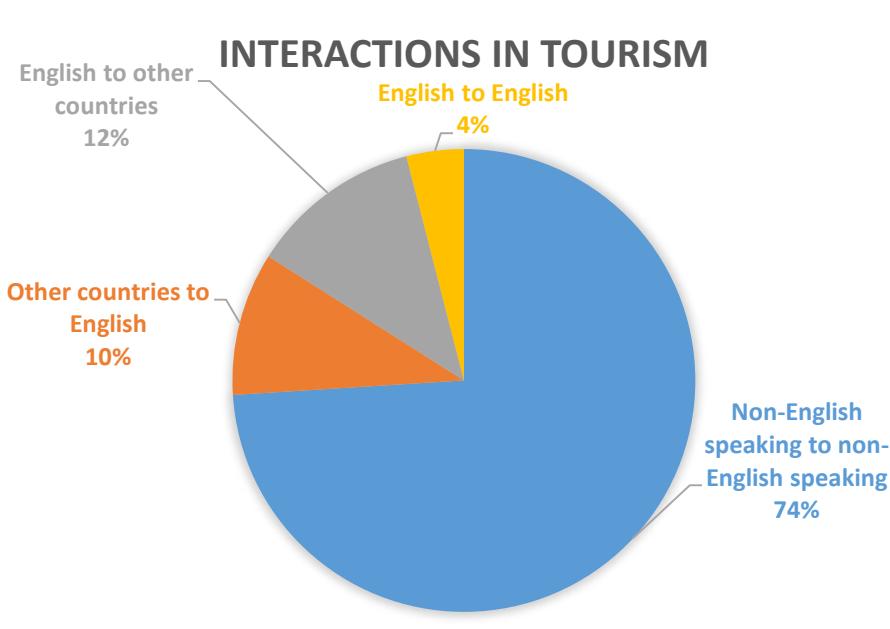


The role of English language today

More than 60 languages are officially recognized in Europe, 24 are in use today and even if the EU working languages are English, French and German, there has been a progressive but dominant use of English. As figures show, English still retains its power in many fields, but things are slowly changing. Ignoring the fact that the status of English L1 is changing means neglecting quite significant aspects of ELT and consequently the possibility of realizing intercultural dialogue. An inexorable trend in the use of global English is that fewer interactions now involve a native-speaker. Data provided by *Ethnologue* show that the number of English speakers as L1 has been outnumbered by its speakers as L2. This means that native-speaker numbers may matter less than they used to in providing a world language status. English position as a global language is now in the care of multilingual speakers.



The *World Tourism Organisation* shows that the majority of human interactions in tourism do not involve English native speakers, which account only for 4%. (Graddol 2006)



As the internet became commercialized, it spread to the wider global community and the proportion of websites in English declined. At the present rate, English will account for over 50% of the world's website content for another ten years at least, but its decline since 1998 should be noticed.

A final point is about the possible effects of the Brexit process on the status and functions of English in the European Union as well. The kind of English used in the EU is likely to move away from native English. (Modiano 2017)

As Graddol (2006) suggests, a new era for English, the one of 'Global English' has to come. The exploration of the new status of English as a global lingua franca and the new cultural, linguistic, political and economic issues surrounding English as it is used in a postmodern world.

Multilingualism and English

Between EU language policy and its view of multilingualism, and the assumption that multilingualism is a new social phenomenon in itself, not just the result of adding numbers of languages to individuals and societies, to me the important question is how the concept of multilingualism and the prominent, though maybe in decline, position of English can co-exist primarily in terms of teaching and learning. Recently new research trends have arisen and one in particular has spread: English as Lingua Franca, ELF.

What English



ELF, as Seidlhofer (2011) explains, is not a variety of English, but a 'variable exploitation of linguistic resources'. Given that fewer interactions involve only English native speakers, proponents of teaching ELF suggest that the way English is taught and assessed should reflect the needs and aspirations of the ever-growing number of non-native speakers who use English to communicate with other non-natives. Intelligibility is of primary importance, rather than native-like accuracy.

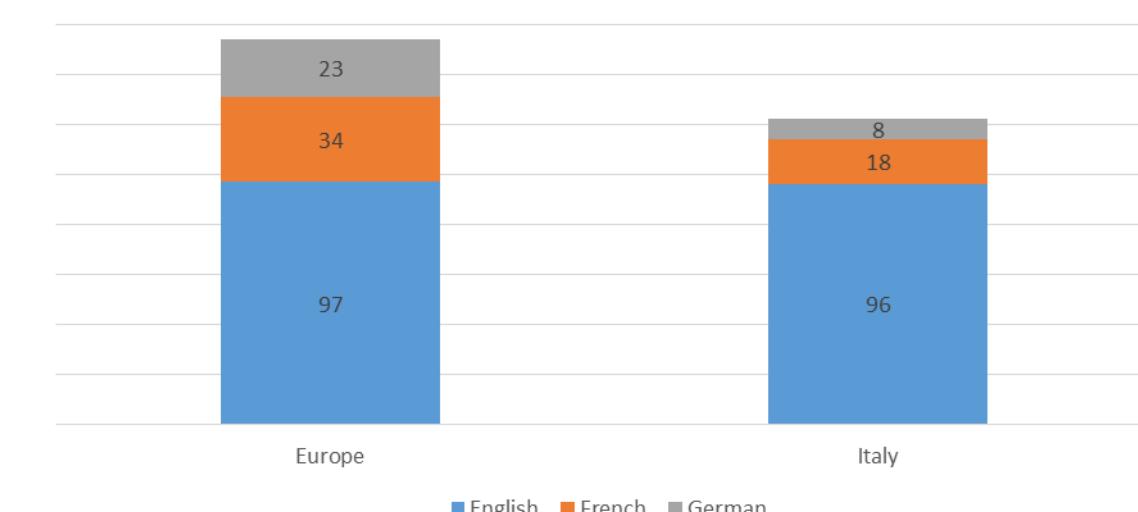
Cogo (2012) in her critique to Sowden gives a definition of ELF as opposed to WE. ELF communication normally occurs within different linguacultural backgrounds, and it is not necessarily geographically located.

ELF is "Accommodation", pragmatic strategies, functional.

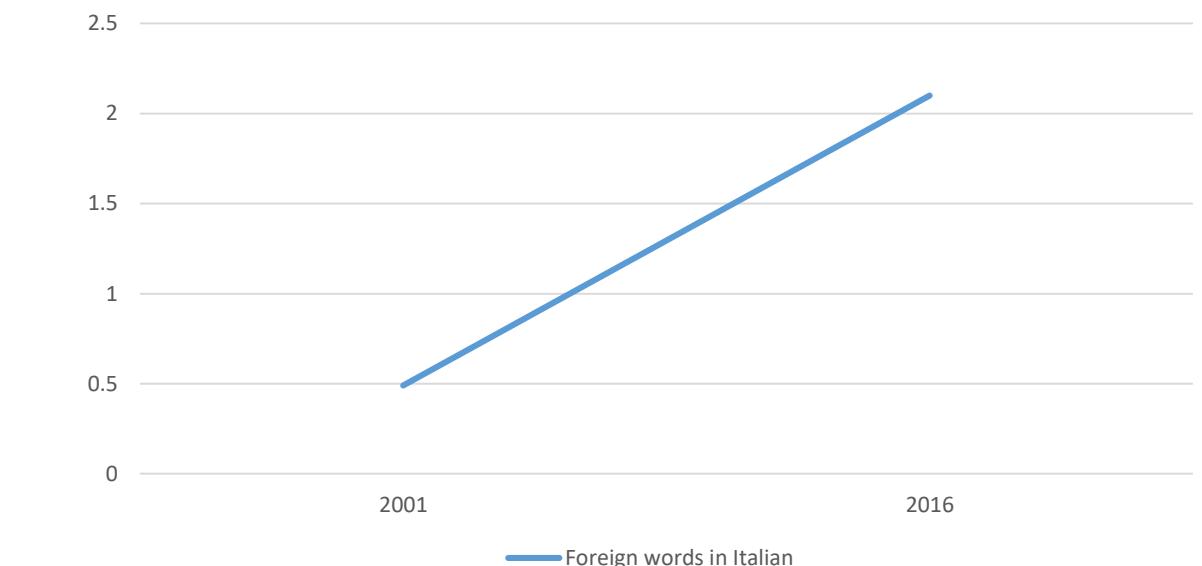
The extremely interesting aspect of research in ELF is the way we are able to construct meaning, ensure understanding and how this surprisingly works efficiently within multilingual background interlocutors.

Italian Scenario

The most studied foreign languages



Foreign words in Italian



Today more than 90% of lower secondary students learn two foreign languages or more, but English is still the dominant one, and as far as my investigation has gone NE is the model prominently taught.

Implications in ELT

Teaching requires a set of *norms and patterns*, but when designing a language curriculum we need to consider also other dimensions such as (1) users of Englishes, (2) uses of Englishes, and (3) modes of communication. It is not thinking of a "model" like a particular variety of English – such as US or British, but rather a complex framework which includes issues of methodology and variety. Teaching ELF is about awareness and choice—making students aware of different ways of speaking English, of language variability and change—and about offering choice to them.

This way ELF focus shifts from the learning-teaching of preconceived norms to the creation of spaces for negotiation, thus viewing contradiction and conflict as productive and meaningful, conceptualizing them as positive in ELT settings.

It is the single speaker, with his or her potential for using English societally with other single speakers in multifarious emerging and shifting micro-contexts, who forms the locus for the popular use and spread of English as a lingua franca today. Multilingual competence have a different state of mind (Cook 1995). Motivation and education towards multiculturality are keys to be able to communicate effectively and act in international contexts.

References

- Canagarajah, Suresh. 2014. In search of a new paradigm for teaching English as an international language. *TESOL Journal* 5(4). 767–785.
- Cogo, A. (2012). English as a lingua franca: concepts, use and implications. *ELT Journal* 66/1. Oxford University Press.
- Graddol, D. (2006). English next. British council.
- Jenkins, J. (2017). Not English but English-within-multilingualism. In S. Coffey & U. Wingate (eds.), *New directions for research in foreign language education*. London: Routledge.
- Seidlhofer, B. (2009). Common ground and different realities: World Englishes and English as a lingua franca. *World Englishes* 28(2). 236–245.
- Sowden, C. (2011). ELF on a mushroom: the overnight growth in English as a Lingua Franca. *ELT Journal*, Volume 66, Issue 1, January 2012, Pages 89–96.
- Wei, L. (2013). Conceptual and methodological issues in bilingualism and multilingualism research. In T. K. Bhatia & W. C. Ritchie (Eds.), *The handbook of bilingualism and multilingualism* (2nd ed., pp. 26–51). Oxford: Blackwell Publishing.

anna.valerio077@gmail.com

A comparative analysis of St. Lucia Creole English and Dominican Creole English

Melissa Irvine
mirv844@aucklanduni.ac.nz
University of Auckland
3rd September; COM2019

Background/Relevance to multilingualism

- Creoles as outcomes of multilingualism
- St. Lucia Creole English (SLCE) and Dominica Creole English (DCE) both *recently emerged*; double (!) creoles
 - Only one other documented case: Unserdeutsch
- Smaller chance of language-internal changes, untraceable changes giving an in-depth look at language formation processes
- Some documentation (varying levels of detail) since initial formation
- SLCE and DCE more-or-less identical in formation history and contributing languages

Today's aims

- Introducing the recent emergence of SLCE and DCE, and the classification of double creoles
- Discussing some of their features
 - Similarities (expected)
 - Differences (not so expected)

Language formation

- Indigenous groups
- First European contact (relatively late: 1630s)
- Area a constant source of dispute between the British and the French
- People mostly French, French-based creole (Kwéyòl) emerged
- Handed over to Britain a final time in the treaty of Paris 1803/1814
- Slow transition to Anglophone society

(Breen 1844, St. Hilaire 2011,
Garrett 1999)



Language formation

- Kwéyòl speaker
- → English ruling class: primarily SW England and Scotland (Breen 1844, Niles 1980)
- → English-medium Mico schools: teachers trained in Jamaica, Antigua, St. Vincent, etc. (not Kwéyòl speakers) (St. Hilaire 2011)
- → Caribbean English/Caribbean creole-speaking migrants: Bajans in the early 1900s (St. Hilaire 2011), cultural influence from nearby Trinidad (Alleyne 1961)
- → (more recently) media influence, trade, tourism: North American English influence
- → L2 effects
- SLCE/DCE speaker

Prediction

same input languages
same formation process
limited time

= same output?

A quick note on the data

- SLCE data collected 2017-2019 over 7 months total, primarily oral data from 13-18 year olds, target language SLCE
 - (partially funded by the National Geographic Society)
- DCE data collected 2016 by Ronald Francis, Common Entrance exam scripts (~ 11 year olds), target language Standard English
- I gratefully acknowledge my participants, NGS and Ronald Francis for their parts in this!
- and these details will become relevant later...

Similarities

In the verb phrase

Simple past unmarked or marked with *had*

(1a) I eat this morning / I had go by the beach (SL)

(1b) I ran and unplug the switch / In the night I had make popcorn (D)

Does or –ing to mark habitual aspect

(2a) I doesn't eat that / You eatin too much (SL)

(2b) They does bearly get time / They bitting hard and you will scram (D)

Similarities

In the noun phrase

Number discord

(3a) That is not birds? (SL)

(3b) That students (D)

Mass/count reduced distinction

(4a) Too much things (SL)

(4b) Too many gabbage on the street (D)

Similarities

Lexical influences

(5) You not *hont?* (SL)
hont ‘embarrassed, ashamed’ < Kwéyòl

(6) Borrow me your pen (SL; also cited in Christie 2010 for DCE)
pwété ‘borrow, lend’ < Kwéyòl

(7) The people are big enough (D; ‘old enough’)
gwan ‘big, old’ < Kwéyòl

(8) It has a lack of jobs around the country (D)
Existential *have* also in SLCE and *ni* ‘have’ in Kwéyòl

Differences: Determiners

- DCE makes use of bare noun arguments. This is not grammatical in SLCE (or in Standard English).

(9) She has very big head (D)
‘She has a very big head’

(10) Some of toys came out (D)
‘Some of the toys came out’

- Not clear if this is Kwéyòl influence. SLCE does have some non-standard determiner use through Kwéyòl influence but difficult to tell (yet) whether present in DCE

TMA marking

- SLCE does not often make use of auxiliary verbs, do-support, etc.
- In DCE, past tense sometimes doubly marked: on the auxiliary *and* the main verb

(11) I had stoped (D; simple past, not past perfect)
'I stopped'

(12) We didn't wanted to stay there (D)
'We didn't want to stay there'

Number marking

- Despite number discord, plurals usually marked in SLCE as in Standard English, inflectional –s
- DCE often relies on context for plurality

(13a) A lot of dogs that outside (SL)

*a lot of dog that outside

(13b) The thousands of easily spreaded disease by mosquitoes (D)

Limitations

- lack of documentation for dialect differences within Kwéyòl
- written vs oral data
- no statistical analysis on DCE data: robust patterns or scattered incidences?
- different target languages in the data collected - just language acquisition errors?
 - Probably not, data seems to match anecdotal evidence + divergences not explained by language acquisition patterns



Bilingual Switching between Languages and Listeners: Insights from Virtual Reality

David Peeters

3 September 2019

d.g.t.peeters@uvt.nl

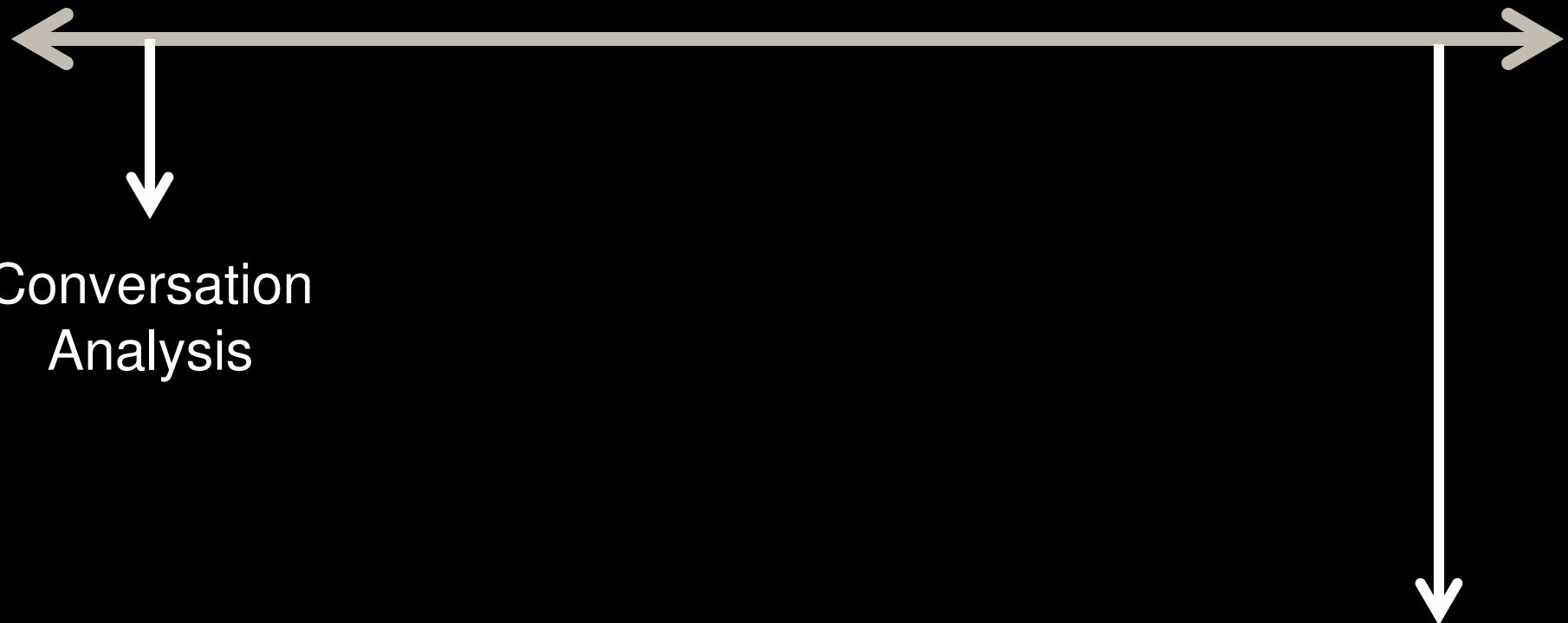
- Rich
- Dynamic
- Communicative
- 3D
- Audiovisual
- Multimodal



- Static
- Repetitive
- Non-communicative
- 2D
- Unimodal

Ecological
validity

Experimental
control



Conversation
Analysis

(many)
Computer
experiments

“[E]xtrapolation from findings obtained in restrained lab settings to real life may be much less obvious than we think”

Willems, 2015

“While a view of comprehension as situated in a rich context seems intuitively plausible and appealing, this is not what has shaped psycholinguistic theorizing”

Knoeferle, 2015

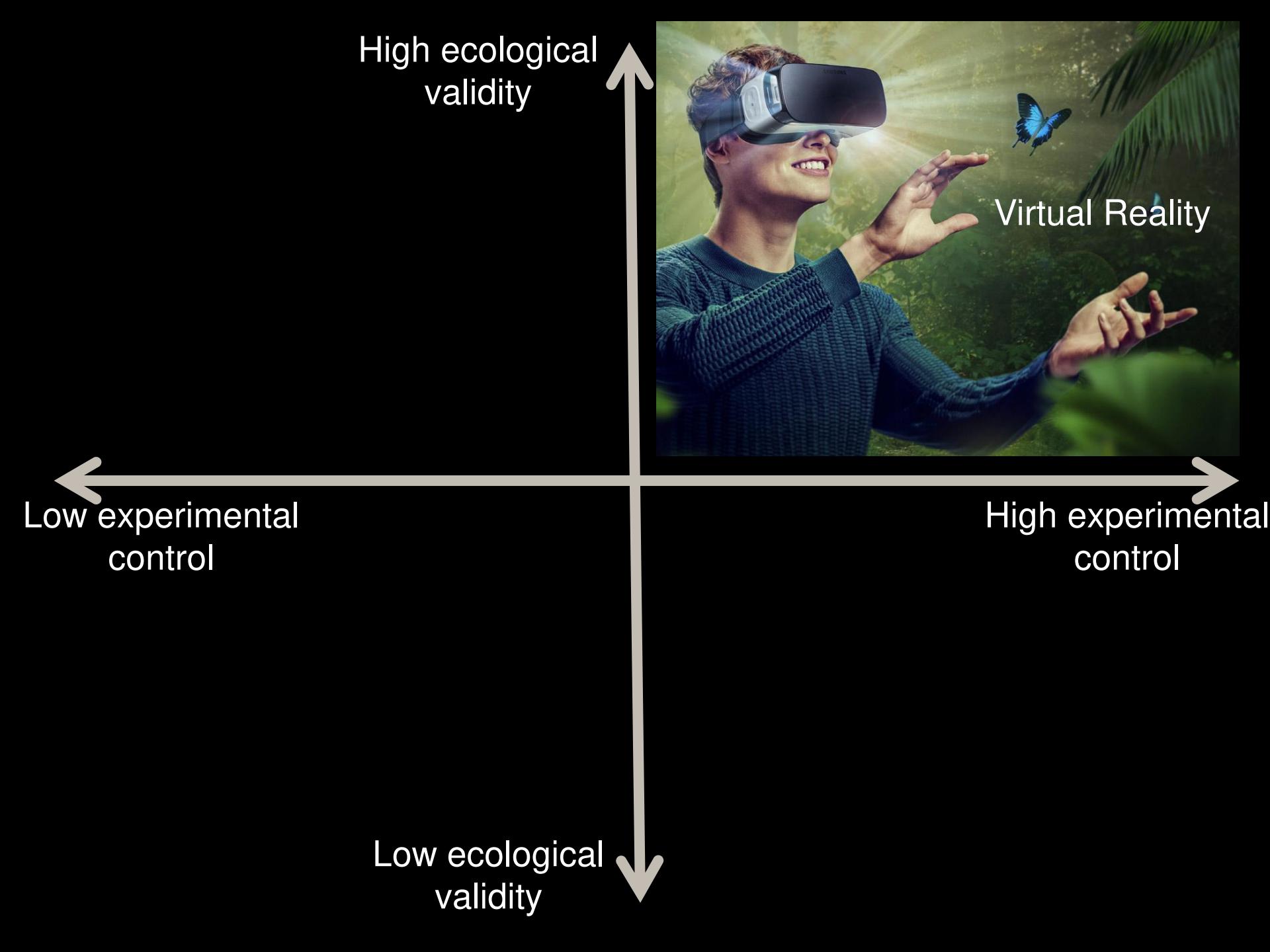
“Passive spectator science”

Hari et al., 2015

Ecological
validity

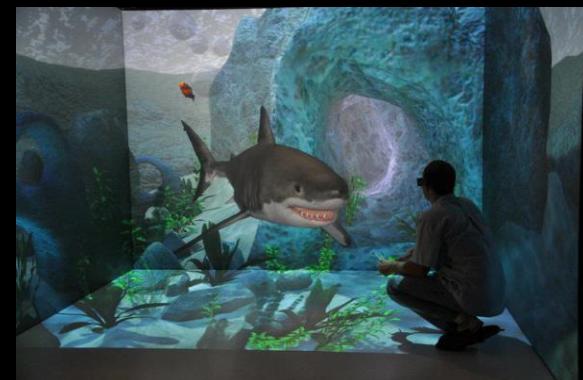
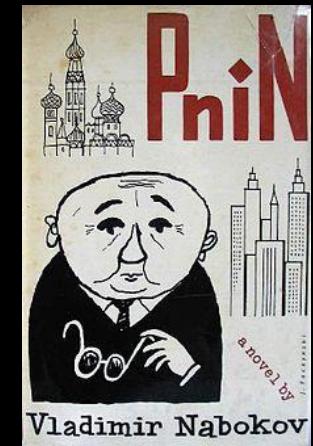
Experimental
control





The basic principle

- One's physical location not necessarily corresponds to one's mental location:
 - Dreaming / Mind wandering
 - Literature (movies / paintings / music)
 - Computer games
 - Virtual Reality



Head-mounted displays



CAVE

Laten we beginnen.

Laten we beginnen.

ntr:

npo



How do bilinguals manage to select the context-appropriate language to speak?

Bilingual language switching

- Bilinguals often switch between languages
 - Within sentences
 - Between listeners
- How do bilinguals select the right language to speak?
- What are the control mechanisms involved in bilingual language production?



Experiment 1: The baseline experiment

- 24 Dutch-English unbalanced bilinguals
- Cued picture naming
- 40 trials per condition
- Picture naming latencies

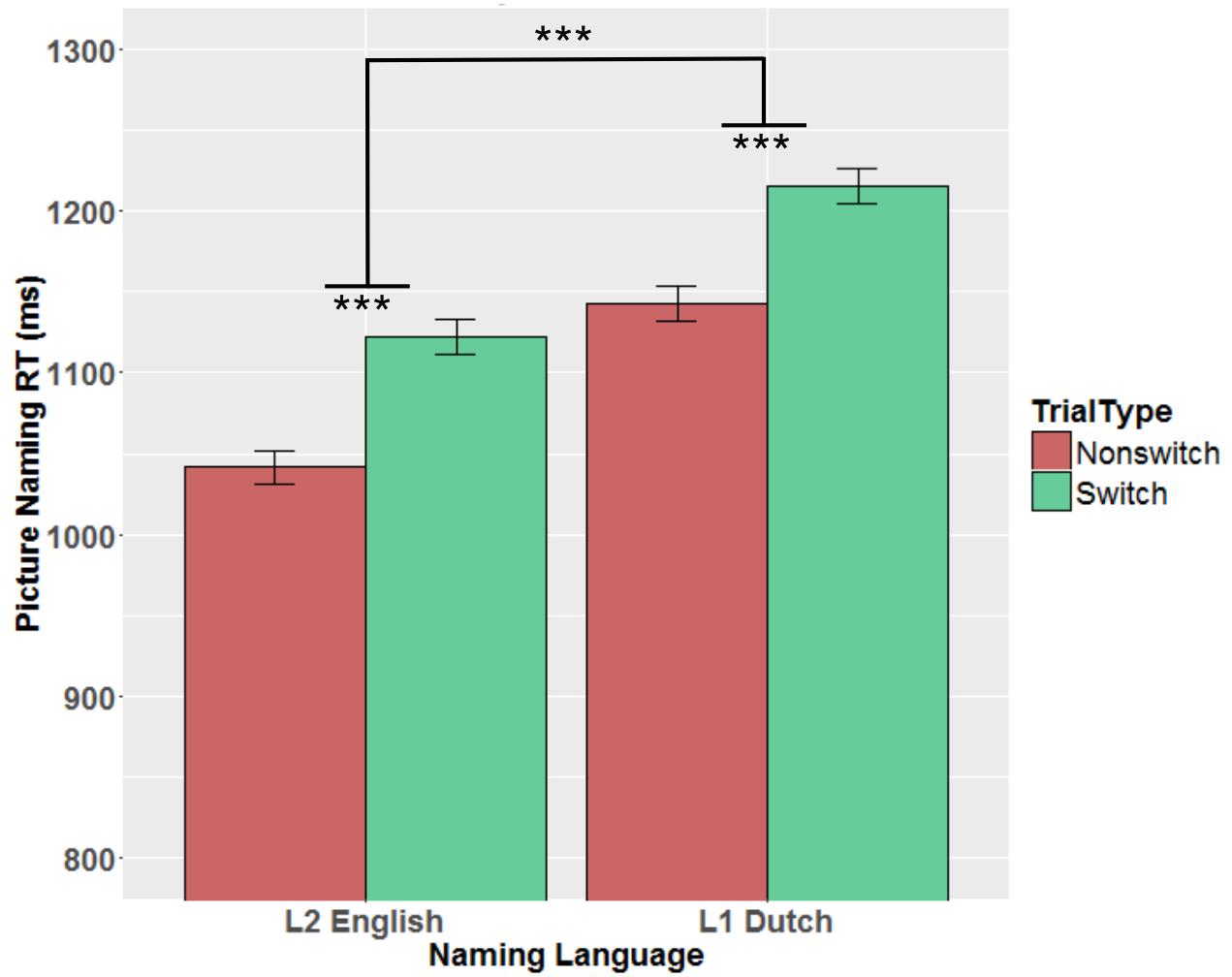
X



X



Results – Experiment 1



Valid criticism

- Language switching in the lab does not reflect everyday intentional language switching.
- Switch cues (colors, flags, rectangles, etc.) are artificial cues.
- Language switching in everyday life not induced by artificial cues.
- Cue-induced switch costs might not reflect basic mechanisms involved in bilingual language production.
- Often: confound between cue-switching and language switching.

Experiment 2: The four avatar experiment

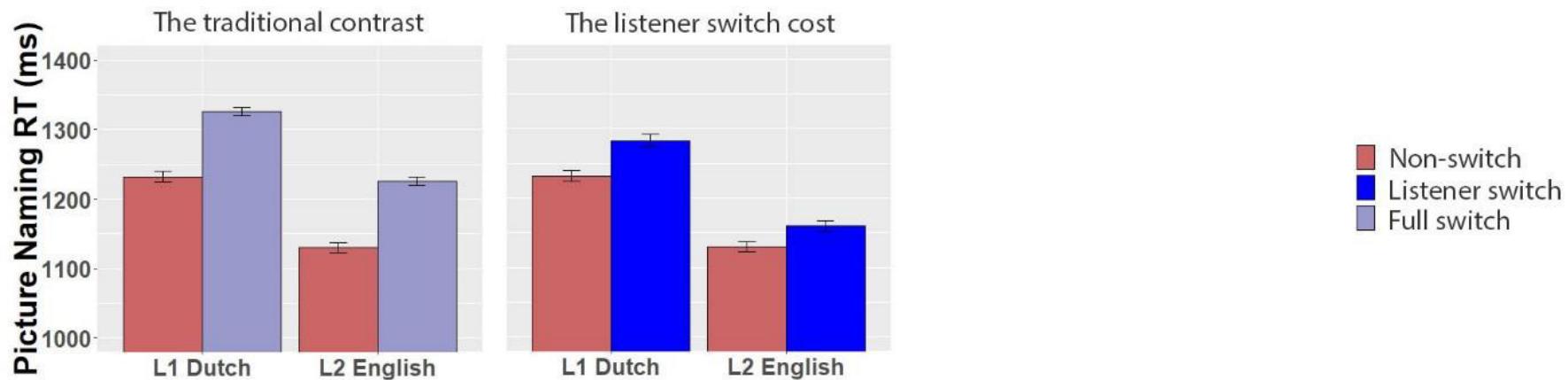
- 48 Dutch-English unbalanced bilinguals
- Cued picture naming
- 40 trials per condition
- Picture naming latencies (+EEG)



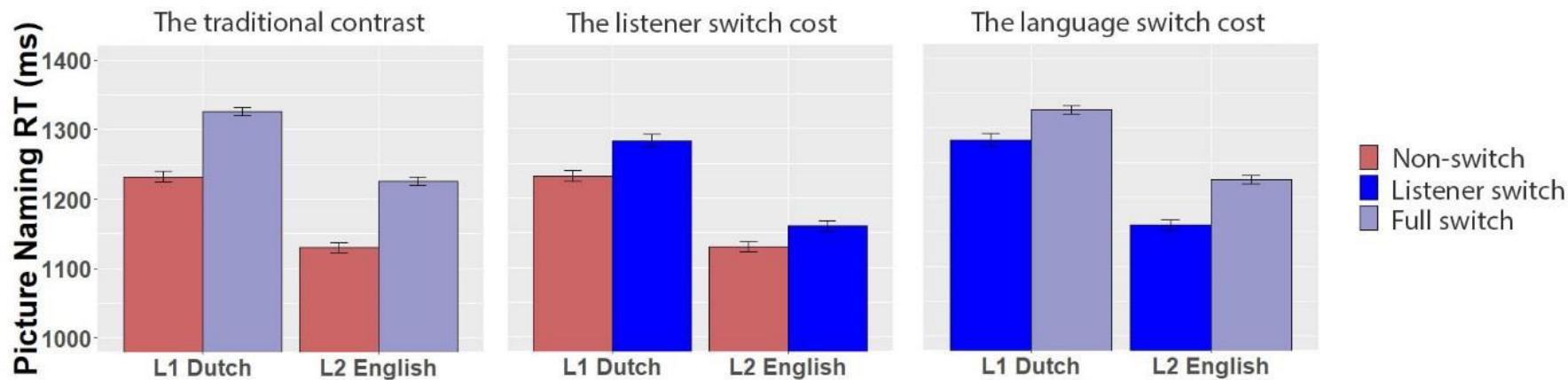
Results – Experiment 2



Results – Experiment 2



Results – Experiment 2



Switching languages comes at a cost, over and above the significant cost of switching listeners

Conclusions

- Sustained inhibition of the native language
 - Reversed language dominance
 - Switching between languages reliably comes at a cost
-
- Ecological validity cued language-switching paradigm
 - Basis for more interactive, immersive paradigms

Take home message

- Ecological validity and experimental control are not two extremes on a continuum.
- Immersive virtual reality offers unique opportunities for experimental bilingualism research.
- Shift of focus towards interaction between modalities (speech, gesture, eye gaze, facial expressions) and towards interaction with non-linguistic environment in bilingual settings.

Thank you!

