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Language Dominance of Bilingual Students

(Diplomová práce)

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V Olomouci dne 08.05.2024   Bc. Markéta Hubková

> "Double learning may confuse the scientist who seeks to discover how it is done, but not the child."
>
> Wallace E. Lambert

Abstract

Assessing language dominance among English learners is essential, especially in academic settings where they often participate in various experiments. To address this need, the thesis focused on understanding language dominance among advanced English learners and aimed to develop a tool to measure it. The first section provides a review of existing literature on bilingualism and language dominance as a theoretical model. Subsequently, a questionnaire was designed to identify learners' dominance between Czech and English. Analysis of the data revealed significant variation among respondents in terms of language dominance. Only a small portion of participants demonstrated balanced bilingualism, with the majority showing dominance in either Czech or English.

Key words

language dominance, questionnaire, bilingualism, immersion, SLA

Anotace

Zachycení jazykové dominance mezi studenty angličtiny je zásadní, zejména v akademickém prostředí, kde se často účastní různých experimentů. Vzhledem k dané skutečnosti se tato magisterská práce zabývá otázkou porozumění jazykové dominance pokročilých studentů angličtiny a cílem bylo vytvořit nástroj, který by tuto jazykovou dominanci zachytil. První část poskytuje přehled existující literatury o bilingvismu a jazykové dominanci jako teoretického modelu. Ve druhé části navazuje dotazník, který se snaží zachytit jednotlivé faktory ovlivňující jazykovou dominanci mezi češtinou a angličtinou. Výsledky odhalily významné rozdíly mezi respondenty, pokud jde o jazykovou dominanci. Pouze malá část účastníků prokázala vyvážený bilingvismus, přičemž většina projevila dominanci buď v češtině, nebo v angličtině.

Klíčová slova

jazyková dominance, dotazník, bilingvismus, imerze, SLA

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1 Introduction

Generally speaking, there are two ways of defining language dominance. It is important to distinguish between language dominance in individuals and societal language dominance. The former refers to a relative state between two or more languages of an individual speaker, while the latter involves languages in a certain country or an area and their usage and distribution. The subject of this thesis is language dominance in individual speakers as it is one of the questions in current research of bilingualism and second language acquisition (SLA).

Language dominance serves as a fundamental parameter in the classification of bilingual individuals, providing insights into their language proficiency and usage patterns. This classification categorizes bilinguals into distinct groups based on their level of dominance in each language. At one end there are individuals who exhibit clear dominance in one language over the other, often referred to as unbalanced or asymmetrical bilinguals. These individuals typically demonstrate superior proficiency and fluency in their dominant language compared to their second language (L2). In contrast, those that are dominant in both languages to the same degree, and they show the same level of acquisition in various tests are called balanced bilinguals (Grosjean, 1982).

The two aims of the thesis are (1) to review literature on the topic of language bilingualism and how language dominance is understood as a theoretical construct and its application in psycholinguistic studies which include language dominance as a variable (2) to propose an instrument for assessing language dominance of people who reached high levels of proficiency in a foreign language.

The thesis is structured as follows. Chapter 2 reviews literature of bilingualism and language dominance including the complementarity principle, the connection between bilingualism, Second Language Acquisition and immersion, the link between bilingualism and psycholinguistics, i.e., psycholinguistic studies of bilingual language

processing, the relation of bilingualism and age, the connection of language dominance and age as well as attrition, and how language dominance can be measured. The literature review is followed by a discussion of constructing a language dominance questionnaire. The questionnaire is designed for advanced learners of English who study the language as an academic subject at universities, such as students of the Department of English and American studies at Palacký University. The point of the questionnaire is to estimate which language is dominant in individual learners and to see whether language learning in formal settings can lead to a shift in language dominance.

2　Literature Review

Bilingualism, the adaptation of two or more languages, is a fascinating and complex aspect of human cognition that has gathered considerable attention from researchers across various disciplines, including linguistics, psychology, neuroscience, and education. In linguistics, they try to unfold the bilingual language acquisition, exploring phenomena such as code-switching, language transfer, and bilingual language processing. Through an analysis of linguistic data, they try to explain the underlying mechanisms that govern language use and proficiency in bilingual contexts. Psychologists investigate the cognitive mechanisms underlying language processing, memory, and executive control in bilingual individuals. Neuroscientists employ advanced imaging techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) to explain the neural correlates of bilingual language processing, highlighting the plasticity and adaptability of the bilingual brain.

All these disciplines are also applicable for language dominance, a highly discussed phenomenon within the field of bilingualism. The study of language dominance draws upon insights from linguistics to understand language structure and acquisition, psychology to examine cognitive mechanisms underlying bilingualism, and sociocultural perspectives to explore the role of language in social interaction. This literature review seeks to provide a comprehensive overview of the existing research on bilingualism and language dominance, highlighting the complex interaction between linguistic, cognitive, and sociocultural factors. It aims to deepen our understanding of how language dominance manifests and evolves within bilingual individuals and communities.

2.1　Bilingualism

First, it is appropriate to define who is a bilingual person. Grosjean and Li (2013, p. 5) defines bilingualism as "the use of two or more languages (or dialects) in everyday life." However, Treffers-Daller (2019) states that the term can refer to a wide range of

people, from those who can say only a few sentences in another language to those whose language abilities in two or more languages are on a high level. Hoffmann (2014) points out there is a large spectrum of circumstances in which people become bilingual, such as:

(1) a small child speaking English to one parent and Welsh to the other one;

(2) a child from an Italian immigrant family living in the States who speaks English at home and outside, but his relatives speak to him in Italian;

(3) a young person who has studied French for several years;

(4) a Portuguese chemist who can read English-written books that are specialized in his subject;

(5) a Danish immigrant in New Zealand who has not used Danish for forty years.

Bilingual speakers differ in various aspects (e.g. Grosjean, 1997), from the basic variables such as age, gender and education to the number of languages known and their competence in each of them, or individuals' language history (when and how the languages were acquired) (Grosjean, 1997). There are bilinguals who acquire two languages from childhood as children of parents who speak different languages. Many people grow up in a community with two languages of communication – they know the official language that they use for formal purposes, and then there is another language they use in an informal setting. Then there are people who emigrate to another country and have to learn a new language and become bilingual as well as people who marry a person whose native language differs, or people who find work opportunities abroad where they face another language that they start learning. They use their languages for different purposes, to achieve different things. Therefore, their vocabulary of one language may completely differ from the vocabulary of the other language. It is also important to mention that children all over the world learn a second language at school and at some point they start to be bilingual. Besides, there is even more variation for multilingual speakers. Considering, for example, the order in which languages are learned. For a trilingual, there are even four possible models of how this person acquired

the three languages. Firstly he/she can acquire the languages in any order, such as L1 (first language), L2 and L3 (third language). Secondly, he/she can acquire L1 and then two L2 at the same time. Thirdly, he/she can start as a bilingual, having two L1, and later on add L3. Fourthly, he/she can acquire three languages at the same time and have three L1s (Butler, 2012).

What differentiates one bilingual from another and from a monolingual person is their language competence. Bilinguals are not two monolinguals in one person (Grosjean 1989), their linguistic competences are not autonomous and isolated from each other. Further, their knowledge of L1 and L2 may not be coextensive. For example, on the level of lexical knowledge, a bilingual may not have two words for any given concept, one in each language. However, this has not always been the view in linguistics. In generative linguistic theory, a view has been promoted since the 1960s according to which the object of linguistic investigation is "an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance" (Chomsky 1965, p. 3). One kind of criticism leveled against the Chomskyan view of linguistics focuses on statistics - nearly half of the world's population is bilingual, therefore basing linguistic descriptions on monolinguals is very limiting.

Moreover, this view sees the "true" bilingual as a person whose languages are fully and identically developed, failing to take into account a person's needs for the two languages (Grosjean 1989). The monolingual perspective on L2 learning and bilingualism is rejected in Cook (1995); he suggests that the appropriate model when comparing two bilinguals is a successful L2 learner who uses L2 for his/her needs, not a monolingual. He also coined the term multi-competence, originally defined as 'the compound state of a mind with two grammars' (Cook, 1991) and later redefined as 'the knowledge of more

than one language in the same mind' (Cook, 2012). Support for the claim that the mind of a monolingual is different from that of a bilingual person may be, for example, the study by Marecka et al. (2016). They studied the cross-linguistic influence of Polish immigrants to the United Kingdom, and they compared the speech of monolinguals with the speech of bilinguals. Their results showed that the speech patterns of monolingual children differed from those of bilingual children due to the influence of English. Another evidence in favor of the difference between monolinguals and bilinguals is the study by Dussias and Sagarra (2007) on syntactic parsing in L1 of Spanish-English bilinguals. They asked 88 people (44 monolinguals of Spanish, 24 proficient Spanish-English speakers with limited immersion experience and 20 proficient Spanish-English speakers with extensive immersion experience) to match a relative clause preceded by a complex noun phrase with the first or the second noun of the phrase[1] and detangle the ambiguity. The results showed that the Spanish-English bilinguals with extensive immersion attached the relative clause to the second noun as this interpretation is more common in English.

Among many differences, bilinguals can be also characterized according to language dominance that can be defined as "the difference in proficiency in a bilingual's two languages" (Silva-Corvalán and Treffers-Daller 2015, p. 7). It is very common that a bilingual person has a stronger and a weaker language. An ideal example of bilingualism is, however, a balanced one – a concept that two languages are used symmetrically in all domains (domains are discussed in a greater detail in the section 2.1.1). Yet, bilinguals are usually not identically skilled in all domains of L2 use and in all four skills, i.e., listening, reading, writing and speaking (e.g. Baker, 2006). Frequently, bilinguals master one domain over the other, or they can speak one of their languages, but they cannot use

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[1] (1) An armed robber shot the sister of the actor who was on the balcony.

(2) Un ladrón armado le disparó a la hermana del actor que estaba en el balcón.

it to write. Then we talk about people that are dominant in one of their languages. Nevertheless, it is difficult to specify where the point separating dominant and balanced bilingualism is. According to Treffers-Daller (2019), differences in language exposure and language use are believed to be the main factors that determine language dominance. For Luk and Bialystok (2013) the most relevant differentiating aspects between bilinguals are language use and language proficiency.

It is essential to recognize that language dominance in bilingual individuals is a multifaceted phenomenon influenced by various factors. While balanced bilingualism, that is characterized by symmetrical proficiency across both languages and domains, is often a desired goal for bilingual individuals, achieving perfect equilibrium between languages is rare in practice. Instead, the reality for most bilinguals is that they exhibit varying degrees of proficiency and dominance in their languages, with one language typically emerging as stronger or more dominant than the other. This dominance may manifest across different linguistic domains, such as speaking, listening, reading, and writing, as well as in various socio-cultural contexts. Beyond mere proficiency, language dominance is influenced by a combination of linguistic, socio-cultural, and individual factors, each contributing to the unique language profile of bilinguals. These factors may include language exposure, language learning environment, socio-economic background, cultural identity, and individual language learning strategies.

The discussion about bilingual language use led to the concept of language mode introduced by Grosjean (e.g., Grosjean, 2001). According to Grosjean and Li (2013) it can be defined as "the state of activation of the bilingual's languages and language processing mechanisms at a given point in time" (p. 15) and bilinguals might vary from other bilinguals in the movement along the language mode continuum. Both languages are partially engaged during the bilingual mode, therefore those who use both languages on a daily basis hardly ever find themselves at the monolingual end of the continuum. On the other hand, those who rarely use both languages in their everyday lives probably do

not move to the bilingual endpoint of the continuum. However, there are bilinguals who move along the continuum depending on who they are speaking to, where they are, what they are doing, what they are discussing, and other factors. This movement can occur anytime and anyplace, one can start a conversation at the bilingual end of the continuum, but his/her interlocutor, even though being bilingual, may not accept the slips into the other language. Therefore, the unwanted language becomes deactivated, and the person moves to the monolingual end of the continuum. It is also possible the other way around, someone can start at the monolingual end and soon move to the bilingual end as he/she realizes that the interlocutor shares the same languages (Grosjean and Li, 2013). Moreover, in situations where a bilingual speaker is required to use their dominant language, they typically exhibit greater ease when compared to situations where their less dominant language is needed. This phenomenon is often observed in various contexts. When using their dominant language, bilingual individuals often demonstrate faster processing speed and more accurate language production, resulting in automaticity and efficiency in language processing. The other way around, when confronted with tasks or situations that require the use of their less dominant language, bilingual speakers may experience difficulties such as occasional language errors. These challenges arise due to the need for conscious monitoring and retrieval of linguistic information from the less dominant language, which may not be as readily accessible or well-practiced as the dominant language in this context.

2.1.1 Bilingual Language Use – The Complementarity Principle

Language mode that was discussed in the previous section describes the level of activation of bilinguals' languages; the Complementarity principle (CP) characterizes bilingual language use in terms of the need for having two or more languages; it helps in understanding the range of languages of bilinguals and why their languages are developed in a certain way.

The fact is that bilinguals generally use their languages in different occasions, in different domains, with different people, and they may require different languages for various situations (Grosjean, 1997). Each language may serve specific purposes or fulfill particular communicative needs that leads to differential language use patterns. While certain domains may be tied to one language, such as using the native language at home or the second language at work, there are also domains where bilinguals switch between languages. However, it is rare for bilinguals to use all their languages across every domain (Grosjean, 2013). Instead, they tend to select the most appropriate language based on factors such as the linguistic demands of the situation, the cultural context, and the language preferences of their interlocutors. This selective language use reflects the dynamic and adaptive nature of bilingual communication, highlighting the flexibility that bilingual individuals possess.

In addition, Grosjean (2015) builds upon Mackey's (1962) understanding of language functions of bilinguals' languages. Mackey (1962) divides these functions into external functions, i.e., the use of a language in various domains, and internal function, i.e., the non-communicative language use (praying, counting, etc.). Most bilinguals, however, tend to perform well-learned behaviors (e.g., counting, mathematical computations, praying) in the language they acquired these skills. While bilingual individuals may be able to recite a prayer fluently in one language, they often struggle to do so in another language due to not having learned it in that particular language (Grosjean, 2010). Then Grosjean (2015) notes that every bilingual can be characterized according to the domains in which he/she uses their languages, and every bilingual will be represented by a pattern specific to him/her.

When taking into account the CP and language dominance, one can say that dominance is domain-specific because a bilingual can be dominant in one language in certain domains, for other domains other language might dominate, and yet for some domains he/she can be a balanced bilingual (Grosjean, 2015). Furthermore, Grosjean

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(2015) refers to Weinreich (1953) to demonstrate that the CP is applicable also for children. Children who are accustomed to discussing specific topics or engaging in certain activities in a monolingual environment, such as a school where only one language is spoken, may face challenges when attempting to discuss the same topics or activities in their second language.

In order to evaluate the CP, Grosjean (2015) developed a Complementarity Index (CI) to determine the degree of complementarity that "ranges from 0% (all topics or activities are covered equally by the two languages) to 100% (topics or activities are language specific; none are covered by both languages)" (Grosjean 2015, p. 72). Fifty percent signifies that the two languages are used in half of the topics or activities and one language is used in the other half. Gasser (2000) in her study asked English-German bilinguals to rate their usage of English and German in their lives. Apart from participants' biography and language history, the bilinguals were asked about the distribution of their languages across various topics and activities. The topics that were covered were for example work/studies, immediate family, distant family, leisure, shopping, etc. The part with activities included, for example writing, note taking, counting, singing alone, praying, speaking to oneself, etc. The results of this study demonstrate that for this group of bilinguals, many topics and activities are language-specific, for example English was used more when talking about family and love, and German was preferred when talking about sport, transportation. Clearly, the results obtained by this study support the claim that different domains of one's life require different languages.

A study by Carroll and Luna (2011) shows that the CP is also important in bilingual language processing. They gave a lexical decision task to two groups of participants. One group was asked about English words that matched their English-language content area, i.e., work, and about Spanish words that matched their Spanish-language content area (family and friends). The other group came from the field of family and friends, and

Spanish words were connected to work. The results showed that CP does matter in language processing. Spanish words from Spanish-language content area (family and friends) were recognized faster and the same for English words from English-language content area (work).

In addition, the domains of language use may affect later recall of what was said during a specific interaction. Marian and Neisser (2000) in their study show that events that occurred in a certain language are better remembered and described in the same language, they call this "language-dependent" recall. They studied Russian-English bilinguals and their retrieval of various life experiences in order to test the hypothesis that memories and language are connected. To illustrate their hypothesis, they mention a real example described by Aneta Pavlenko (personal communication, 1998) when she was asked in Russian to give her apartment number in the United States, but her response was the number of her apartment in Russia. The results obtained in their study show that the language used influences which memories will be accessed, the Russian memories were better retrieved in the interview in Russian and the English memories were better recalled in the interview in English.

Overall, the Complementarity Principle offers invaluable insights into the complexities of bilingual language processing and behavior. Shedding light on how bilingual individuals strategically use their languages in diverse linguistic contexts deepens our comprehension of the multifaceted nature of bilingualism. Through its exploration of the way bilinguals effectively communicate and interact across different language domains, the Complementarity Principle offers an understanding of the adaptive strategies employed by bilingual individuals to handle the complexities of language use.

2.1.2 Bilingualism and Age

Age in bilingual research is the point at which L2 learning starts (age of acquisition, AoA). It is a factor that helps us in determining language dominance of an individual learner. The study by Flege et al. (2002) suggests that, based on self-ratings, age of arrival

and use of L1 affect language dominance. As Birdsong (2014) states, AoA is considered to stand in the way of L2 to become the dominant language. However, L1 does not always have to be the dominant language, AoA can predict the timing and degree of L1 attrition (more about language attrition in section 2.2.2) which means that L2 can become the dominant language.

A study by Ecke and Shishkin (2018) proves their hypothesis that younger learners succeed more in L2 acquisition than older learners. In their study, the younger group surpassed the older group, they scored higher in verbal fluency tests, and they responded faster in the Stroop task (more about this test in section 2.1.5). This advantage seems to be due to their age of arrival and years of formal education in the United States of America. It is expected that the younger group receives more L2 input in various domains, such as school, friends, work, entertainment, etc., therefore they use the L2 in more variable ways than the older group of immigrants. When the participants were asked to indicate their language use in different domains, the older group used mostly Russian, on average in 12 domains, while English rarely, in six domains. Compared to the younger group, they used English in 11 domains and Russian in seven domains.

Overall, age of arrival and language dominance are interconnected and influenced by various environmental, social, and individual factors. While age of arrival plays a significant role in shaping the course of language acquisition, it is not the only determinant of dominance. Early exposure to a language often leads to higher proficiency levels, which in turn can influence language dominance. However, language dominance can also shift over time based on changes in language use patterns and experiences. Therefore, while age of arrival sets the stage for bilingual development, proficiency and language dominance emerge as dynamic constructs that are shaped by ongoing linguistic interactions and experiences throughout the lifespan.

2.1.3 Balanced vs Dominant Bilingualism

As discussed in the previous section, bilinguals use their languages for different purposes, in different domains. Bilingual individuals use their languages across diverse purposes and domains, reflecting the nature of bilingual language use. In various contexts, such as academic, or professional settings, bilinguals engage with their languages to fulfill specific communicative needs and achieve particular goals. For instance, they may use one language predominantly in an academic environment, while employing their other language more frequently in professional interactions. This flexibility allows bilinguals to adapt their language choices based on the linguistic demands of each domain. In this respect, it is possible to say that dominance is language specific, because one can be dominant in one language in a certain domain and dominant in the other language in different domains; or one can be balanced.

Birdsong (2015) refers to two approaches to balanced bilingualism – an across-domain and a within-domain approach. The former one refers to balanced bilinguals when they use one language for half of the domains under study, and the second language for the other half of the domains. On the other hand, the latter refers to that a balanced bilingual is a person who uses both of the languages in a certain domain with neither language being favored over the other in terms of frequency of use.

Unlike dominant bilinguals, who exhibit a clear superiority in one language over the other, balanced bilinguals show a high degree of symmetry in their language abilities. This balance extends across various language skills, including listening, speaking, reading, and writing, as well as different linguistic domains and contexts. Treffers-Daller (2015) in her overview of various studies that deal with the operationalization of balance and dominance (e.g., Lambert et al., 1959; Treffers-Daller and Korybski, 2015; Gollan et al., 2012) shows that there are balanced bilinguals but with respect to a certain criterion, therefore the proportion of balanced and dominant bilinguals differ in each study. In Lambert's et al. (1959) study, nearly 70% of participants were balanced according to

reaction time in two languages, Treffers-Daller and Korybski (2015) measured balance with respect to lexical diversity with 72% of balanced bilinguals. Gollan et al. (2012) utilized a picture naming task and the results showed only 20% of balanced bilinguals. Yet, it is common to divide bilinguals into these two groups despite the fact that the notion of balanced bilingualism is questionable.

Treffers-Daller (2015) concludes that even though researchers may find bilinguals who are balanced according to one selected variable, it does not necessarily mean that they are universally balanced. It can emerge under certain conditions, such as early and extensive exposure to multiple languages, consistent and balanced use of both languages in various contexts, and positive attitudes towards language learning. However, achieving and maintaining balanced bilingualism requires ongoing practice and exposure of language skills throughout the individual's life.

2.1.4 The Role of Language Immersion

People can become bilingual in many different ways, many of them through learning the language in a classroom setting. While a bilingual person has already achieved fluency in two languages, a language learner is actively working towards acquiring proficiency in a new language. Bilinguals are able to use both languages, and they may use each language interchangeably depending on the context. A language learner, on the other hand, is someone who is in the process of acquiring proficiency in a new language. They may be at various stages of proficiency, ranging from beginners who are just starting to learn the basics of a language to advanced learners who are approaching fluency. These learners typically attend classes to study English as their second language, whether they are in non-English-speaking countries or English-speaking ones. However, programs for English as a second language are often found to be less effective in achieving proficiency (Alanís, 2000). These diverse paths to bilingualism can influence language dominance. For instance, individuals attending English as a second language classes may experience challenges in achieving high

proficiency, which could affect the dominance of English. This suggests that the effectiveness of language learning programs may play a role in shaping language dominance among bilingual individuals.

Thus, another possibility for language education is a two-way (or dual) bilingual education that involves teaching the school curriculum in two languages with the goal of becoming proficient in the two languages used for communication and learning and also becoming bicultural (Block, 2011). It usually involves a majority, i.e., a native language of the majority of the participants in the class, and a minority language, i.e., a native language used by the smaller part of the group. There are two basic models of approaching two-way immersion – the 90/10 model and the 50/50 model. The former includes the majority of instruction provided in a minority language in the primary grades with a gradual increase to a majority language, whereas the latter includes instruction more or less equally divided between the two languages in all grades (Howard et al., 2003). Nevertheless, this type of education excludes programs where an L2 is taught only in foreign language classes.

The two-way immersion program started more than 40 years ago with the Ecole Bilingue, a French/English program in Massachusetts, and Coral Way, a Spanish/English program in Florida and the majority of these programs are Spanish/English ones (Howard et al., 2003). This kind of schooling is also advantageous for native English speakers as the United States has not had a strong education system of a foreign language. Even though the two-way immersion program can help develop strong abilities of oral and written competence in a second language (Howard et al., 2003), the study by Alanís (2000) shows that not all of the 85 fifth-grade participants of the two-way immersion program were developing bilingual proficiency. The scores show that most of the students reached a high level of English proficiency, but not of Spanish proficiency. Yet, this difference might be caused due to teachers' lack of usage of Spanish language and Spanish resources. As accurately noted by Michael and Gollan (2005), immersion

experience can be one of the main factors that influence how well an individual becomes proficient.

Immersion leads not only to proficiency, but also to dominance. A point discussed by the researchers with respect to language education is the distinction between additive or subtractive bilingualism that can be influential in terms of dominance and reversed dominance (a phenomenon discussed in section 2.1.5). Additive approach aims to maintain students' bilingualism by adding another language (such as the two-way immersion program), whereas subtractive bilingualism tries to shift students to become dominant in one language and lose or replace one language with another. However, the subtractive approach is not beneficial, and it was mostly used in the United States for L1 Spanish speakers from the 1970s onwards to shift students from their L1 towards the dominant language – English. On the other hand, the additive approach is typical for national minority group members (such as Welsh in Great Britain, or Catalan in Spain) or for programs where minority language is used in teaching the majority language students (May, 2008).

Nevertheless, the usefulness of bilingual programs is a matter of debate. Baker and de Kanter (1981) replicated a research by the American Institutes for Research (AIR) to evaluate bilingual programs and the results showed that the bilingual education did not demonstrate educational advantages over programs taught only in English. Even though this study is very often quoted, it is also heavily criticized due to the methodology that was employed (Baker and de Kanter rejected the collected data through students' L1) (May, 2008). In this respect, Thomas and Collier (2002) conducted a study where they show that students from bilingual programs outperform those from monolingual programs.

Another type of bilingual program is a two-way immersion program where half the students are L1 native speakers, and the other half are L2 native speakers. Students are taught by two native speakers (of L1 and of L2) and half the instruction time is in L1 and

half in L2. The research by Cazabon et al. (1998) focuses on the development of bilingualism in the two-way immersion program called Amigos with English-speaking students and Spanish-speaking students and the results show that both groups were developing balanced skills in the two languages (English and Spanish) not only from the instruction but also from the daily contact with the other group.

Additionally, an end point that is expected to come with language learning is ultimate attainment, an outcome of acquiring the highest possible development in the second language (Chan, 2018). A study by Bongaerts (2005) shows that some adult L2 learners are capable of achieving pronunciation that is native-like. In his research, a group of native-speaker judges was asked to make a distinction between a group of highly successful learners and native speakers. The result was that the judges had seemed not to be able to make such a distinction. Most importantly, the average score of the highly successful learners was higher than that of the group of the native speakers. The author hypothesized that the reason for this unexpected outcome may have been due to the regional differences. The group of native speakers was from the south of England or from the Midlands and their pronunciation included some regional characteristics, whereas the group of judges came from the north of England. The group of successful learners had received the standard pronunciation of British English called Received Pronunciation. Therefore, a different study was performed that proved their hypothesis to be true. In this study, the group of native speakers received high scores as the group of successful learners. However, these results cannot be generalized to any two languages. The study by Bongaerts (2005) included Dutch and English, typologically similar languages. In his third study, he conducted another experiment with Dutch learners of French and the results showed that the group of native speakers performed better than the group of highly successful learners. Only a few individuals of the successful learners were judged as native speakers. Typological differences, however, are not the only factor that influence the ultimate attainment. In general, older learners are less likely to obtain native-likeness

in the L2. Flege (1995) argues that after establishing the phonetic categories for the first language, bilingual individuals tend to perceive the sounds of their second language based on those L1 categories. This is especially true for L2 sounds that closely resemble sounds in their L1. The more similar an L2 sound is to the nearest L1 sound, the less likely the learner is to recognize the subtle differences that exist between the two sounds.

2.1.5 Bilingualism and Psycholinguistics

Becoming bilingual involves a complex process that goes beyond simply acquiring two languages. It requires the development of distinct linguistic systems within the mind and the ability to navigate between them smoothly. The bilingual mind must not only learn the vocabulary and grammar of each language but also develop strategies for managing two linguistic systems simultaneously. This includes the ability to switch between languages depending on the context, inhibit one language while using the other, and even blend elements of both languages in a process known as code-switching. This suggests that the bilingual mind operates in a unique way, constantly processing and balancing two linguistic systems to effectively communicate and function in diverse linguistic environments.

In addition, the relationship between proficiency and dominance in bilingualism needs to be respected. Proficiency refers to the level of skill or fluency that an individual has in a particular language, encompassing various linguistic aspects such as vocabulary, grammar, pronunciation, and comprehension. On the other hand, dominance refers to the relative strength or preference that an individual has for one language over another. Higher proficiency in a language often correlates with greater dominance in that language. Individuals tend to feel more confident and comfortable using languages in which they are proficient. Therefore, if someone has a high level of proficiency in a particular language, they may naturally incline towards using that language in various domains of life, thus establishing dominance.

A key issue in bilingual language processing is language control. It refers to the cognitive processes involved in managing and regulating the use of two or more languages. It encompasses the ability to selectively activate and inhibit language representations in order to effectively communicate in the desired language according to the situation. Studies show that suppressing words in L1 tends to be more difficult than suppressing L2 words. In other words, there is less inhibition required for the less dominant second language when speaking in the dominant L1. Nevertheless, when a bilingual is speaking in the weaker L2, the L1 must be strongly inhibited. Consequently, switching back to the L1 will be difficult due to the strong inhibition that was applied in the preceding task. This asymmetry in inhibition between the dominant L1 and the weaker L2 becomes evident in language switching tasks. When bilinguals are required to suppress words in their dominant L1 while speaking in the weaker L2, they often experience greater difficulty and slower response times. Empirical support for these studies is found in language switching showing that there are more significant language-switching costs for switching from L2 to L1 than vice versa. For example, Meuter and Allport (1999) asked bilingual speakers to name Arabic numbers from 1 to 9 unpredictably in their L1 or L2 and the results show slower responses in L1 than in L2 demonstrating that switching from L2 to L1 is more difficult. This phenomenon, when bilinguals respond faster in their non-dominant language, is called reversed dominance. There are several studies that show it in mixed language contexts. Even though it is easier for a bilingual to produce words in the dominant language, the study by Gollan and Kleinman (2018) shows that naming pictures in the non-dominant language increasingly delays the following naming of unrelated pictures in the dominant language. In this respect, it is assumed that the more often a bilingual names a picture in the non-dominant language, the more inhibition the dominant language gets. Likewise in the study by Van Assche et al. (2013) where English-dominant Chinese-English bilinguals demonstrate

that after performing a Chinese phonemic fluency task, they produce less responses in an English letter fluency task.

It is known that both languages of a bilingual speaker are always active, and they cannot be inhibited completely. In a study by Colomé (2001), the participants, Catalan-Spanish bilinguals, after seeing a picture, were asked to press 'yes' or 'no' depending on whether a certain phoneme was in the Catalan name for the picture or not. When they saw a picture of a table, the bilinguals would press 'yes' for the phoneme /t/ because table in Catalan is taula. They would respond 'no' for the phoneme /m/ that is present in the Spanish word mesa. The results show that response times were slower for phonemes such as /m/ because it is part of the word in the non-target language while the phoneme /f/ is in neither of the languages. Moreover, a study by Ivanova and Costa (2008) demonstrates that highly proficient and L1 dominant bilinguals show slower naming performance than monolinguals. This bilingual disadvantage can be explained in terms of frequency because they use the L1 words less often than monolinguals, therefore they need more time to retrieve them.

In addition to the bilingual disadvantage, the study by Folke et al. (2016) demonstrates a disadvantage in metacognitive processes, i.e., processes that involve awareness, monitoring, and regulation of one's own cognitive activities. The researchers conducted experiments that involved monolingual and bilingual participants to examine their metacognitive abilities in various tasks. One experiment focused on memory retrieval, where participants were asked to learn and recall word pairs. Another experiment assessed participants' ability to monitor their confidence in making decisions. The results revealed that bilingual individuals exhibited a disadvantage in metacognitive processing compared to monolinguals. The bilingual participants showed reduced metacognitive sensitivity, they were less accurate in assessing their own cognitive performance and monitoring their confidence levels. This finding was consistent across different tasks and conditions.

The most widely accepted model of bilingual language processing that explains certain characteristics of individual differences in bilingual processing is the Inhibitory Control Model (Green, 1998). It hypothesizes that bilingual language processing involves the active suppression of the non-target language in order to facilitate fluent and efficient communication in the target language and proposes that lexical units are suppressed in the non-target language so that there is no interference in the target language and this inhibition is used to help the selection of the target language. It explains how bilingual individuals manage their two languages. It focuses on the cognitive processes involved in language switching and the control mechanisms that help bilinguals to selectively activate and deactivate their languages. Unlike monolinguals, bilinguals must select a language in which they will perform, and it is suggested that the Inhibitory Control Model (ICM) can be applied also at the language level, i.e., a bilingual does not only choose the task to perform, but also the language in which to perform (Michael and Gollan, 2005). In addition, one type of behavior that is common only for bilinguals is code-switching, "the alternating use of two languages in the same stretch of discourse by a bilingual speaker" (Bullock and Toribio 2009, p. xii). The Inhibitory Control Model suggests that language switching involves inhibiting the currently active language while activating the new language. This process requires the ability to shift quickly and flexibly between language systems while in communication. It also serves as an evidence that L2 is never completely turned off in a bilingual mind, therefore monolinguals cannot be compared to bilinguals and expect the same performance.

An observation made from studies on ICM is that proficiency does not play a role in suppression, all bilinguals at all stages must be capable of suppressing L1 words in order to produce words in L2. The study by Ecke and Shishkin (2018) supports it. Their study explored language control abilities among younger and older groups of Russian-English immigrants with similar length of residence in the US. The older group of immigrants, who were also unbalanced bilinguals in terms of proficiency, displayed equal

abilities in language control as the younger group that was fluent in both languages. Ecke and Shishkin (2018) suggests that these language control abilities rely on stability in language system and language usage, because the older group of immigrants control the two languages in everyday life, and they use them regularly in certain domains. However, this inhibition ability declines with age as proposed by the Inhibitory Deficit Hypothesis (Hasher, 2015). As individuals age, they experience a decline in their ability to inhibit irrelevant information or suppress distracting stimuli. This decline in inhibitory control can lead to difficulties in filtering out irrelevant information, maintaining attention on relevant tasks, and resisting interference from irrelevant cues. In the study by Gollan et al. (2021), the older group of bilinguals showed more errors which provides evidence for this hypothesis.

A significant stage in language production is a lexical selection, i.e., a mechanism when the intended words are retrieved from the speaker's lexicon. This selection is needed because there are several lexical representations that are activated, not only the items that match the intended meaning but also other semantically related ones, with the activation of the lexical node 'cat' comes activation of 'miaow' or 'mouse'. In this respect, it is believed that during the process of lexical selection in one language, lexical nodes from both languages get activated (Costa and Santesteban, 2004). A study by Colomé (2001) mentioned earlier proves this hypothesis. The findings revealed that participants required more time to reject the phoneme when it appeared in the Spanish word compared to the control condition.

Based on the Inhibitory Control Model, balanced bilinguals should need a lot less inhibition due to their approximately similar language proficiency in both languages, therefore it is expected that the amount of inhibition would be similar in both languages. In this respect, less balanced bilinguals should benefit more from the inhibition of the dominant language, and they are expected to show a larger reversed dominance effect. In the study on picture naming in mixed-language blocks, however, those who show more

reversed dominance are balanced bilinguals (Declerck et al., 2020). In the study by Costa and Santesteban (2004), highly proficient bilinguals also showed slower naming in their L1 than in their L2. Regarding this, they proposed an alternative theory that is independent of the inhibitory control. They proposed that reversed dominance depends on a mechanism that is evolved only in highly balanced bilinguals. This means that only balanced bilinguals would exhibit reversed language dominance. Nevertheless, there are also studies showing a reversed dominance effect in unbalanced bilinguals (e.g., Peeters and Dijkstra, 2018).

A different experimental paradigm that is used for assessing bilinguals' language control is the bilingual Stroop test. It is a test that examines the interference effect on naming responses, i.e., the distinction between a neutral response time (without any interfering words) and the naming time that is conditioned by an incongruent word. The point of the monolingual version of the test is to name a color while controlling a congruent additional stimulus (the printed word blue corresponds to the color) or an incongruent additional stimulus (the printed word yellow does not correspond to the color). Thus, the task with incongruent stimulus takes more time to name due to the interference of the incongruent word with the color to name (Ecke and Shishkin, 2018).

In the bilingual version of the Stroop test there are two language conditions. While in an intralingual condition participants deal only with one language (for example English), in an interlingual condition a second language comes in (for example Portuguese). In the former, the bilinguals are asked to name the print color of the words blue (congruent stimulus) and yellow (incongruent stimulus). In both cases the correct response is blue. In the latter condition, the participants name in English the print color of the Portuguese words vermelho 'red' (congruent stimulus) and verde 'green' (incongruent stimulus) and the correct answer is red. The aim of the bilingual Stroop test is to examine the ability to control bilingual's two languages. Studies have shown that the interference effects (time costs) are more significant in intralingual conditions, it takes

participants more time to name the word in intralingual conditions. It is proposed that suppressing the incongruent stimulus depends on the proficiency of the interfering language of a bilingual, on the proficiency of the response language and on the similarity between the two languages. Therefore, it is assumed that the higher proficiency level of the interfering language, the larger is the interference effect (Ecke and Shishkin, 2018).

Interestingly, the research on trilinguals shows that the non-native languages interfere with each other more than with the native language, i.e., the third language (L3) interacts more with L2 than with L1 and vice versa (Duyck et al., 2021). This phenomenon was described as the foreign language effect (Meisel, 1983). In this respect, Williams and Hammarberg (1998) in their study of language production in an English-German-Swedish trilingual show that when a trilingual switches from the L3, he/she switches almost every time into the L2. The authors suggest that while the L2 and the L3 are switched on in L3 speech production, the L1 gets more inhibition. A potential explanation for this phenomenon, that the cognitive system treats the languages similarly, given by Bardel and Falk (2012) says it is due to the cognitive similarity between the languages, i.e., they are learned in a similar way (similar age of acquisition, similar learning contexts, etc.).

2.2   The Dynamics of Language Dominance

Language dominance in bilingual individuals is indeed a complex and multifaceted phenomenon shaped by a multitude of factors. It connects age of language acquisition, variability in language use, proficiency, and the plasticity of the human brain among others. Age of language acquisition plays a significant role in shaping linguistic dominance. Bilingual individuals who acquire their languages early in childhood may develop a stronger foundation in both languages and it can potentially lead to more balanced bilingualism. In contrast, late bilinguals who acquire a second language later in life may experience asymmetrical proficiency levels, with one language becoming more dominant over time.

According to Treffers-Daller (2019), language dominance refers to the strength of a bilingual's language proficiency with dominant language being the more developed one (Snape and Kupisch, 2016). However, it is not static. As time goes by, a bilingual's languages may evolve. A language that used to be the stronger one may fade due to some circumstances, such as moving abroad, and the weaker language becomes more dominant. Although determining language dominance can be complex, with considerations such as fluency alone, fluency and use, or even proficiency in reading and writing, the primary focus for many experts lies on fluency - subjective (based on self-reports) and objective fluency (evaluated through assessment tools).

Furthermore, Grosjean (2002) discusses the process of gaining fluency in a second language while losing fluency in the first language, known as language restructuring. He mentions a person whose dominant language has changed four times in 50 years where the second language was the dominant one. Therefore, it is appropriate not to assume that a person's mother tongue is the dominant language (Grosjean, 2013). A large study documenting a change in language dominance is by Bahrick et al. (1994). The authors studied 801 Mexican-American immigrants who had arrived in the United States between the ages of 10 and 26. The results show that English became the dominant language for most of these individuals after approximately 12 years of residence. This shows that language dominance can change with time in young children and also in adults. In addition, not only can language dominance shift but it can also shift back and the L1 might become the dominant language again (Birdsong, 2018). These switches are possible due to changing circumstances including immigration, educational or social reasons, etc. The shifts in dominance are usually caused by attrition of L1 and this may be affected by the age at which attrition starts happening (Birdsong, 2014). He notes that younger bilinguals who are exposed to the L2 at an earlier age, during critical periods of language development, may experience more significant changes in language dominance. This is because the constant use and immersion in the L2 during formative years can lead

to the gradual attrition of the L1. As a result, the L2 may become more dominant, and the bilingual individual may exhibit greater proficiency and comfort in using the L2 in various contexts. However, not all studies find evidence of shifts in language dominance. Kupisch and Van de Weijer (2015) studied German-French adult simultaneous bilinguals and concluded that the childhood language environment significantly impacts language dominance in adult simultaneous bilinguals. They found that the language spoken at home during early childhood plays a crucial role in determining which language becomes dominant later in life. Specifically, individuals who were exposed to a balanced input of both German and French at home tended to exhibit more balanced language dominance as adults. Those who experienced a dominance of one language over the other at home often displayed a corresponding dominance of that language in their adulthood. These findings highlight the influence of early language exposure and support the notion that the childhood environment shapes the course of language development and dominance in bilingual individuals. They also concluded that language dominance is not likely to change during adulthood, at least not with simultaneous bilinguals. A part of their participants had moved to Germany during their adulthood and had lived there for varying lengths of time. The researchers proposed that if the surrounding language environment significantly impacted language proficiency in adulthood, an increase in length of residence in Germany would result in higher proficiency in German and lower proficiency in French. Their regression analysis, however, did not show significant correlation between length of residence after the age of 19 and language proficiency.

Moreover, the concept of language dominance is not static but rather a dynamic subject to change over time. Factors such as changes in language use patterns, shifts in socio-cultural contexts, life experiences, and continued language learning opportunities can all influence the relative dominance of each language in a bilingual individual's repertoire. As such, language dominance should be viewed as an evolving aspect of bilingual identity rather than fixed. As bilingual individuals go through various life stages

and contexts, their language dominance may undergo shifts and adaptations in response to changing environments and experiences. For example, exposure to a new linguistic community in a different cultural setting may lead to a reevaluation of language preferences. Similarly, changes in professional or academic field may require increased use and proficiency in one language over another.

Furthermore, the perception of language dominance can vary among bilingual individuals and may be influenced by internal factors such as language attitudes, personal preferences, and feelings of proficiency, as well as external factors such as societal norms. Internally, factors such as language attitudes, personal preferences, and feelings of proficiency play a significant role in shaping one's perception of language dominance. Bilingual individuals may inherently incline towards one language over another based on their emotional connection, or perceived fluency. For instance, bilinguals may see themselves as more dominant in their heritage language due to a strong sense of cultural identity and pride associated with that language. This subjective understanding of language dominance adds another layer of complexity to the phenomenon.

2.2.1 Language Dominance and Child/Adult Bilinguals

Language dominance in early and late bilinguals can manifest differently due to variations in age of language acquisition, exposure, and proficiency levels. Adult bilinguals typically acquire a second language later in life, often after childhood or adolescence. They have already established a dominant language, which is their first language, their language system is fully developed. As already stated, with increased exposure and practice, the second language of late bilinguals may become more dominant over time, especially in contexts where it is used extensively.

It has been observed that the dominant and non-dominant languages of a bilingual develop in a different way (Treffers-Daller, 2019). Schlyter (1994) notes that the difference between the stronger and the weaker language is great. She claims that sometimes the development of the weaker language is similar to the development of

a second language, e.g., some aspects of grammar are acquired differently, or not at all. In her study of six bilingual French-Swedish children, she shows that the stronger language has characteristics of a first language in a monolingual child, whereas the weaker language is similar to the acquisition of a second language. The development of finiteness, word order, or placement of negation in the stronger language varies from these aspects of grammar in the weaker language. Even though many researchers think that in the weaker language some delay may occur in the progress of syntax (e.g, Bernardini and Schlyter, 2004), Meisel (2007) states that the children will catch up. Döpke (2000) argues that the weaker language is not acquired in the same way as a second language. The weaker language is acquired in a more naturalistic, integrated manner alongside the dominant language, often following the same developmental patterns and milestones as monolingual children learning a single language. This is because the weaker language is part of the child's linguistic environment from the beginning, even if it is used less frequently. In contrast, second language acquisition typically involves more conscious effort, explicit learning, and exposure to new linguistic structures and rules. Second language learners often rely on strategies such as memorization, language classes, or interaction with speakers of the target language to acquire proficiency. She gives an example of German and English, and she says that due to the similarities between these two languages, a bilingual child may struggle at first to acquire the structures in both languages, but the acquisition is similar to the monolingual children and not to the adult learners of a second language.

Proficiency in one's mother tongue, even if there are two of them, often develops naturally and effortlessly from early childhood, as individuals are immersed in a linguistic environment where their native language is spoken and used consistently in everyday situations. This early and continuous exposure to the mother tongue allows individuals to acquire linguistic skills and fluency gradually over time which may lead to a high level of proficiency in the language and possibly to language dominance. However, for many

adults, gaining proficiency in a second language can be a challenging and often frightening task. Unlike the natural acquisition process of the mother tongue, learning a second language as an adult typically involves deliberate effort, formal instruction, and constant practice.

One of the primary obstacles that adults face when learning a second language is the cognitive and physiological changes that occur with age (Lenneberg, 1967). The brain undergoes developmental changes over time, and as individuals grow older, their capacity for language learning may diminish. This can make it more difficult for adults to grasp new linguistic structures, vocabulary, and pronunciation patterns compared to children, whose brains are more adaptable and receptive to language acquisition. Thus, progress in acquiring proficiency in a second language may be slower and more challenging for adults compared to younger learners.

2.2.2 Language Dominance and Attrition

Plasticity of the human brain allows for ongoing language development and adaptation, contributing to the dynamic nature of linguistic dominance. As bilingual individuals navigate through different linguistic environments and life experiences, their language skills may evolve, this may lead to changes in dominance over time. This brain plasticity also underlies the phenomenon of attrition of the L1, where decreased use or exposure to the first language can result in a decline in proficiency and a shift in dominance towards the second language.

Language attrition is often defined as "the non-pathological decrease in proficiency in a language that had previously been acquired by an individual" (Köpke and Schmid 2004, p. 3) with alterations taking place at the cognitive level (Gallo et al., 2021). The topic of attrition brings a lot of questions, one of them being if an individual is really capable of forgetting a language that was once learned, whether it would be L1 or L2 (Köpke and Schmid, 2004). Köpke and Schmid (2004) refers to a study by Fromm (1970) that describes a case of a third-generation Japanese-American 26-year-old man who,

under hypnosis, rediscovered the ability to speak Japanese, a language once spoken when he was a child, and when awake, he was no longer able to understand that language. Therefore, it is assumed that language only becomes inaccessible when it is not needed, not completely forgotten.

In the field of language attrition, researchers distinguish between the attrition of an L1 and of an L2. Although there is typically no differentiation between languages acquired through naturalistic means and those learned through explicit instruction, Schmid and Mehotcheva (2012) advocate for the necessity of making such a distinction. They suggest that the implicit acquisition process involved in immersion learning may influence the representation of linguistic structures in memory, potentially impacting their susceptibility to attrition. The studies of foreign language learning show that language performance is more susceptible to attrition compared to skills related to language reception (e.g., Hakuta and D'Andrea, 1992); only time is insufficient for a language to undergo attrition (e.g., Murtagh, 2003); the initial proficiency may be a predictor of attrition – the higher the initial proficiency, the less probability of attrition to occur (e.g., Mohotcheva, 2010). All these findings, however, should be taken carefully in consideration due to the fact that foreign language learning and the opportunities to learn foreign languages have changed over the years.

The attrition of an individual's L1 is closely related to age, more specifically to the onset of age of L1 loss (Gallo et al., 2021). Those who leave their native language environment prior to reaching puberty appear to be at a higher risk of undergoing a more severe loss (e.g., Karayayla and Schmid, 2019). This comes in hand with the Critical Period Hypothesis because it suggests that if individuals leave their native language environment before the critical period ends, they might experience more significant language attrition compared to those who maintain exposure to their native language throughout the critical period (Gallo et al., 2021). Research examining language attrition in adopted children provides support for this hypothesis. This connection is evident in

studies such as the one conducted by Pallier et al. (2003), they examine whether a second language can effectively replace the first language in individuals who experienced early and complete separation from their native language. They were using neuro-linguistic methods to trace any language activity in the brain while the participants were exposed to the forgotten language. They found that, in terms of brain activity, the participants did not differ from those who had never been exposed to that language before the experiment. Nevertheless, it cannot be precisely specified what is the age limit beyond which attrition is less likely to take place (Köpke and Schmid, 2004) but Köpke and Schmid (2004) mentions a study by Olshtain (1986) that suggests that literacy in a language can have an impact on attrition, i.e., when a child acquires reading and writing skills in at least one language, the resistance to complete attrition of that language increases.

According to Köpke and Genevska-Hanke (2018) language dominance and attrition represent two stages of the same phenomenon and their study shows that dominance and attrition extremely depend on the context of immediate language use, and both adjust with the change of language environment. It is believed that extended exposure of L2 will lead to a higher impact of the L2 on the L1 that is becoming the non-dominant language. Attrition, however, cannot be explained only by frequency of use, it is necessary to combine various factors for attrition to appear, such as age, proficiency, attitude, motivation, language use or length of exposure (Schmid and Mehotcheva, 2012).

2.2.3 Language Dominance and Measurements

In section 2.1.1 I discussed the close link of language dominance to the domains of language use. They must be taken into account when we think about the ways of determining one's language dominance. It is possible to also determine dominance according to dimensions, i.e., "fluency of speech, lexical diversity, morphosyntactic knowledge, length of utterances, parsing speed and accuracy" (Birdsong 2014, p. 2). All this needs to be considered when establishing language dominance.

When comparing two bilingual individuals and assessing their respective language dominance, it becomes crucial to consider their proficiency levels, as proficiency plays an important role in shaping dominance. Proficiency serves as an essential element in determining how skilled individuals are in using each of their languages across various linguistic domains. Proficiency directly impacts the fluency with which bilinguals communicate in each language. Those with higher proficiency levels are likely to demonstrate greater linguistic competence and confidence in expressing themselves, this directs them to a more dominant use of that language in relevant contexts. Lower proficiency levels may result in less dominant language usage and a tendency to rely more on the language in which individuals feel more proficient. Additionally, proficiency influences language use across different domains, such as in academic, professional, social, and personal settings. Bilingual individuals with higher proficiency in a particular language may navigate towards using that language more extensively in domains where they feel most comfortable and competent which further reinforces their dominance in that language. Overall, proficiency serves as a critical factor in understanding and comparing language dominance among bilinguals. By taking into account individuals' proficiency levels in each language, researchers can gain deeper insights into the complexities of bilingual language use and development. This facilitates them to assess language dominance more accurately.

Flege et al. (2002) accurately points out that there is no generally acknowledged method to assess language dominance, instead researchers adopt various techniques for assessing dominance, such as self-ratings, fluency tasks, lexical decision tasks, word classification tasks, etc. For example, they measured sentence duration and the results obtained show that it is a preferable index of language dominance. A study by Lambert et al. (1959) can be considered as one of the earliest studies measuring language dominance. It is based on a range of measures including many based on receptive or productive word knowledge. Fishman and Cooper (1969) measured the degree of

bilingualism on the basis of a word naming task where bilingual individuals were given a time limit of one minute to name, for each language, as many words as possible associated with a certain semantic domain. On the other hand, it is difficult to choose which domains need to be measured.

Researchers started to measure language development of bilingual children with so-called mean length of utterance (MLU) that is frequently used to operationalize dominance. Genesee et al. (1995) in their study used the MLU, upper bound (the longest utterance produced by the child during one session), word types, and the percentages of multimorphemic utterances to estimate language dominance of five French-English bilingual children. Treffers-Daller (2019) mentions other tests to measure language dominance, such as the Clinical Evaluation of Language Fundamentals (CELF) developed by Wiig et al. (2013) or the Test for Reception of Grammar (TROG) developed by Bishop (2003). However, these tests could be used as alternatives to sentence repetition tasks only if they were created in different languages. It is not, however, an easy task, as Treffers-Daller (2019) commented, due to typological differences between languages.

A different test that can be used to measure language dominance is The Peabody Picture Vocabulary Test (PPVT) developed by Dunn and Dunn (2007). In this test, individuals hear a word, and they need to choose one picture out of four based on the meaning of this word. This test is adapted for more than 60 languages, so it makes it a great alternative for estimating language dominance. A vocabulary test developed by Haman et al. (2015) that can be used to measure language dominance in bilingual children is Cross-linguistic Lexical Tasks (CLTs) that is established for different languages. These tasks aim to assess how bilingual children acquire and use vocabulary in each of their languages, offering valuable insights into their language proficiency and development. In the matter of dominance measures, Bahrick et al. (1994) accurately note that tasks which require retrieval of words, such as lexical decision tasks, are more likely to be impacted by a person's recent language environment due to the priming effect.

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An alternative approach to measure dominance is through lexical diversity. These measurements are used to indicate how many different words appear in a text. Lexically diverse texts include a high number of different words, meanwhile low diverse texts repeat the same words. However, the problem with this measurement is that the longer the text is, the more the values drop. Therefore, researchers suggested a different option, the Guiraud's index that does not depend on the text length. It is estimated by dividing the number of unique words (these are called types) in the text by the square root of the total number of words called tokens. This index allows us to fairly compare texts of a different length. The higher the Guiraud's index is, the greater the lexical diversity is, i.e., the wider the vocabulary in the text (Chen, 2023).

Lexical diversity is used as a useful tool for estimating language dominance in Treffers-Daller and Korybski (2015). The languages under study were Polish and English, two typologically different languages. Treffers-Daller and Korybski argue that measuring dominance in this way is advantageous because this technique works with any language. It is also economical because there is no need in purchasing any tests and last but not least, it can be used with typologically distinct languages. Treffers-Daller (2011) also mentions that it is possible to use it with oral data, therefore bilinguals who cannot write in one of their languages can become part of a study, too. In addition, researchers can study all the vocabulary that is used in the sample with the possibility to analyze them in a context, they do not need to select only certain words and analyze them in isolation.

One potential disadvantage of this method is that it does not consider language use and dominance with respect to domains. Treffers-Daller and Korybski (2015) further point out the issues with multilingualism; are the measurements of language dominance suitable also for multilinguals and are there any multilinguals that are balanced in all their languages? Moreover, as noted by Treffers-Daller (2011), measuring language dominance in this way is time-consuming and therefore it might not be suitable for research that needs to have the results quickly. Anyway, apart from lexical diversity, it is

also possible to study other lexical variables, such as lexical sophistication (using uncommon words in a text), lexical density (the use of lexical and function words in a text), or frequency of errors (Treffers-Daller, 2011).

One more test created for bilinguals is by Macnamara et al. (1969) and it is based on reading where the faster rate of reading meant dominance in that language. Treffers-Daller (2019) proposes to measure language dominance indirectly, through exposure measures, i.e., measuring the amount and quality of exposure of each language of bilingual individuals, providing insight into the frequency of usage of the languages. These measures seem to be easier because they eliminate the requirement of creating tests in two languages that are comparable. However, these exposure measures can be challenging, too, because input patterns vary between bilinguals. One of the differences is, for example, the age of onset. The age at which they start to hear two or more languages, early or simultaneous bilinguals are exposed to two languages from birth or during early childhood, while late bilinguals begin hearing one of their languages later in life. As a result, the total exposure to each language varies significantly based on when each language was first encountered. Another difference between bilinguals' input is the distribution of languages across various domains and its different quality. Some children are exposed entirely to the minority language at home and to the majority language in different settings, while others are exposed to both languages at home and to the majority language in other environments. In addition, the typological differences between languages also interact with the factors mentioned above. It is a difference when a bilingual speaks two languages that are closely related, such as Spanish and Catalan, or when he/she speaks typologically different languages, for example Portuguese and Turkish. All these variables interact, and they make a difference on the language dominance. Nowadays, researchers try to suggest questionnaires that could capture bilinguals' distribution of languages across various domains.

Birdsong (2014) mentions a so-called index of dominance. It is the quantified difference between the evaluations of domains in one language and the domains in the other language. Then it is possible to see that a bilingual is dominant in a language to a certain degree, and he/she can be compared with another bilingual. It demonstrates that two bilinguals that are dominant in the same language probably will not be dominant in that language to equal degrees. Along with the dominance index, Birdsong (2014) points out that a high dominance index does not imply a high level of proficiency in one's language because being dominant in one language does not mean that the person has high proficiency in that language, only that he/she has a lower proficiency in the other language.

Additionally, Birdsong et al. (2012) introduced a questionnaire, so-called the Bilingual Language Profile, to assess bilinguals' language dominance. It includes an introductory part and four major parts (language history, language use, language proficiency and language attitude). This test does not classify bilinguals as being dominant in one or the other language, but it creates a score ranging from +218 in one language to zero to -218 in the other language. This questionnaire developed by Birdsong et al. (2012) serves as a valuable tool for assessing language dominance, encompassing essential components that contribute to a comprehensive understanding of bilingual language abilities. To ensure the accuracy and reliability of self-reports in determining language dominance, the questionnaire also needs to capture the key domains of language use.

To sum up, as Flege et al. stated (2002), there is no generally accepted measurement to determine language dominance in bilinguals in the present days. There are various procedures in doing so. Besides, as mentioned earlier, language proficiency is one of the most relevant parts of language dominance. It includes a knowledge of phonology, morphology, syntax, etc. and the question is which of these aspects should be relative in language dominance measurements. Besides, assessing language dominance should be

done on a gradient scale (Dunn and Fox Tree, 2009) because simply dividing bilinguals into being dominant or balanced is not adequate and a scale would reflect the reality more.

3 Research questions

Following the literature review, the purpose of this thesis was to create a tool that would allow us to estimate language dominance of native speakers of Czech whose second language is English. When people that are dominant in the same language are compared with others, a significant difference can occur. The aim was to identify the degree of language dominance of university students. The questionnaire tried to cover as many aspects that influence language dominance as possible. The goal was to detect which of the two languages is the dominant one and what are the differences between the individual participants.

4 Methods

4.1 The instrument and procedure

The data for this research were collected through an online questionnaire. A link to the survey was distributed on a Facebook page of university students and it was also shared with the students through the Moodle discussion forum of the Department of English and American Studies of University of Palacky. The questionnaire (see Appendix) was designed to display students' language dominance between Czech and English. This method was used as the most convenient tool to collect information from a larger number of people as questionnaires are relatively easy to administer and distribute, making them accessible to a wide range of participants. In addition, they ensure consistency in data collection and facilitate comparisons across different individuals and groups. This questionnaire included Yes/No questions, multiple choice questions (single- and multiple-selection questions), open-ended questions, and questions based on the Likert Scale.

The survey was divided into two versions – an English version (questions 2-42) and a Czech version (questions 43-83). The initial question involved students selecting the language in which they preferred to complete the questionnaire, followed by 41 questions in their chosen language. First eleven questions out of the 41 dealt with participants' basic and biographical information, such as their age, their gender or the number of languages that they speak. Another set of questions was designed to focus on their language history, i.e., whether they were living in the Czech Republic at the time of responding, whether they spent some time in an English-speaking country, when they started learning English, or for how many years they obtained instruction in English in most of their subjects in school. This set was followed by six questions about language proficiency – whether they had noticed a decline in fluency in Czech/English, rating the basic skills (reading, listening, writing, speaking) in Czech/English, rating their ability to maintain fluency in

Czech while surrounded by speakers of English, and a question about code-switching and borrowing. Then there was a set of sixteen questions about language use, e.g., how much time they spent speaking Czech/English. This group of questions also contained a list of various domains and activities (e.g., praying, swearing, internal monologue, counting, expressing emotions, dreaming, listening to academic content, watching entertaining programs, etc.) where the participants were asked to decide which language they were using for each activity. The last four questions addressed language attitude, i.e., if they believed that Czech/English is an important part of their life, which of the two languages they would have chosen for the rest of their lives and why.

The choice of the questions was based on the literature (Dunn and Fox Tree, 2009; Birdsong et al., 2012; Li et al., 2006; Gasser, 2000). The part concerning language history started with Q13 which was included due to higher likelihood of Czech becoming the more dominant language. Question 14 was designed along the same line, because recent stay may include improved language skills and influence the dominance. The age range in question 15 was chosen on the factor of how school stages are distributed in the Czech Republic – 0-11 years is a preschool to an elementary school, 11-15 years is a junior high school, and more than 15 years is a high school. Moreover, immersion can provide higher fluency that can lead to change of dominance (Q16).

The part with language proficiency included potential language shifts. The domains introduced in the part of language use in question 25 were proposed as pairs – formal and informal activities, followed by situations in which they interact with different people, and by situations of private language use that may show language dominance that is not influenced by situations involving other individuals and to see which language is probably more authentic for the participants. To show language dominance for cognitive tasks, Q33 was added.

4.2 Participants

The participants of this study were students whose native language was Czech, their second language was English and at the same time they did not have two mother tongues. The total number of students that met these requirements of the study reached 141. Their age varied from 19 years old to 41 years old and 100 of them were females, 31 males and 10 non-binary or they preferred not to say. At the time of responding, 105 participants were studying towards a bachelor's degree, 33 towards a master's degree and only 3 towards a doctor's degree. The number of students that were part of the Department of English and American studies reached 112 (70 of them were students of philology, 42 of them students of translating and interpreting), only 29 of the participants studied a different major, e.g., chemistry, journalism, software engineering, geoinformatics, Japanese philology, musicology, Dutch philology, psychology, law, etc. Out of all 141 participants, 128 of them were multilinguals, i.e., they were speakers of more than two languages. Mostly, the respondents indicated that they were speakers of German or Spanish. Up to the point of responding to the survey, 54 people learnt English through the combination of formal classroom instruction and interaction with others, 44 of them specified that they learnt not only in the classroom or by interacting with different people, but also by watching videos, movies, reading books, listening to podcasts, etc.

5 Results

Out of the 141 respondents, only 45 students filled in the questionnaire in English, 96 of them chose the Czech version. At the moment of responding, 137 of people were living in the Czech Republic, while only 12 people had spent at least three months in an English-speaking country in the last three years. Almost all respondents started learning English when they were 11 years old or younger, only 1 of them started later than at 15 years of age. Slightly more than half of the students experienced being instructed in English for most of the school subjects for at least 1 year, while 30 of all the respondents did not obtain English instruction for a minimum of 1 year.

Over the last 3 years, 67 students had noticed a decline in fluency in Czech language, while in English only 24 respondents had detected weakening of fluency. Table 1 shows the number of respondents and how they have rated the decline of each skill in Czech. Table 2 shows the number of respondents who rated having strong basic language skills in English. Figure 1 represents respondents' evaluation of their ability to maintain fluency in Czech when surrounded by speakers of English. The respondents indicated that when they code-switch or borrow expressions from one language to another, they mostly do so when speaking Czech, i.e. they code-switch to or borrow from English (107 respondents).

(Czech)	Definitely not	Not often	I do not know	Only sometimes	Definitely yes
Reading	110	20	0	8	3
Speaking	29	45	2	54	11
Writing	64	40	4	25	8
Listening	119	20	0	2	0

Table 1: Number of respondents reporting weakening of their basic language skills.

(English)[2]	Definitely not	Not often	I do not know	Only sometimes	Definitely yes
Reading	4	6	2	44	85
Speaking	4	15	9	71	42
Writing	4	15	10	64	48
Listening	6	3	11	56	65

Table 2: Number of respondents rating the strength of their basic language skills in English.
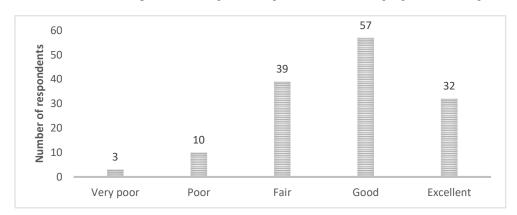

Figure 1: Ability to maintain fluency in Czech when surrounded by speakers of English.

Figure 2 represents the number of respondents and how much time they usually spent speaking Czech and English on an average day. Table 3 shows the number of respondents and the language they reported to use for different activities involving the four basic language skills – writing, speaking reading and listening – in formal and informal use. Table 4 shows the number of respondents who choose to use one or the other language for communication in intimate relationships, i.e. with friends, family, or work relationships, i.e. classmates, teachers, work colleagues. Figure 3 reports private use of language; it represents the number of students and their choice of a language in different personal situations. When counting to themselves (e.g., counting people in a group), the majority of the respondents (130 of them) counted in Czech. Furthermore, when they were asked to multiply 234 x 5, 129, the students performed this task also in

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[2] The question was as follows: "Do you usually feel you have a strong ability to perform the basic language skills in English? Rate each skill separately."

Czech. Nearly half the students dreamt mostly in the Czech language, 38 of them, however, did not know. If the respondents had children, 88 of them would speak to them in both languages, 52 would choose Czech.
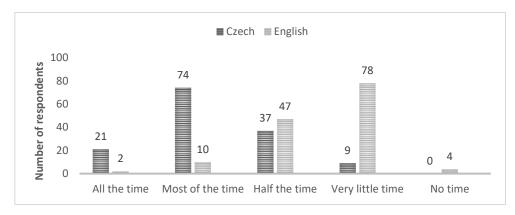

Figure 2: The time spent speaking Czech and English.

	Czech	English	Both	Neither
Writing in an informal way	35	26	80	0
Writing in a formal way	69	20	51	1
Reading for pleasure	11	56	72	2
Reading academic books and papers	3	81	56	1
Talking about topics related to everyday situations or general life matters	90	6	45	0
Talking about topics related to your studies	37	34	69	1
Listening for pleasure	5	79	56	1
Listening to academic content	9	65	62	5

Watching entertaining programs	1	91	49	0
Watching educational content	1	99	40	1

Table 3: Number of respondents reporting the choice of Czech or English for different activities.

	Czech	English	Both	Neither
Interacting with close family	125	0	15	1
Interacting with distant family members	133	0	5	3
Interacting with friends	55	5	81	0
At home	117	2	20	2
Interacting with teachers or classmates	28	21	90	2
At work	83	5	37	16

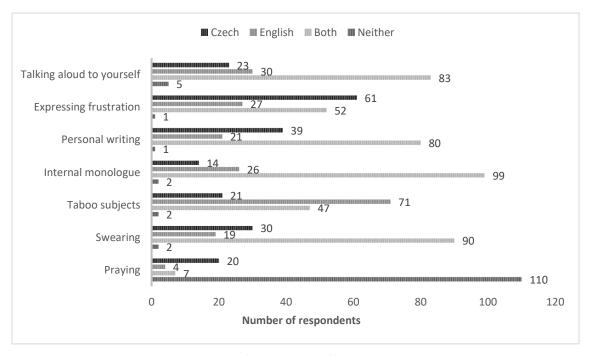Table 4: Number of respondents and the choice of language in different situations.

Figure 3: The choice of language in different personal situations.

Figure 4 represents the attitude of the respondents toward Czech and English. They responded to the question whether they considered each language an important part of their lives. If the respondents had to choose between Czech and English for the rest of their lives, only 48 of them would choose Czech, while 93 of them would select English. The reason for choosing Czech was mostly the fact that it was their mother tongue, they felt a sense of cultural identity associated with that language. Furthermore, they did not want to lose this language because they use it with their family, who do not speak English. On the other hand, those who chose English mentioned that it is a more universal and more practical language. [3]
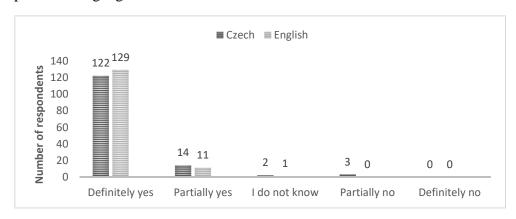

Figure 4: The importance of Czech and English.

A participant's dominance score in a language is the sum of the points awarded for each response. The Table 5 below explains the point system for this questionnaire. The evaluation started with question 1, where the participants selected the language in which they wished to proceed with the questionnaire. Then the scoring continued from question 13 for those who chose English and from question 54 for those who chose Czech, questions 33 and 42 for English (74 and 83 for Czech) were not evaluated. The resulting points varied from 0 to 21.5 points for Czech and from 1 to 21.5 for English. The least possible score for each language was -4 points and the highest possible score was 27

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[3] The questions were as follows: "Do you believe that your mother tongue (Czech) is an important part of your life?"/ "Do you believe that your L2 (English) is an important part of your life?"

points. The median for the language dominance was 11.5 points for Czech, 8.5 points for English, the mean equaled 11.63 for Czech (SD 3.90) and 8.81 for English (SD 3.7) for English. The interquartile range reached 5 for Czech and 4.25 for English (for each respondents' score see Appendix).

Q1: a = +1 (L1), b = +1 (L2)	Q27/68: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q13/54: a = +2 (L1), b = +0	Q28/69: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q14/55: a = +2 (L2), b = +0	Q29/70: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q15/56: a = +1 (L1), b = +0; c = +1 (L2)	Q30/71: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q16/57: a = +1 (L1), b = +0; c = +1 (L2)	Q31/72: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q17/58: -0.5 (L1) if yes	Q32/73: a = +0.5 (L1), b = +0.5 (L2)
Q18/59: -0.5 (L2) if yes	Q34/75: a = +0.5 (L1), b = +0.5 (L2)
Q19/60: L1: Definitely not +1, Not often +0.5, I do not know +0, Only sometimes -0.5, Definitely yes -1	Q35/76: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q20/61: L2: Definitely not -1, Not often -0.5, I do not know +0, Only sometimes +0.5, Definitely yes +1	Q36/77: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q21/62: a = +1 (L2), b = +0.5 (L2), c = +0, d = +0.5 (L1), e = +1 (L1)	Q37/78: a = +0.5 (L1), b = +0.5 (L2), c = +0, d = +0
Q22/63: a = +1 (L2), b = +1 (L1), c = 0.5 both, d = 0	Q38/79: a = +0.5 (L1), b = +0.5 (L2), c = +0
Q23/64: L1: a = +1, b = +0.5, c = +0, d = -0.5, e = -1	Q39/80: L1: a = +1, b = +0.5, c = +0, d = -0.5, e = -1
Q24/65 L2: a = +1, b = +0.5, c = +0, d = -0.5, e = -1	Q40/81: L2: a = +1, b = +0.5, c = +0, d = -0.5, e = -1
Q25/66: none/both +0, L1/L2 +0.5	Q41/82: a = +0.5 (L1), b = +0.5 (L2)
Q26/67: none/both +0, L1/L2 +0.5	

Table 5: Scoring system.

The participants were divided into three groups according to their study major, including philology students, students of translating and interpreting (ATP) and students of other (non-English) majors. In the analysis, the dominance scores of the three groups

are compared. Table 6 presents the percentage scores for the Czech language among these groups. Similarly, Table 7 displays the corresponding English language scores.

%CZ	Valid N	Mean	Minimum	Maximum	Std. Dev.
All groups	141	43.03	0.00	79.63	14.53
Philology	70	39.71	0.00	68.52	13.37
ATP	42	43.30	5.56	74.07	14.79
Other	29	50.64	18.52	79.63	14.38

Table 6: Results of the Czech score.

%EN	Valid N	Mean	Minimum	Maximum	Std. Dev.
All groups	141	32.64	3.70	79.63	13.74
Philology	70	36.08	3.70	79.63	13.74
ATP	42	31.57	7.41	66.67	12.04
Other	29	25.86	5.56	55.56	13.69

Table 7: Results of the English score.

Figures 5 to 7 show the relationship between the English dominance score and the Czech dominance score. Figure 5 displays the relationship for the philology students. It demonstrates a negative correlation ($r = -0.6705$; $p = 0.0000$) with a moderate to strong relationship between the scores. For the students of other majors, Figure 6 also demonstrates a negative correlation between the scores ($r = -0.7548$; $p = 0.00000$), which is even stronger than for the philology students. Figure 7 shows that there is no relationship between the scores of students of ATP, the correlation was not significant ($r = -0.1704$; $p = 0.2806$).
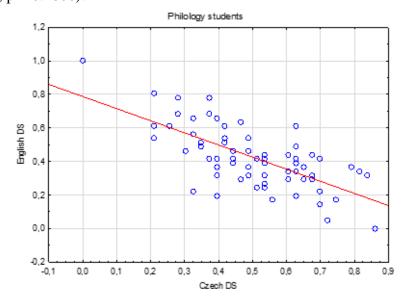

Figure 5: Relationship between English and Czech scores among philology students.
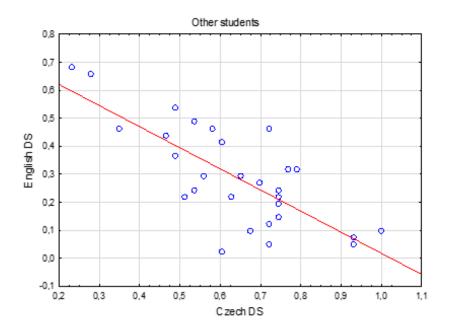
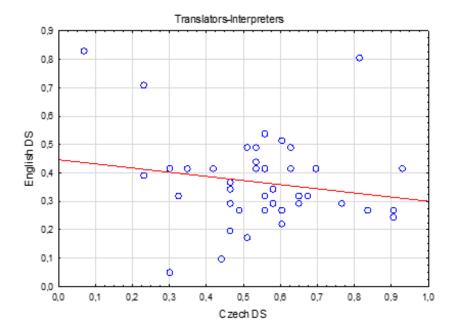Figure 6: Relationship between English and Czech score among other students.

Figure 7: Relationship between English and Czech score among students of ATP.

Figure 8 shows the frequency distribution of the English scores of philology students. The distribution is unimodal. A Shapiro-Wilk test was conducted, revealing that the English language scores of the 70 advanced English foreign language learners follow a normal distribution, as evidenced by a *p*-value of .401 and W(70) = .98. This statistical test confirms the assumption of normality, indicating that the distribution of English scores among philology students adheres to a normal distribution pattern.
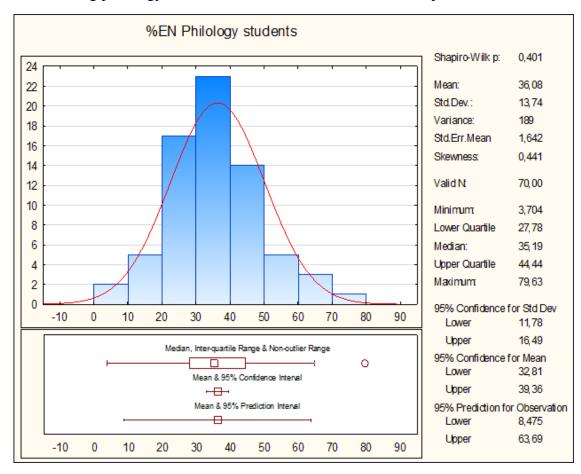

Figure 8: Distribution of the English scores of philology students.

Figure 9, which depicts the frequency distribution of English scores among 42 students studying translating and interpreting, offers valuable insights into the distributional characteristics of language dominance within this specific academic group. The distribution of English scores has failed the test due to the value of p less than .05, revealing deviations from the expected normal distribution – W(42) = .92, p = .006.
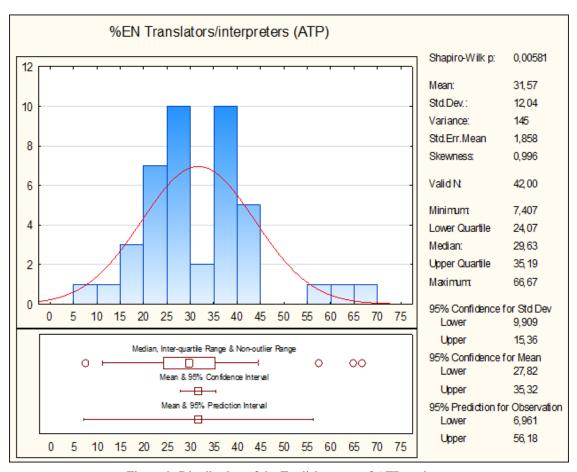

Figure 9: Distribution of the English scores of ATP students.

Figure 10 displays the frequency distribution of English scores among students in majors other than philology or ATP. A Shapiro-Wilk test conducted on the English language scores of 29 skilled learners has confirmed that the distribution is normal, yielding a calculated statistic of W(29) = .96 and a *p*-value of .272.

Figure 10: Distribution of the English scores of students of different majors.

Figure 11 depicts the frequency distribution of Czech scores among philology students. A Shapiro-Wilk test performed on the Czech language scores of 70 students has confirmed that the distribution follows a normal pattern, with a computed statistic of W(70) = .99 and a *p*-value of .689.

Figure 11: Distribution of the Czech scores of philology students.

Figure 12 illustrates the frequency distribution of Czech scores among students in the ATP program. A Shapiro-Wilk test conducted on the Czech language scores of 42 students has verified that the distribution adheres to normality, with a calculated statistic of $W(42) = .97$ and a p-value of .454.
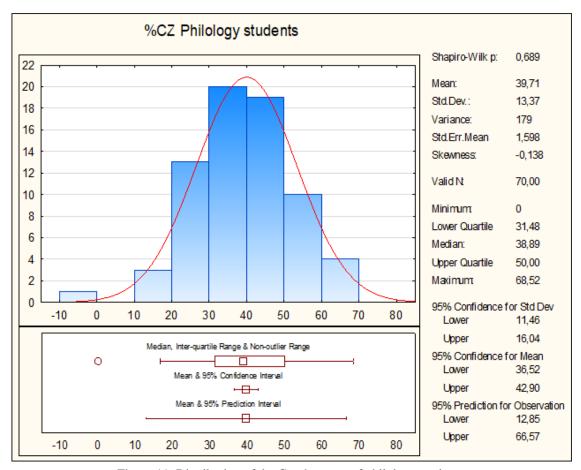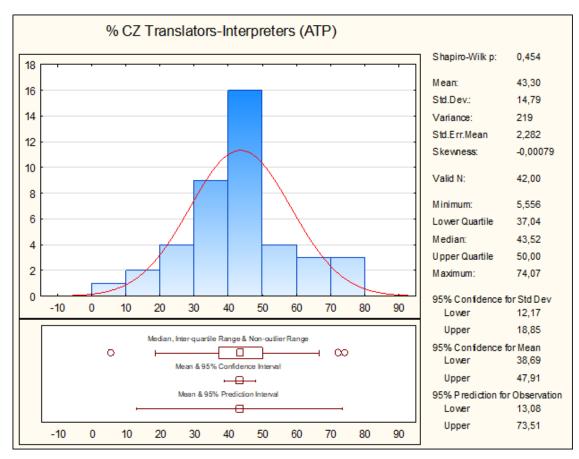

Figure 12: Distribution of the Czech scores of ATP students.

Figure 13 presents the frequency distribution of Czech scores among students of other majors. A Shapiro-Wilk test conducted on the Czech language scores of 29 proficient English foreign language learners has verified that the distribution is normal, with a calculated statistic of W(29) = .97 and a *p*-value of .604.

Figure 13: Distribution of the Czech scores of students of other majors.

In the preceding section, the distributions of the variable in the three groups were shown in histograms. The Shapiro-Wilk test of normality gave evidence against normality of score distribution in the English data of the Translator-Interpreter group (ATP), i.e., the *p* was smaller than 0.05 (see Figure 9). Also, the Histogram showing distribution of the English dominance scores in the Other student group (in Figure 10) might suggest a deviation from normality, although this was not reflected in the *p* value. The violations of the normality of distribution led to the use of nonparametric statistics to test the differences between the groups, specifically the Kruskal-Wallis test in Statistica (that substitutes for ANOVA). The Czech and English DS (descriptive statistics) scores were

entered as the dependent variables and the Field of study (Philology, Translating-Interpreting, Other) as the independent, grouping, variable.

The output of the Kruskal-Wallis statistics is reported in Tables 8-11 below. For the English DS scores, the differences between the rank totals of 81 (Philology), 52 (Other) and 67 (ATP) were significant (see also in Table 8). The same results apply for the Czech DS scores as seen in Tables 10 and 11.

English	Kruskal-Wallis ANOVA by Ranks Independent (grouping) variable: field Kruskal-Wallis test: H (2, N= 141) =11,59666 p =,0030			
	Code	Valid	Sum of Ranks	Mean Rank
ATP	1	42	2808.500	67
other	2	29	1498.000	52
philology	3	70	5704.500	81

Table 8: Kruskal-Wallis test summary for English DS score.

Multiple comparisons of mean ranks for all groups			
English	Multiple Comparisons p values (2-tailed); %EN (results)		
	ATP	other	philology
ATP		0.369	0.200
other	0.369		0.003
philology	0.200	0.003	

Table 9: Kruskal-Wallis test results for English DS score.

Czech	Kruskal-Wallis ANOVA by Ranks Independent (grouping) variable: field Kruskal-Wallis test: H (2, N= 141) =12,11234 p =,0023			
	Code	Valid	Sum of Ranks	Mean Rank
ATP	1	42	3000.500	71
other	2	29	2696.500	93
philology	3	70	4314.000	62

Table 10: Kruskal-Wallis test summary for Czech DS score.

Multiple comparisons of mean ranks for all groups			
Czech	Multiple Comparisons p values (2-tailed); %CZ (results)		
	ATP	other	philology
ATP		0.087	0.655
other	0.087		0.002
philology	0.655	0.002	

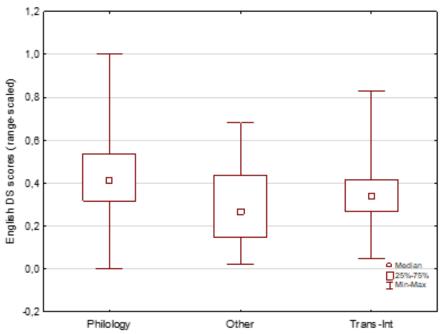Table 11: Kruskal-Wallis test results for Czech DS score.

Figure 14: The box-plot of range-scaled English DS scores.

Figure 15: The box-plot of range-scaled Czech DS scores.

To establish whether the DS scores for English and Czech differ in each group, we used the non-parametric test for comparing dependent samples in Statistica (Sign test). We adjusted the alpha level of significance at the strict 0.001 to eliminate instances of false positives. Summary of the results is given in Table 12 and the DS scores of each group are compared in box plots in Figures 16-18.

	No. of	Percent	Z	p-value
All groups	141	24.823	5.895	0.000
Philology	70	37.143	2.032	0.042
ATP	42	11.905	4.783	0.000
Other	29	13.793	3.714	0.000

Table 12: Sign test – the difference between Czech and English DS scores.

Figure 16: Box plot of comparison of DS scores of ATP students.

Figure 17: Box plot of comparison of DS scores of other students.

Figure 18: Box plot of comparison of DS scores of philology students.
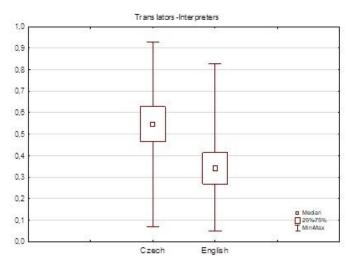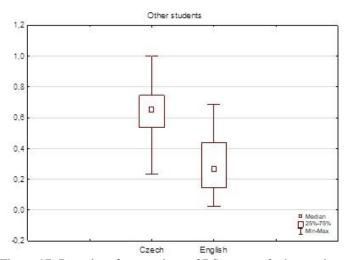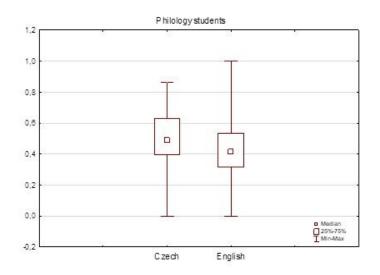
6 Discussion

The primary objective of this thesis was to develop a comprehensive instrument for assessing language dominance in native speakers of Czech who achieved high proficiency in English. This attempt involved creating a questionnaire designed to capture various aspects of participants' language history (Q13 – Q16/Q54 – Q57)[4], their proficiency levels (Q17 – Q22/Q58 – Q63), their language use patterns (Q23 – Q38/Q64 – 79), as well as participants' attitudes towards each language (Q39 – Q42/Q80 – Q83). The participants were asked to provide detailed information about their language background, including factors such as age of acquisition, and language exposure.

The questionnaire examined participants' language proficiency across multiple language skills, including listening, speaking, reading, and writing. By assessing proficiency levels in each language skill, the questionnaire aimed to provide a comprehensive understanding of respondents' linguistic abilities in both Czech and English. Proficiency in listening, speaking, reading, and writing was included in this questionnaire due to its close connection to language dominance. It provides a more comprehensive understanding of participants' overall linguistic abilities.

Furthermore, it explored participants' language use patterns across various domains and contexts, including academic, professional, social, and familial settings. This comprehensive assessment of language use aimed to capture the depth of respondents' engagement with each language in their daily lives. Bilingual individuals may demonstrate varying levels of proficiency and comfort in different language domains. For example, they may feel more confident using one language in professional settings while preferring to use another language in social interactions. By assessing language use across multiple domains, the questionnaire allows to identify domain-specific patterns of language dominance.

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[4] English and Czech versions.

Additionally, the questionnaire included items designed to measure respondents' attitudes towards each language, such as perceived language importance. By assessing participants' attitudes towards each language, the questionnaire sought to uncover underlying motivations and preferences that may influence language dominance. Participants' attitudes towards each language can reveal their fundamental motivations and preferences for using one language over another. Positive attitudes towards a language can serve as a stimulant for greater motivation to use and maintain proficiency in that language, thereby setting its dominance in an individual's linguistic repertoire. When individuals possess a positive perception of a language, they are more inclined to engage actively in learning, practicing, and using it in various contexts. This heightened motivation often leads to more frequent and effective language acquisition, but also facilitates its long-term preservation and utilization. On the other hand, negative attitudes towards a language can slow down the process of language acquisition and maintenance. When individuals hold unfavorable opinions about a language, they may experience less motivated to engage with it, leading to reduced practice and limited exposure.

The difference in language dominance among respondents was evident in the wide range of scores observed, ranging from 0 points to 21.5 points. Interestingly, none of the participants scored below 0 or reached the maximum possible score, this indicates that while there was variability in dominance, the extreme ends of the spectrum were not detected. Moreover, only a small proportion of respondents achieved the same score in both languages, highlighting the rarity of balanced dominance among bilingual individuals. It is noteworthy that only 38 respondents were identified as English dominant, suggesting that shifts in language dominance are indeed possible but not common.

The observed differences in scores among the three groups – philology students, ATP students, and students from other majors – highlight the potential influence of major on language dominance outcomes. Particularly striking are the differences between the

ATP students on one hand and philology students and other majors students on the other. The negative correlations of the Czech and English scores in the former two groups imply that the higher the score in Czech language, the lower is the score in English. Interestingly, this pattern does not hold true for ATP students, where no significant correlation between Czech and English scores was found.

The findings offer valuable insights into the relationship between academic major and language dominance scores among bilingual students. The significant differences observed between students of philology and those from other majors in both English and Czech scores suggest that academic discipline plays an important role in shaping language proficiency levels, thus influencing language dominance. Philology programs typically involve intensive language study and immersion in language and literature, which may contribute to higher proficiency levels in both English and Czech among philology students which then might lead to dominance. Students from other majors may have less exposure to English language that leads to differences in language proficiency outcomes. Interestingly, the lack of significant differences in the scores among students of translating and interpreting suggests a more homogeneous distribution of language proficiency within this group. This finding may reflect the specialized nature of the program, where students undergo strict language training.

Overall, the development of this questionnaire represents a significant contribution to the field of bilingualism, it provides a valuable tool for the researchers to assess language dominance between Czech and English. Through its comprehensive approach to measure various aspects of bilingual language proficiency, use, and attitudes, the questionnaire offers researchers an understanding of language dominance dynamics in bilingual individuals.

In conclusion, the questionnaire emerged as a highly effective tool for assessing language dominance among foreign language learners. It effectively and quickly detected the data of a larger number of people, enabling a comprehensive analysis of language

dominance across diverse learner populations. It also allowed different kinds of questions with a set of suggested answers, offering respondents a range of options and facilitating an exploration of language use patterns and preferences. Overall, the questionnaire proved to be a valuable instrument for researchers seeking to gain insights into the complex dynamics of language dominance in bilingual contexts.

To further enhance the accuracy and comprehensiveness of tracking language dominance scores, it is necessary to improve the questionnaire. One key enhancement would involve balancing the distribution of questions across all four parts – language history, language proficiency, language use, and language attitude. This would entail increasing the number of questions in each section to eliminate any disproportionality. By equalizing the potential score in all four parts, the questionnaire would offer a more comprehensive assessment of language dominance. It would allow for a more precise evaluation of participants' linguistic abilities and preferences. Such enhancements would contribute to the overall effectiveness and reliability of the questionnaire as a tool for measuring language dominance among bilingual individuals.

7 Conclusion

The main aims of this thesis encompassed an approach to enhance our understanding of bilingualism and language dominance. A comprehensive review of the literature of bilingualism, with a particular focus on its intersection with language dominance was followed by the development of an instrument created to assess language dominance among advanced learners of English. This instrument, constructed in the form of a questionnaire, was then tested with university students.

The major finding was the difference between individual students in the total Czech and English scores, implying a significant variation. Moreover, the results of the analysis highlight the relationship between language skills and academic major among bilingual individuals. The significant interaction effect between an academic field and a language suggests that the influence of language dominance varies depending on the specific academic discipline. Particularly noteworthy is the finding that philology students exhibit minimal differences between Czech and English scores, contrasting with greater disparities observed among students from other majors. These findings highlight the importance of considering contextual factors such as academic specialization when assessing dominance among bilingual populations. Further research in this area could provide valuable insights into the underlying mechanisms driving these differences.

In conclusion, it is important to note that no two bilingual individuals are alike in terms of language dominance. Each person's language profile is shaped by a unique combination of factors, including linguistic background, cultural identity, and individual experiences. As such, the study of language dominance requires an understanding of the diversities of bilingual language development. The dynamic interaction between these factors underlines the complexity in assessing and interpreting language dominance. While some bilinguals may exhibit balanced dominance of their languages, where proficiency and usage, thus dominance, are evenly distributed across both linguistic repertoires, others may demonstrate varying degrees of dominance depending on

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contextual factors and life experiences. Continued research in this area has the potential to provide valuable insights into the mechanisms that influence the differences in language dominance among bilingual populations. By delving deeper into the complex interplay of linguistic, cognitive, and sociocultural factors, researchers can provide a valuable insight into the nature of bilingual language development, enhancing our understanding of this complex phenomenon.

8 Resumé

Je důležité vědět, že žádní dva bilingvní jednotlivci nejsou stejní, co se týče jazykové dominance. Jazykový profil každé osoby je tvořen kombinací faktorů, například jazykové prostředí, kulturní identita a individuální zkušenosti. Studium jazykové dominance proto vyžaduje pochopení této rozmanitosti, zároveň interakce mezi jednotlivými faktory zdůrazňuje složitost v posuzování interpretace jazykové dominance. Zatímco někteří bilingvisté mohou projevovat vyváženou dominanci svých jazyků, jiní mohou naopak prokazovat různé stupně dominance v závislosti na kontextuálních faktorech a životních zkušenostech.

Hlavním cílem této práce, nicméně, bylo vytvořit nástroj pro měření jazykové dominance pokročilých studentů angličtiny a výsledný dotazník byl rozeslán mezi vysokoškolské studenty. Hlavním zjištěním byla rozmanitost mezi jednotlivými studenty v celkovém skóre v češtině a angličtině, což naznačuje významnou variabilitu. Výsledky analýzy navíc poukazují na vztah mezi jazykovou dominancí a akademickým oborem. Významná interakce mezi oborem a jazykem naznačuje, že vyjadřování v jiných jazycích se liší v závislosti na konkrétním oboru studia. Zvláště pozoruhodné je zjištění, že studenti filologie projevují minimální rozdíly mezi skóre v češtině a v angličtině, na rozdíl od větších rozdílů u studentů jiných oborů. Tyto výsledky zdůrazňují důležitost zohlednění různých faktorů jako je akademická specializace. Další výzkum v této oblasti by mohl poskytnout cenné poznatky o tom, co stojí za těmito rozdíly, což přispěje k hlubšímu porozumění jazykovému vývoji bilingvních jedinců.

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10 List of Tables and Figures

10.1 Tables

10.2 Figures

11 Appendices

11.1 Questionnaire

1. **Vyberte si jazyk, ve kterém chcete vyplnit dotazník.**

   Choose the language in which you wish to fill out the questionnaire.

   ☐ Čeština   ☐ English

2. **Are you a native speaker of Czech and at the same time, your L2 is English?**

   ☐ Yes   ☐ No

3. **Are you a student of an English Department?**

   ☐ Yes   ☐ No

4. **What is your study program?**

   ☐

5. **If L1 refers to your mother tongue, are there more languages you consider as your mother tongues (i.e. more L1s)?**

   ☐ Yes   ☐ No

6. **Please, choose a nickname.**

   ☐

7. **How old are you?**

   ☐

8. **How would you describe your gender?**

   ☐ Female

   ☐ Male

   ☐ Not binary

   ☐ I prefer not to say

9. **I'm currently studying towards**

   ☐ a bachelor's degree.

   ☐ a master's degree.

   ☐ a doctor's degree.

10. **Do you speak more than two languages? (at least at the level A1)**

   ☐ Yes   ☐ No

11. **What other language(s) can you speak?**

   ☐ None, I speak only two languages   ☐ German

☐ Spanish   ☐ Russian

☐ Portuguese   ☐ Arabic

☐ Chinese   ☐ Ukrainian

☐ French   ☐ Italian

☐ Other _____

12. How did you learn English up to this point?

☐ Mainly through formal classroom instruction

☐ Mainly through interacting with people

☐ A mixture of both

☐ Other (specify) _____

13. Do you currently live in the Czech Republic?

☐ Yes   ☐ No

14. Within the last 3 years, have you spent more than 3 months in a foreign country where English is the official language? (e.g., England)

☐ Yes   ☐ No

15. At what age did you start learning English?

☐ Later than 15 years old

☐ Between 12-15 years old

☐ Between 0-11 years old

16. How many years of schooling in English have you had (from primary school through university)? This means that you were taught most subjects in English.

☐ 0 years

☐ 1-5 years

☐ More than 6 years

17. Over the past 3 years, have you noticed a decline of fluency in L1 (Czech)?

☐ Yes   ☐ No

18. Over the past 3 years, have you noticed a decline of fluency in your L2 (English)?

☐ Yes   ☐ No

19. Have you ever noticed a weakening of your ability to perform the basic language skills in Czech? Rate each skill separately.

	Definitely not	Not often	I do not know	Only sometimes	Definitely yes
Reading	☐	☐	☐	☐	☐
Speaking	☐	☐	☐	☐	☐

Writing	☐	☐	☐	☐	☐
Listening	☐	☐	☐	☐	☐

20. Do you usually feel you have a strong ability to perform the basic language skills in English? Rate each skill separately.

	Definitely not	Not often	I do not know	Only sometimes	Definitely yes
Reading	☐	☐	☐	☐	☐
Speaking	☐	☐	☐	☐	☐
Writing	☐	☐	☐	☐	☐
Listening	☐	☐	☐	☐	☐

21. How would you describe your ability to maintain fluency in Czech (L1) when surrounded by speakers of English (L2)? (e.g., you are staying abroad where you communicate in English every day and suddenly your Czech friend starts calling you on the phone)

☐ Very poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

22. When code-switching and borrowing from one language to another, how does it mostly happen?

☐ Speaking Czech and borrowing from English.

☐ Speaking English and borrowing from Czech.

☐ Borrowing from Czech and also from English.

☐ I never code-switch or borrow from one language to another.

23. On an average day, how much time do you typically spend speaking Czech (L1)?

☐ All the time

☐ Most of the time

☐ Half the time

☐ Very little time

☐ No time

24. On an average day, how much time do you typically spend speaking English (L2)?

☐ All the time

☐ Most of the time

☐ Half the time

☐ Very little time

☐ No time

25. Which language (Czech or English) do you usually use for activities listed below?

	Czech	English	Both	Neither
Writing in an informal way (e.g., taking notes for yourself)	☐	☐	☐	☐
Writing in a formal way (e.g., official e-mails)	☐	☐	☐	☐
Reading for pleasure (e.g., books, magazines, blogs,...)	☐	☐	☐	☐
Reading academic books and papers	☐	☐	☐	☐
Talking about topics related to everyday situations or general life matters	☐	☐	☐	☐
Talking about topics related to your studies (e.g., linguistic subjects, physics,...)	☐	☐	☐	☐
Listening for pleasure (podcasts, audiobooks, music, radio)	☐	☐	☐	☐
Listening to academic content (live	☐	☐	☐	☐

lectures, online lectures)			
Watching entertaining programs, e.g. movies / TV shows / videos on YouTube or on social media	☐	☐	☐	☐
Watching educational content (e.g. videos on YouTube)	☐	☐	☐	☐

26. Which languages do you use in these situations?

	Czech	English	Both	Neither
Interacting with close family parents/siblings/partner)	☐	☐	☐	☐
Interacting with distant family members	☐	☐	☐	☐
Interacting with friends	☐	☐	☐	☐
At home (people you live with)	☐	☐	☐	☐
Interacting with teachers or classmates	☐	☐	☐	☐
At work (e.g. interacting with colleagues, superiors, customers)	☐	☐	☐	☐

27. In which of the following languages do you pray?

☐ Czech

☐ English

☐ Both

☐ Neither

28. In which of the following languages do you swear?

☐ Czech

☐ English

☐ Both

☐ Neither

29. In which of the following languages do you talk about taboo subjects?

☐ Czech

☐ English

☐ Both

☐ Neither

30. In which of the following languages do you talk to yourself in your head (internal monologue)?

☐ Czech

☐ English

☐ Both

☐ Neither

31. Which language do you use for personal writing? (e.g., writing a journal, notes to self, to-do lists, shopping lists,...)

☐ Czech

☐ English

☐ Both

☐ Neither

32. Which language do you mostly use for counting when you count for yourself? (e.g., you have a group of people, and you need to count how many of them there are)

☐ Czech

☐ English

☐ Both

☐ Neither

33. Multiply 234 x 5.

☐

34. Which language did you calculate the numbers in?

☐ Czech

☐ English

35. What language do you usually use to express frustration? Imagine that something really upsets you (e.g. you missed the last bus to the airport), you get angry, and you say something out loud to no one in particular.

☐ Czech

☐ English

☐ Both

☐ Neither

36. Which of the following languages do you use when talking aloud to yourself?

☐ Czech

☐ English

☐ Both

☐ Neither

37. Which language do you mostly dream in?

☐ Czech

☐ English

☐ Both

☐ I do not know

38. If you have children in the future, which languages would you choose to speak with them?

☐ Czech

☐ English

☐ Both

39. Do you believe that your mother tongue (Czech) is an important part of your life?

☐ Definitely yes

☐ Partially yes

☐ I do not know

☐ Partially no

☐ Definitely no

40. Do you believe that your L2 (English) is an important part of your life?

☐ Definitely yes

☐ Partially yes

☐ I do not know

☐ Partially no

☐ Definitely no

41. If you were to choose only one of your languages for the rest of your life, which one would you choose?

☐ Czech   ☐ English

42. Why did you choose that language?

☐

43. Je vaším mateřským jazykem čeština a zároveň druhým jazykem (L2) je angličtina?

☐ Ano ☐ Ne

44. Jste studentem/studentkou katedry anglistiky?

☐ Ano ☐ Ne

45. Jaký je váš studijní program?

[ ]

46. Jestliže L1 znamená váš mateřský jazyk, mluvíte více než jedním L1?

☐ Ano ☐ Ne

47. Prosím, vyberte si přezdívku.

[ ]

48. Kolik je vám let?

[ ]

49. Jaké je vaše pohlaví?

☐ Žena

☐ Muž

☐ Nebinární

☐ Preferuji to neříct

50. Právě studuji

☐ bakalářský obor.

☐ magisterský obor.

☐ doktorandský obor.

51. Mluvíte více než dvěma jazyky? (alespoň na úrovni A1)

☐ Ano ☐ Ne

52. Které jazyky to jsou?

☐ Žádný, mluvím jen dvěma jazyky. ☐ Němčina

☐ Španělština ☐ Ruština

☐ Portugalština ☐ Arabština

☐ Čínština ☐ Ukrajinština

☐ Francouzština ☐ Italština

☐ Jiný _____

53. Jak jste se naučili anglicky?

☐ Hlavně ve formálním prostředí (škola, soukromé lekce).

☐ Hlavně díky interakci s jinými lidmi.

☐ Oběma způsoby.

☐ Jinak (upřesněte) _____

54. Žijete momentálně v České republice?

☐ Ano ☐ Ne

55. Strávili jste v anglicky mluvící zemi alespoň 3 měsíce během posledních 3 let?

☐ Ano ☐ Ne

56. V kolika letech jste se začali učit anglicky?

☐ Později než v 15 letech.

☐ Mezi 12-15 lety.

☐ Mezi 0-11 lety.

57. Kolik let jste měli vyučování ve škole v angličtině (základní škola až vysoká škola)? Tzn. většina předmětů byla vyučována v anglickém jazyce.

☐ 0 let

☐ 1-5 let

☐ Více než 6 let

58. Všimli jste si, že by se vaše schopnost mluvit plynule česky během posledních 3 let změnila k horšímu?

☐ Ano ☐ Ne

59. Všimli jste si, že by se vaše schopnost mluvit plynule anglicky během posledních 3 let změnila k horšímu?

☐ Ano ☐ Ne

60. Všimli jste si někdy, že by se vaše základní jazykové schopnosti v češtině zhoršily? Ohodnoťte každou schopnost zvlášť.

	Určitě ne	Spíše ne	Nevím	Spíše ano	Určitě ano
Čtení	☐	☐	☐	☐	☐
Mluvení	☐	☐	☐	☐	☐
Psaní	☐	☐	☐	☐	☐
Poslech	☐	☐	☐	☐	☐

61. Máte pocit, že vaše základní jazykové schopnosti v angličtině jsou na vysoké úrovni? Ohodnoťte každou schopnost zvlášť.

	Určitě ne	Spíše ne	Nevím	Spíše ano	Určitě ano
Čtení	☐	☐	☐	☐	☐
Mluvení	☐	☐	☐	☐	☐
Psaní	☐	☐	☐	☐	☐

Poslech ☐ ☐ ☐ ☐ ☐

62. Jak byste popsali vaši schopnost vyjádřit se plynule česky, když jste obklopeni anglicky mluvícími lidmi? (např. jste v zahraničí, kde každý den mluvíte anglicky, a najednou vám zavolá váš český kamarád)

☐ Velmi špatná

☐ Špatná

☐ Přiměřená

☐ Dobrá

☐ Výborná

63. Když si vypůjčujete slova z jednoho jazyka do druhého, jakým způsobem to většinou děláte?

☐ Mluvíte česky a půjčujete si slova z angličtiny.

☐ Mluvíte anglicky a půjčujete si slova z češtiny.

☐ Oběma způsoby.

☐ Nikdy nepřebírám slova z jednoho nebo druhého jazyka.

64. Kolik času strávíte mluvením v češtině během dne?

☐ Celou dobu

☐ Většinu času

☐ Půlku času

☐ Velmi málo času

☐ Vůbec

65. Kolik času strávíte mluvením v angličtině během dne?

☐ Celou dobu

☐ Většinu času

☐ Půlku času

☐ Velmi málo času

☐ Vůbec

66. Kterým jazykem většinou mluvíte během těchto aktivit?

	Česky	Anglicky	Oběma jazyky	Žádným jazykem
Psaní neformálním způsobem (např. psaní poznámek pro sebe)	☐	☐	☐	☐

x

Psaní formálním způsobem (např. psaní e-mailů)	☐	☐	☐	☐
Čtení pro radost (např. knížky, časopisy, blogy, ...)	☐	☐	☐	☐
Čtení akademických článků a knih	☐	☐	☐	☐
Mluvení o každodenních záležitostech	☐	☐	☐	☐
Mluvení o tématech, které se vztahují k vašemu studiu (lingvistika, fyzika, biologie, ...)	☐	☐	☐	☐
Poslech pro radost (podcasty, audioknihy, hudba, rádio, ...)	☐	☐	☐	☐
Poslech akademického obsahu (přednášky, online přednášky, ...)	☐	☐	☐	☐
Sledování zábavných pořadů (filmy, seriály, videa na YouTube nebo na sociálních sítích)	☐	☐	☐	☐
Sledování edukačních	☐	☐	☐	☐

videí (např. na
YouTube)

67. Kterým jazykem mluvíte během těchto situací?

	Česky	Anglicky	Oba jazyky	Žádným jazykem
Při interakci s blízkou rodinou (rodiče, sourozenci, partner/ka)	☐	☐	☐	☐
Při interakci se vzdálenou rodinou	☐	☐	☐	☐
Při interakci s přáteli	☐	☐	☐	☐
Doma (s lidmi, se kterými bydlíte)	☐	☐	☐	☐
Při interakci s učiteli a spolužáky	☐	☐	☐	☐
V práci (s kolegy, nadřízenými, zákazníky, ...)	☐	☐	☐	☐

68. Ve kterém z jazyků se modlíte?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

69. Ve kterém z jazyků je pro vás přirozenější používat vulgární slova?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

70. Ve kterém z jazyků se vám snadněji mluví o tématech, která jsou tabu?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

71. Ve kterém jazyce si mluvíte sami pro sebe (interní monolog)?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

72. Který jazyk používáte, když si píšete sami pro sebe? (psaní deníku, poznámky pro sebe, nákupní seznam, ...)

☐ Češtinu

☐ Angličtinu

☐ Oba jazyky

☐ Žádný jazyk

73. Ve kterém jazyce počítáte, když potřebujete něco spočítat sami pro sebe? (máte skupinu lidi, kterou potřebujete přepočítat, abyste věděli, kolik osob tam je)

☐ V češtině

☐ V angličtině

74. Vynásobte 234 x 5.

☐

75. Ve kterém jazyce jste příklad spočítali?

☐ V češtině

☐ V angličtině

76. Ve kterém jazyce většinou vyjadřujete frustraci? Představte si, že vás něco opravdu rozzuří (např. ujede vám poslední autobus na letiště), naštvete se a sami pro sebe si něco řeknete.

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

77. Ve kterém jazyce si mluvíte nahlas sami pro sebe?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ V žádném jazyce

78. Ve kterém z jazyků se vám většinou zdají sny?

☐ V češtině

☐ V angličtině

☐ V obou jazycích

☐ Nevím

79. Pokud budete mít někdy děti, jakým jazykem na ně budete mluvit?

☐ Česky

☐ Anglicky

☐ Oběma jazyky

80. Myslíte si, že čeština je důležitou součástí vašeho života?

☐ Určitě ano

☐ Spíše ano

☐ Nevím

☐ Spíše ne

☐ Určitě ne

81. Myslíte si, že angličtina je důležitou součástí vašeho života?

☐ Určitě ano

☐ Spíše ano

☐ Nevím

☐ Spíše ne

☐ Určitě ne

82. Pokud byste si měli vybrat mezi češtinou a angličtinou a mluvit pouze tímto jazykem po zbytek vašeho života, který jazyk byste si vybrali?

☐ Češtinu   ☐ Angličtinu

83. Proč jste si vybrali tento jazyk?

[   ]

11.2 Respondents' score

Philology students	TOTAL Czech	TOTAL English
1	11	6
2	6	15
3	18.5	1
4	7.5	11.5
5	11.5	6.5
6	9.5	9
7	14.5	10
8	8.5	5
9	10.5	8.5
10	13.5	9
11	10	14
12	14	7
13	8	9.5

14	15	5.5
15	13.5	5
16	7	5.5
17	14.5	7
18	18	7.5
19	10.5	10.5
20	11.5	10
21	14.5	7.5
22	8.5	9.5
23	13.5	11
24	9.5	10.5
25	15	9.5
26	9.5	9.5
27	17.5	8
28	7	14.5
29	11.5	9
30	11.5	7.5
31	16	4.5
32	8.5	8.5
33	17	8.5
34	13	7
35	11.5	9.5
36	13.5	8
37	15.5	2
38	8.5	7.5
39	6.5	10.5
40	13	8
41	15	4
42	13.5	13.5
43	7	12.5
44	7.5	11
45	9.5	9
46	9.5	10.5
47	10.5	12
48	13	10
49	4.5	12
50	11	9.5
51	4.5	13.5
52	9	13.5
53	13.5	13.5
54	8	15

55	10	7
56	11.5	6
57	4.5	17.5
58	9	11.5
59	10.5	12
60	6	17
61	5.5	13.5
62	14	8.5
63	0	21.5
64	8	17
65	8	9.5
66	13.5	9.5
67	8.5	14.5
68	10.5	7.5
69	12	4.5
70	9	12

Table 13: Total scores of philology students.

ATP students	TOTAL Czech	TOTAL English
1	12	12
2	14	7
3	14	7.5
4	11	4.5
5	7	7.5
6	18	6.5
7	5	9
8	9.5	3
9	19.5	6.5
10	10	8.5
11	10	8
12	13	5.5
13	20	9.5
14	10	5
15	9	9.5
16	12	7.5
17	12.5	7
18	11	11
19	13	6.5
20	6.5	2
21	16.5	7
22	12	6.5

23	13.5	9.5
24	10	7
25	11.5	11
26	10	5
27	10.5	6.5
28	17.5	17.5
29	19.5	6
30	11.5	10
31	12.5	8
32	11.5	9.5
33	9	9.5
34	13.5	11
35	7.5	9.5
36	12	9.5
37	14.5	7.5
38	13	11.5
39	1.5	18
40	15	9.5
41	6.5	9.5
42	5	15.5

Table 14: Total scores of ATP students.

Other students	TOTAL Czech	TOTAL English
1	14	7
2	15.5	3.5
3	5	15
4	16	5
5	21.5	3
6	13.5	5.5
7	10.5	8.5
8	16	4
9	11	5.5
10	12	7
11	16.5	7.5
12	20	2
13	20	2.5
14	14.5	3
15	12.5	10.5
16	16	5.5
17	13	1.5
18	11.5	6

19	10	10
20	15.5	10.5
21	13	9.5
22	10.5	12
23	15	6.5
24	16	6
25	11.5	11
26	15.5	2
27	7.5	10.5
28	6	14.5
29	17	7.5

Table 15: Total scores of other students.