

# **Bilingualism and its Effect on Foreign Language Learning**

Dissertation

Zur Erlangung des akademischen Grades

Dr. phil.

Im Fach Erziehungswissenschaften

Eingereicht an der  
Kultur-, Sozial-, und Bildungswissenschaftlichen Fakultät  
der Humboldt-Universität zu Berlin

Von Jessica Anna Tsimprea Andrade Maluch, Ed.M.

Präsidentin der Humboldt Universität zu Berlin  
Prof. Dr.-Ing. Dr. Sabine Kunst

Dekanin der Kultur-, Sozial-, und Bildungswissenschaftlichen Fakultät  
Prof. Dr. Julia von Blumenthal

Gutachter / Gutachterin:

1. Prof. Dr. Petra Stanat
2. Prof. Dr. Hans Anand Pant
3. Prof. Dr. Dominique Rauch

Tag der mündlichen Prüfung: 20.12.2017



## Table of Contents

1	Introduction-----	1
2	Theoretical framework and empirical state of the art-----	6
2.1	The nature of bilingualism-----	6
2.2	The consequences of bilingualism-----	9
2.2.1	The cognitive consequences of bilingualism-----	11
2.2.2	Bilingualism and its effect on metalinguistic awareness -----	14
2.3	Bilingualism and foreign language learning -----	19
2.3.1	Metalinguistic awareness and additional language learning -----	20
2.3.2	Learning strategies in foreign language learning -----	21
2.4	Factors affecting the relationship between bilingualism and additional language learning-----	23
2.4.1	Individual characteristics and background factors -----	24
2.4.2	Features of bilingualism and foreign language outcomes -----	28
2.4.3	Foreign language learning achievement and development-----	32
2.5	Bilingualism and foreign language learning: empirical state of the art-----	33
2.5.1	The importance of individual and familial background characteristics -----	34
2.5.2	The variability between features of bilingualism-----	37
2.5.3	Possible differential patterns of growth-----	40
3	Gaps in the literature and goals of the present study-----	42
4	Study 1: The effect of speaking a minority language at home on foreign language learning -----	45
4.1	Introduction-----	46
4.1.1	Cognitive and linguistic consequences of bilingualism -----	47
4.1.2	Factors affecting language learning -----	48
4.1.3	Immigrant bilingualism and language learning: empirical evidence -----	50
4.1.4	Research questions -----	54
4.2	Methods -----	55
4.2.1	Participants -----	55
4.2.2	Measures -----	57
4.3	Results-----	59
4.3.1	Descriptive statistics-----	59

4.3.2	Bilingualism and English achievement -----	61
4.3.3	Patterns in English achievement across bilingual language groups-----	63
4.4	Discussion -----	67
4.4.1	Limitations and implications for future research -----	72
5	Study 2: Bilingualism as a resource for foreign language learning of language minority students? -----	74
5.1	Introduction-----	75
5.1.1	Cognitive and linguistic consequences of bilingualism -----	76
5.1.2	Moderating factors of bilingualism on foreign language learning -----	77
5.1.3	Bilingualism and foreign language learning: empirical findings -----	78
5.1.4	The Current Study -----	82
5.2	Methods -----	82
5.2.1	Participants -----	82
5.2.2	Measures -----	85
5.2.3	Statistical analysis -----	86
5.3	Results-----	88
5.3.1	Differences between Bilingual and Monolingual Groups -----	88
5.3.2	Cross-sectional Prediction of English Achievement in the Sixth and Eighth Grades 89	
5.3.3	Differential Achievement Gains -----	91
5.4	Discussion -----	92
6	Study 3: Bilingual profiles and third language learning -----	98
6.1	Introduction-----	99
6.1.1	Cognitive and linguistic consequences of bilingualism -----	100
6.1.2	Bilingual factors affecting language learning-----	101
6.1.3	Bilingualism and L3 learning: empirical evidence -----	104
6.1.4	The current study -----	107
6.2	Methods -----	108
6.2.1	Participants -----	108
6.2.2	Measures -----	109
6.2.3	Statistical analysis -----	110
6.3	Results-----	111
6.3.1	Descriptive statistics-----	111
6.3.2	Bilingualism and English as a foreign language-----	113

6.4	Discussion -----	116
7	Findings, discussion, and implications-----	120
7.1	Summary of central findings -----	120
7.2	Discussion -----	123
7.2.1	The influence of individual background factors -----	124
7.2.2	The effect of bilingual features -----	126
7.2.3	Differences in foreign language learning over time-----	131
7.3	Limitations-----	132
7.4	Implications for future research and praxis -----	134
8	References -----	139
9	List of Tables-----	161
10	List of Figures-----	162



## **Acknowledgements**

To Adeline Tsimprea (1919-2016), your strength and will provided me with solid roots.

To Cheryl Tsimprea, your nurturing and support have encouraged me to reach my potential.

To Thilo Maluch, you have challenged me to thrive.

I would like to thank Petra Stanat for her critical feedback and ongoing support. My writing is forever improved because of your time and energy. Also, vital to the completion of this dissertation is Sebastian Kempert. Thank you for your thought-provoking critique and patience with my German. I would also like to thank Marko Neumann for his helpful insights on methodology and statistics. I am grateful to my colleagues at the IQB, especially Bettina Akukwe, Camilla Rjosk, Sebastian Weirich, Ricarda Klein, Kirstin Dröbig, and all the ladies of the Immigration and Language working group for their feedback on the many versions of this thesis and support in navigating all the bureaucracy. Thank you to my friends across the pond, Elizabeth Johnson and Rochelle Wilensky, and also to Renita Danabalan here in Berlin, who provided great critique and support. I am forever grateful to my mentor, Marjorie Ransom, for her wise guidance. Many thanks to the anonymous reviewers who challenged me and provided such great feedback.

I am forever grateful to my loving family of strong women: Lorna Tsimprea, Gail Tsimprea, Francine Benes, Ashlie Tsimprea Swallow, Kara Tsimprea Swallow, Janna Tsimprea, Andrea Meunier, Anna Soares (1913-2014), and of course my little man, Alexander Louis Tsimprea Maluch.





## **Abstract**

In many countries today, there is a large achievement gap between students with immigrant background and their peers. However, many students with immigrant backgrounds speak a minority language at home as well as the majority language of the larger society, resulting in some level of bilingualism. Bilingualism is associated with unique patterns of cognitive and linguistic development that may affect their foreign language learning in positive ways. However, previous empirical research has yielded contrary results. This thesis explores the relationship between bilingualism and foreign language achievement. I pay special attention to factors that affect this relationship, namely background factors, varying bilingual profiles and differential patterns of growth between bilinguals and monolinguals. All analyses are conducted with large-scale assessment samples of students from Germany.

The first research article investigates the effect of immigrant bilingualism on learning English as a foreign language, considering confounding background variables and examining the effect of proficiency in the instructional language at school. The results showed a general positive trend between bilingualism and English foreign language achievement. This positive trend differed significantly between bilingual groups with different home languages with the strongest predictor for foreign language learning being instructional language proficiency.

This second research article considers the effect of bilingualism on the achievement in English as a foreign language from elementary to secondary school. The analyses revealed that, although a significant advantage of bilingualism is found in elementary school, it disappeared as students proceed into secondary school, yielding differential gains for the language minority and monolingual groups. The level of exposure to the minority language played an important role for the English achievement development for bilingual students.

The third research article examines the effect of bilingualism on learning English as a foreign language, considering the impact of manner and age of bilingual acquisition and learning as well as language use practices. The results showed higher foreign language listening and reading outcomes for bilinguals who received formal instruction in their minority language, had acquired both languages in their first three years, and switched more often between their two languages, when compared to their other bilingual and monolingual peers.

The findings of this thesis add to the evidence that under certain conditions, some bilinguals from immigrant communities have advantages in foreign language learning in school compared to their monolingual peers although this pattern does change over time.

## **Zusammenfassung**

In vielen Ländern existieren Unterschiede in der Leistung zwischen Schülerinnen und Schülern mit und ohne Migrationshintergrund. Viele Schülerinnen und Schüler mit Migrationshintergrund sprechen eine Minderheitensprache zu Hause sowie die Zielsprache des Wohnlandes, was zu einem gewissen Grad der Zweisprachigkeit führt. Die Zweisprachigkeit ist mit einzigartigen Mustern der kognitiven und sprachlichen Entwicklung verbunden, die das Fremdsprachenlernen der bilingualen Schülerinnen und Schüler positiv beeinflussen können. Allerdings hat die bisherige empirische Forschung widersprüchliche Ergebnisse ergeben. Diese Dissertation untersucht die Beziehung zwischen der Zweisprachigkeit und dem Fremdsprachenlernen. Ich achte dabei besonders auf Faktoren, die diese Beziehung beeinflussen, nämlich Hintergrundmerkmale, unterschiedliche Merkmale in der Zweisprachigkeit und die Wirkung unterschiedlicher Wachstumsmuster zwischen den zweisprachigen und einsprachigen Gruppen. Alle Analysen werden mit Stichproben großer Schulleistungsuntersuchungen von Schülerinnen und Schülern aus Deutschland durchgeführt.

Der erste Forschungsartikel untersuchte die Wirkung der Zweisprachigkeit von Schülerinnen und Schülern mit Migrationshintergrund auf das Erlernen von Englisch als Fremdsprache unter Berücksichtigung von sich teils überschneidender Hintergrundvariablen und unter Kontrolle der Kenntnisse in der Unterrichtssprache. Die Ergebnisse zeigten einen positiven Trend zwischen der Zweisprachigkeit und dem Fremdsprachenlernen in Englisch. Dieser positive Trend unterschied sich deutlich zwischen den Gruppen verschiedener Heimatsprachen mit den Kenntnissen der Unterrichtssprache als stärksten Prädiktor.

Der zweite Forschungsartikel betrachtete die Wirkung der Zweisprachigkeit auf die Leistung in Englisch als Fremdsprache von der Grundschule bis zur weiterführenden Schule. Die Analysen zeigten, dass, obwohl ein wesentlicher Vorteil der Zweisprachigkeit in der Grundschule gefunden wird, dieser verschwindet, wenn die Schülerinnen und Schüler in die Sekundarstufe I übergehen. Dies führt zu unterschiedlichen Leistungszuwächsen von zweisprachigen und einsprachigen Schülerinnen und Schülern. Das Niveau des Kontakts mit der Minderheitensprache spielte eine wichtige Rolle für die Leistungsentwicklung zweisprachiger Schülerinnen und Schüler in Englisch.

Der dritte Forschungsartikel untersuchte die Wirkung der Zweisprachigkeit auf das Erlernen von Englisch als Fremdsprache und berücksichtigte die Auswirkungen der Art und Weise und der Abfolge des Erlernens der Zweitsprache sowie des Sprachgebrauchs. Die Ergebnisse zeigten Leistungsvorsprünge im Hör- und Leseverstehen in der Drittsprache für Zweisprachige, die Unterricht in ihrer Minderheitensprache erhielten, beide Sprachen in ihren

ersten drei Lebensjahren erworben hatten und häufiger zwischen ihren beiden Sprachen wechselten. Einsprachige und Zweisprachige, die diese Voraussetzungen nicht erfüllten, schnitten schlechter in der Drittsprache ab.

Die Ergebnisse dieser Dissertation geben weitere Hinweise, dass unter bestimmten Voraussetzungen Zweisprachige mit Migrationshintergrund im Vergleich zu ihren einsprachigen Mitschülerinnen und -schülern Vorteile im Fremdsprachenlernen in der Schule haben, obwohl sich dieser Befund im Laufe der Zeit verändert.



## 1 Introduction

With globalization, immigration is becoming increasingly more prevalent in the world today. In the last two decades, immigration in Europe has increased by 1 million every year between 1990 and 2013 (United Nations, 2013) with migrants moving within as well as coming into the European Union (Eurostat, 2017). The resulting demographic change not only has increased the diversity of society but also has changed the educational landscape in schools (De Paolo & Brunello, 2016). This demographic shift in schools around Europe has created challenges to meet the needs of all students. Indeed, students with immigrant background tend to be less successful than their non-immigrant peers (De Paolo & Brunello, 2016; Stanat & Christensen, 2006). This gap remains even after controlling for confounding individual and familial background characteristics (Dustman, Frattini, & Lanzara, 2012; OECD, 2010).

In Germany, roughly a quarter of the school population has an immigrant background (Haag, Boehme, Rjosk, & Stanat, 2016; Pöhlman, Haag, & Stanat, 2013; Statistisches Bundesamt, 2012). It is well documented that for this group of students, disparities in scholastic achievement exist throughout the school system (Diehl, Hunkler, & Kirsten, 2016). Students with one or more parents not born in Germany have been found to have a lower level of school readiness than their peers from native families upon entering school (Biedinger, Becker, & Rohling, 2008). In IGLU 2011, fourth-graders, who have both parents with immigrant background, lagged behind their peers in reading by just under one-half of a standard deviation, translating into three-quarters of a school year of learning, although this is reduced to one-quarter of a year of learning after controlling for background characteristics (Schwippert, Wendt, & Tarelli, 2012). In secondary school, ninth-graders of first and second generation immigrants perform significantly lower in reading than their non-immigrant background peers (Haag et al., 2016). And upon school completion, students with immigrant

backgrounds are underrepresented among students who receive a university-bound leaving certificate (*Abitur*; DIPF, 2016). These discrepancies are not only noticeable for students with immigrant background but also students with immigrant background who speak a minority language at home (e.g., Stanat, Rauch, & Segeritz, 2010).

Many students with immigrant background speak another language at home in addition to the majority language in the larger society (DIPF, 2016). In Germany, over 70% of 15-year-old students with immigration background speak a minority language at home (Gebhardt, Rauch, Mang, Sälzer, & Stanat, 2013). In other words, they are bilingual on some level, as they speak both a minority language in the family as well as the majority language in school. In contrast with the aforementioned findings that highlight the disadvantages of immigrant students, bilinguals could have resources that may positively impact their learning. Despite evidence that speaking a minority language at home is negatively associated with some learning outcomes (Kempert et al., 2016; Poehlman et al., 2013), bilingualism is associated with unique patterns of cognitive and linguistic development, which differ from those of monolingualism, and may affect learning in positive ways (for reviews, see Adesope, Lavin, Thompson, & Ungerleider, 2010; Barac, Bialystok, Castro, & Sanchez, 2014). For example, attentional control processes, which have been found to be associated with proficient bilingualism, may be a concrete resource for school subjects such as mathematics (Kempert, Sallbach, & Hardy, 2011; Saalbach, Gunzenhauser, Kempert, & Karbach, 2016) as well as scientific reasoning (Kempert & Hardy, 2014).

In addition to math and science, bilingual resources could also impact foreign language learning<sup>1</sup>. Anecdotal evidence has long suggested that bilinguals learn additional languages with more ease than monolinguals. Indeed, studies in which the first and second languages are officially supported in the school or community have found significant

---

<sup>1</sup> Throughout this thesis, I refer to foreign language learning and additional language learning as languages acquired in a formal school setting and use these terms interchangeably.

advantages in foreign language outcomes for bilingual students (for review, see Cenoz, 2013). For example, in the Basque Country where both languages (Basque and Spanish) are present in the community and supported through formal learning in school, bilinguals were found to have significantly higher English outcomes than their Spanish monolingual peers (Cenoz & Valencia, 1994). However, studies examining the effect of bilingualism on further language learning without the support of the minority language at school are inconclusive<sup>2</sup>. While some studies find advantages in language learning outcomes (e.g., Klieme, 2006), others find no differences (e.g., Sanders & Meijers, 1995) or even disadvantages for bilinguals compared to their monolingual peers (Schoonen et al., 2002).

As an explanation, Cenoz (2013) proposed that with bilinguals in immigrant communities there are many additional varying factors that potentially play an important role in foreign language outcomes that have not been systematically considered in investigations. Firstly, when investigating students with immigrant background, academic outcomes, and background factors are confounded with each other (Walter, 2008). Indeed, socio-economic status, cultural capital, and the educational attainment of the parents are significant predictors of educational outcomes. Furthermore, these factors vary significantly between students with immigrant background and their native peers as well as between different groups of immigrants (Gebhardt et al., 2013). However, many studies have not taken these factors into account, potentially leading to biased results that do not explain the relationship between bilingualism and additional language learning but rather the disparity between groups.

Secondly, with bilinguals in immigrant communities, the majority language is normally officially promoted in school while the minority language is not. In comparison to other forms of bilingualism (i.e., due to bilingual education), bilingual in immigrant

---

<sup>2</sup> For simplicity, I make reference to bilingual students' known languages as their home minority language or L1 and the majority language or L2. This ordinal nomenclature should not be confused with age of acquisition (simultaneous vs. sequential bilingualism). Additionally, a bilingual student's foreign language will be referenced to intermittently as their L3.

communities may lead to low or imbalanced levels of bilingual proficiency (De Angelis, 2007). Similarly, there may be substantial heterogeneity among acquisition and development factors (e.g., age of acquisition, language exposure and use) potentially affecting learning in known and target languages. It is well documented that development in known languages affects the achievement in target languages between the minority language (L1) and majority language (L2) (Edele & Stanat, 2016) as well as a second and third language (L2 to L3; Haenni Hote, Heinzmann, Müller, Oliveira, Wicki, & Werlen, 2011). This unknown variability may affect results in foreign language achievement for bilingual students.

Thirdly, to date, the relationship between bilingualism and foreign language learning has primarily been investigated with cross-sectional data, with one known study examining the development within one school year. In other areas of academic achievement, bilinguals have been found to have varying patterns of growth when compared to their monolingual peers (Han, 2012; Mancilla-Martinez & Lesaux, 2011). Previous inconclusive results may be due to the fact that bilingual and monolingual groups have different patterns of learning over time. In other words, mechanisms that support bilinguals in foreign language learning may only be helpful at certain points in the language learning process.

To date, studies investigating the effect of bilingualism on foreign language learning with samples of students who are bilingual due to immigration have yet to address these issues adequately. Based on this gap in the literature, the goal of this thesis is to investigate the effect of bilingualism on foreign language learning outcomes as well as the conditions that affect this relationship. Specifically, I examine the relationship between bilingualism and foreign language learning achievement, paying specific attention to features of bilingualism and individual background factors. The basis for this thesis are data from several representative large-scale samples of students in Germany, which are analyzed in three studies. The datasets encompass both elementary and secondary school and are in part longitudinal.



This thesis is structured as follows. In Chapter 2, I present the theoretical framework and the empirical state of the art. I will begin with a general discussion of bilingualism (Section 2.1), followed by an overview of the unique cognitive and linguistic patterns associated with bilingualism (Section 2.2). Section 2.3 considers the link between bilingualism and additional language learning more specifically. In Section 2.4, I explore how factors in the bilingual language experience potentially influence foreign language learning outcomes, concentrating on psycholinguistic and background factors. I then present the empirical state of the art of the relationship between bilingualism and foreign language learning (Section 2.5), exploring the potential reasons for inconclusive results.

In Chapter 3, I present the goals and research questions for the three studies, which are presented in Chapters 4-6 respectively. To conclude, I discuss the central results of the studies before considering the theoretical and practical implications in Chapter 7.

## 2 Theoretical framework and empirical state of the art

### 2.1 The nature of bilingualism

Bilingualism is “[...] a range of different patterns and combinations of acquiring and knowing multiple languages [...]” (Dörnyei, 2009, 15). Despite the wide breadth of bilingualism – worldwide bilinguals make up roughly 60% of the world’s population (Romaine, 2008) – and the numerous studies investigating this phenomenon, there is little agreement on what exactly a bilingual person is, and definitions are derived from various theoretical and methodological perspectives with specific problems and contexts in mind (Mohanty, 1994). However, there is consensus that bilingualism is psychologically and sociologically unique from monolingualism, the state of knowing and using a single language (Hamers & Blanc, 2000). Juxtaposed to this, bilingualism could be described as “[...] the practice of alternatively using two languages [...]” (Weinreich, 1953, p.1). In addition, there is agreement that a bilingual is more than the sum of two monolinguals (i.e., Multicompetency by Cook, 1991; 2003; Grosjean, 1985).

Definitions of bilingualism tend to take several approaches, but most incorporate either a competency or a functional approach (Mohanty, 1994). Many have stressed the importance of competency, like Bloomfield (1984) who argues that a bilingual person has “[...] native-like control of two languages” (p. 56). Steiner (1998) takes competency one step further by suggesting that a bilingual (or trilingual) person is one that does not proceed laterally when translating but rather reaching inward to the “symbiotic core” (Steiner, 1998, p. 125). Conversely, it has also been proposed that to be bilingual, only a minimal competence is needed in at least one of the four language skills (listening, speaking, reading and writing) (Macnamara, 1967).

The functional approach, while taking into account competence as well, also considers the importance of the environment in which bilingualism exists. Skutnabb-Kangas (1981)

identifies a bilingual individual as “[...] someone who is able to function in two (or more) languages, either in monolingual or bilingual communities, in accordance with the sociocultural demands made of an individual’s communicative and cognitive competence by these communities or by the individual herself [...]” (p.90). This definition recognizes the competency aspects while highlighting the communicative competence necessary to meet the needs of the individual and interlocutor.

Similar to other functional conceptualizations which include competency and contextual components, Hamers and Blanc include in their definition the psychological nature of knowing and using two languages. They define bilingualism, or what they term as bilinguality, as “[...] the psychological state of an individual who has access to more than one linguistic code as a means for social communication” (Hamers & Blanc, 2000, p.6). I adapt and use this overarching definition for the current study, as it is broad enough to encompass a spectrum of bilingualism yet specific enough to recognize the cognitive and linguistic aspects. Furthermore, it isolates social communication as a defining factor and therefore includes individuals who speak two languages but do not necessarily read and write in two languages (i.e., biliteracy). This definition also focuses on individual bilingualism, varying from societal bilingualism, which emphasizes the wider phenomenon of bilingualism across societies and the globe (Baker, 2011; Hamers & Blanc, 2000).

Considering the variety of characteristics and contexts associated with bilingualism, theorists have proposed different categories of bilingualism. Hamers and Blanc (2000) in their discussion of bilingualism distinguish between six psychological and sociological dimensions of bilingualism, while Edwards (2006) identifies eight interacting psychological, cognitive, linguistic and cultural dimensions. These subcategories can influence the development of a bilingual’s linguistic, neuropsychological, cognitive and sociocultural language profile (Hamers & Blanc, 2000, p. 28) and, consequentially, should be taken into account when

comparing findings as well as in generalizing about the greater phenomenon of bilingualism (Mohanty, 1994).

A central subdivision of bilingualism is the age at which both language are acquired (or learned), as in the case of *simultaneous* and *sequential* bilingualism (Genesee, Hamers, Lambert, Mononen, Seitz, & Starck, 1978). Simultaneous bilingualism begins from the onset of language acquisition (August & Hakuta, 2005). A simultaneous bilingual learns two linguistic systems that can serve the same social function and therefore develops discrimination as well as perceptual skills early on (Hamers & Blanc, 2000). In contrast, sequential bilinguals learn one language after another. The exact age boundary between simultaneous and sequential bilinguals is rather arbitrary, although August and Hakuta (2005) suggest age five as a possible onset of sequential bilingualism when it is argued the basic components of language are already in place (McLaughlin, 1984). Proposed distinctions between the groups include maturation and acquisition differences as well as attainment and proficiency differences (Butler & Hakuta, 2006).

Another category which may overlap with the simultaneous/sequential typology is that of *balanced* and *dominant* bilingualism (Peal & Lambert, 1962). Balanced bilingualism refers to bilinguals who have similar proficiencies in both languages, while dominant bilingualism is when an individual has a higher proficiency in one language over the other. This dichotomy is often related to functional differences as well as age of acquisition (Butler & Hakuta, 2006). This distinction plays a role in Cummins' *Interdependence Hypothesis* and the construct of underlying proficiency (2000), in which it is hypothesized that first and second language knowledge are linked, and that a first language needs to be sufficiently developed in order to transfer skills to the second language successfully.

Another distinction is *additive* and *subtractive* bilingualism. First proposed by Lambert (1973) at a symposium entitled 'cultural factors in learning,' this dichotomy has been used widely across the literature to explain a variety of phenomena from cognitive to

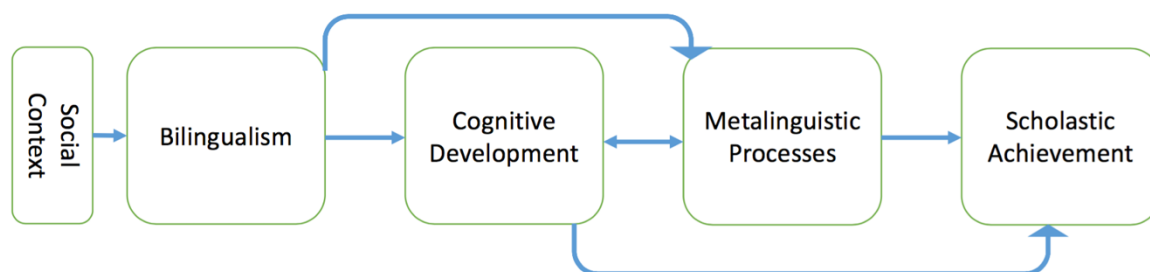
ethnolinguistic differences. In its original conception, *additive* bilingualism is when a second language is developed without the loss of the first. Juxtaposed to this is *subtractive* bilingualism, which is when the two languages are in competition with each other, resulting in one language being replaced by the other. In this paper, Lambert also proposes that additive bilingualism is associated with languages that are “[...] socially relevant [...]” and “[...] have social value and respect [...]” (p. 25), or what is sometimes referred to as *elite* bilingualism (Fishman, 1977; De Mejía, 2013). Conversely, Lambert observed that *subtractive* bilingualism usually happens with language minority groups. “Their degree of bilinguality at any point in time would likely reflect some stage of subtraction of the ethnic language and its replacement with another” (p. 25). This may be the case with bilingualism due to immigration, as the home language is slowly replaced by the more prestigious majority language of the receiving country (Edwards, 2006).

These categories of bilingualism have proved useful when explaining varying outcomes associated with bilingualism (Cummins, 1976). As I will discuss in the following sections, these forms of bilingualism can alter the cognitive and metalinguistic consequences of having “[...] access to more than one linguistic code as a means for social communication” (Hamers & Blanc, 2000, p.6).

## **2.2 The consequences of bilingualism**

Bilingualism as an individual and societal phenomenon has long been a topic of interest for researchers across a variety of disciplines such as psychology, linguistics, and education. For over fifty years, research has investigated the possibility that bilingualism may have facilitating effects on cognitive and metalinguistic outcomes (Bialystok, 2002). The results are mixed, but the majority of research reports advantages for bilinguals (for reviews, see Adesope et al., 2010; Barac et al., 2014).

To frame this discussion, it is useful to begin with an overarching theoretical model to explain these processes. Despite the plethora of literature on the topic, there is a dearth of theoretical models explaining the relationship between bilingualism and cognitive and linguistic processes, including metalinguistic awareness. Building on the theoretical basis of Vygotsky (2012), Ben-Zeev (1977), and Cummins (1978), all of whom associated bilingualism with heightened metalinguistic processes and cognitive development, Mohanty (1994) provides a general model to structure the effects of bilingualism on cognitive and linguistic processes and to show how this, in turn, influences learning outcomes (Figure 2.1).



*Figure 2.1.* A model of the relationship between bilingualism, metalinguistic processes and cognitive development, Based on Mohanty, 1994

In this model, bilingualism is developed within a certain social context (e.g., bilingualism due to immigration). Although often interpreted as a marginal component, the wider social context directly impacts how bilingualism is developed and may affect the development of cognitive and metalinguistic processes (Mohanty, 1994, p. 96). Building on the social context, knowing and speaking two languages has consequences for cognitive development and in turn, can impact how an individual is able to reflect on linguistic knowledge (Kemp, 2001). This, in turn, can have an effect on scholastic achievement (Mohanty, 1994). As Mohanty states:

In the context of bilingualism, it can be said that, as a result of the demands of the complexities involved in bilingual communication, the bilingual child develops certain coping

strategies which boost his metalinguistic development in particular and metacognitive development in general. Better development of metalinguistic and metacognitive processes, in turn, help the child exercise greater control over his cognitive processes and make them more effective improving the level of performance of the child in a variety of intellectual and scholastic tasks. (p. 92).

The bilingual variation in cognitive and metalinguistic development ultimately has consequences for scholastic achievement.

In line with this model, I will organize the sections as follows. I will begin with a discussion of the cognitive effects of bilingualism. Subsequently, I will consider why bilinguals vary in their metalinguistic functions.

### **2.2.1 The cognitive consequences of bilingualism**

It has long been theorized that experiencing the world with two languages has consequences for the development of cognitive abilities (Vygotsky, 2012), and the relationship between bilingualism and cognitive outcomes has been the subject of numerous studies. Early investigations proposed a negative relationship between bilingualism and cognitive outcomes. Weinreich (1953) in *Languages in Conflict* reported that bilinguals not only had reduced intelligence but also faced split national loyalties, problems of marginalization, emotional difficulties, moral depravity, stuttering, left-handedness, excessive materialism, and laziness. However, early studies relied on faulty research designs, which did not take into account confounded socio-psychological factors. This resulted in conclusions related more to the problems of immigrants integrating into a society with a strong majority language than that of bilingualism *per se* (for discussion, see Hamer & Blanc, 2000).

The landmark study by Peal and Lambert (1962) called this well-established view of bilingualism into question. Using a sample matched for background characteristics, balanced

bilinguals (i.e., bilinguals with similar proficiencies in both languages) outperformed monolinguals in verbal and nonverbal tests of cognitive ability. The authors concluded that bilingual children had a more diversified structure of cognition and mental flexibility. This study sparked a series of further investigations, examining the potential cognitive benefits of knowing and using two language systems. Subsequently, bilinguals have repeatedly been shown to have advanced cognitive flexibility and processing functions (for reviews, see Adesope et al., 2010; Barac et al., 2014; Bialystok, 2009; Hamers & Blanc, 2000).

Specifically, bilinguals have been found to have greater ability in reconstructing perceptual situations (Balkan, 1970), exhibit a larger range of divergent thinking (Adi-Japha, Berberich-Artzi, & Libnawi, 2010; Ricciardelli, 1992), and show more discrimination when making perceptual distinctions (Ben-Zeev, 1972; 1977). Additionally, there is some evidence that the effect of bilingualism extends to working memory tasks (e.g., Morales, Calvo, & Bialystok, 2013) although these findings are not consistent (Engel de Abreu, 2011).

Bialystok (2010) proposes that bilinguals have higher levels of executive functions – the interrelated processes of inhibition, attentional control, and shifting (Miyake et al., 2000). Specifically, bilinguals have been found to have enhanced inhibition (Bialystok, Craik, & Luk, 2012; Colzato et al., 2008) and attentional control (Bialystok, Craik, Klein, & Viswanathan, 2004; Bialystok et al., 2005; Bialystok, 2006a; Morton & Harper, 2007; Martin-Rhee & Bialystok, 2008; for contrary results, see Paap & Greenberg, 2013). This is observable in the Simon Task, which tests stimulus-response compatibility (Barac et al., 2014). Participants are tested on their reaction time when stimulus and response is compatible and incompatible. Bilinguals have been found to have significantly faster reaction time, especially when the stimuli and responses are incompatible (Bialystok, 2006a).

Bilinguals have also been found to be more accurate on the incongruent tasks as measured by the Flanker Task (e.g., Yang, Yang, & Lust, 2011) or child-friendly ANT version (e.g., Costa, Hernández, & Sebastián-Gallés, 2008; Rueda et al., 2004). Originally



developed by Eriksen and Eriksen (1974), the Flanker Task measures response time of congruent and incongruent stimuli with letters, or with the case of the ANT version, arrows. Additionally, bilinguals have been found to respond more quickly when answering items of the Stroop Task (Bialystok, Craik, & Luk, 2008; for contrary results, see Kousaie & Phillips, 2012), the effect of which has been attributed to the competition between automatic processes of reading and the process of color naming (MacLeod & MacDonald, 2000).

Several analogous explanations have been proposed for why bilinguals demonstrate these advantages. One perspective suggests that suppressing one language when speaking the other trains bilinguals to suppress the irrelevant part of the task and control their attention better than monolinguals (Adesope et al., 2010). Another claims that a bilingual's ability to hold two languages simultaneously in the mind, resisting intrusions of the other language, might explain the greater control (Yoshida, 2008). In other words, while the first explanation stresses the suppression of one language which forces enhanced attention, the latter emphasizes a stronger separation between languages which results in enhanced control process.

These findings have been shown to be robust across varying language groups with different immigration background and cultural history (Barac & Bialystok, 2012; Bialystok, Barac, Blaye, & Poulin-Dubois, 2010; Yang et al., 2011). Other background factors, like socio-economic status as well as parental education, have been found to influence executive functions of monolingual (Ardila, Rosselli, Matute & Guajardo, 2005; Hughes & Ensor, 2005; Mezzacappa, 2004; Noble, Norman & Farah, 2005) and bilingual children (Carlson & Metzloff, 2008). However, when comparing monolingual and bilingual children, both from low socio-economic status families, bilingual children still outperform their monolingual peers. This suggests that although socio-economic status is an important factor, it does not necessarily interact with group membership and bilinguals still have an advantage in

executive functioning once socio-economic status is taken into account (Engel de Abreu et al., 2012).

Language proficiency seems to play a role in the advantage of bilinguals in executive functioning. For example, bilinguals with higher proficiency have been found to have greater ability to inhibit interferences than bilinguals with lower proficiency (Zied et al., 2004). Similarly, simultaneous bilinguals who had more balanced proficiencies outperformed not only monolinguals but also language minority children who had been attending bilingual immersion classes for six months (Carlson & Metzoff, 2008). This result not only replicates earlier findings which link bilingual proficiency and enhanced cognitive abilities (i.e., Hakuta & Diaz, 1985), but also suggests that bilinguals must reach a certain level of bilingual proficiency to have cognitive advantages.

In conclusion, the experience of knowing and using two languages affects cognitive development. Specifically, bilingualism has been found to have an impact on executive functioning. This heightened executive functioning, although robust across varying language combinations, cultural backgrounds, and socio-economic statuses, may be affected by bilingual language proficiency.

## **2.2.2 Bilingualism and its effect on metalinguistic awareness**

As depicted in the theoretical model above (Figure 2.1), another aspect important to the study of bilingualism is its effect on metalinguistic awareness. As a subcategory of metacognition (Roberts, 2011), metalanguage utilizes conscious control of knowledge as opposed to unconscious acquisition. Despite its various interpretations as a construct (for discussion, see Jessner, 2006), metalinguistic awareness can be defined as “[...] the ability to reflect upon and manipulate the structural features of spoken language, treating language itself as an object of thought, as opposed to simply using the language system to comprehend and

produce sentences” (Tunmer & Herriman, 1984, p. 12). These features of language can include such areas as phonology, syntax, morphology, phrasal construction, semantics, pragmatics, knowledge about text types and their structures, and conversational rules (Dakowska, 1993).

Metalinguistic awareness allows an individual to detach the meaning from the context in which it is embedded (Beilin & Spontak, 1969). An example of metalinguistic awareness includes the ability to separate meaning and forms, discriminate language components, identify ambiguity and understand the use of grammatical forms and structures (De Angelis, 2007). Children develop metalinguistic awareness in three stages: implicit knowledge, epilinguistic knowledge and finally explicit knowledge (Gombert, 1992; Karmiloff-Smith, 1986). Metalinguistic awareness appears in early childhood during the preschool years (Barac et al., 2014) and develops throughout childhood (Hakes, 1980) with a big leap during literacy acquisition (Homer, 2009).

Metalinguistic awareness overlaps with several other psychological processes, namely attention or noticing (e.g., Carr & Curran, 1994). However, they do differ. As Schmidt (2007) discusses, attending (or noticing) is the mechanism that controls access to awareness. Metalinguistic awareness also intersects with language aptitude (Kemp, 2001; Rauch, Naumann, & Jude, 2011). Although rather contentious as a construct (for discussion, see Dörnyei, 2010a), foreign language aptitude can be defined as a complex of “basic abilities that are essential to facilitate foreign language learning” (Carroll & Sapon, 1959, p. 14). The overlap between metalinguistic awareness and language aptitude is revealed in the variety of language aptitude test instruments such as the Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1959; for discussion, see Bowey, 1988; Kemp, 2001; Skehan, 2016), the Pimsleur Language Aptitude Battery (PLAB; Pimsleur, 1966; for discussion, see Hawkins, 1981; 1999) and the Language Awareness Test (LAT; Fehling, 2008). This overlap is

worthwhile to mention in that metalinguistic awareness seems to be a central element in facilitating foreign language learning.

While all children develop metalinguistic skills, metalinguistic awareness in bilingual children has been of specific interest to research and has a long history (Barac et al., 2014). The theoretical assumption is that bilinguals, having additional cognitive demands of two languages, develop additional consciousness about language (Roberts, 2011). Managing the demands of two languages, bilingual children acquire an analytic orientation to language structure (Mohanty, 1994) regarding it as an object onto itself, resulting in heightened metalinguistic awareness. This awareness can become utilized when solving new tasks or approaching a new linguistic code (Moore 2006; Ransdell, Barbier & Niit 2006; Jessner, 1999; 2006). As proposed by Vygotsky (2012), having the ability to express the same thought in different languages enables a bilingual child “[...] to see his language as one system among many, to view its phenomena under more general categories, and this leads to awareness of his linguistic operations” (p. 110). Segalowitz (1977) refers to the internalization of two languages as resulting in a more complex, better equipped mental calculus, which enables bilinguals to manipulate the rules of linguistic systems more easily. Metalinguistic awareness also requires the use of executive functions, specifically inhibition, as to some extent, it requires an individual to suppress specific aspects of language (Bialystok, 1986; 1997; Bialystok, Shenfield, & Codd, 2000). Therefore to some extent, the construct of metalinguistic awareness may overlap with as well as act in conjunction with executive functions (c.f. the Bialystok Model, 2001; the Mohanty Model, 1994). Furthermore, it is proposed that metalinguistic awareness can transfer between languages (Jessner, 1999; 2006) although the exact nature of the transfer remains unclear (Verhoeven, 2007).

Despite the strong theoretical assumptions, empirical studies paint an inconsistent picture regarding metalinguistic awareness in bilingual children. Although often conceptualized and operationalized as a unitary construct (Ricciardelli, 1989), metalinguistic

awareness is usually divided into several subcategories (Roberts, 2011). Here, I will focus the current discussion on phonological, syntactic and lexical awareness. The most widely researched aspect of metalinguistic awareness is phonological awareness, or the ability to manipulate phonological units such as syllables, onsets, rimes and phonemes (Barac et al., 2014). Despite the plethora of empirical studies, there has been no consistent positive relationship found between bilingualism and phonological awareness (for review, see Bialystok, 2006b). In kindergarten, bilinguals seem to have heightened phonological awareness, but this advantage disappears by the first grade (Bruck & Genesee, 1995; Yellard, Pollard, & Mercuri, 1993). In older children, some studies have found heightened levels of phonological awareness for bilinguals (Campbell & Sais, 1995; Eviator & Ibrahim, 2000), while others found no differences between the monolingual and bilingual groups (Bialystok, Majumder, & Martin, 2003).

In contrast, there is more consensus about heightened awareness in bilinguals regarding other aspects of metalinguistic awareness, specifically those that require selective attention. Syntactic awareness, assessed with tasks that ask the individual to judge and correct grammatical mistakes and determine ambiguity and create interpretations, have been found to be heightened in bilingual samples. Bilinguals have been found to have enhanced abilities to note and correct grammatical mistakes, especially when given misleading information like nonsense sentences like “Apples grow on noses” (Bialystok, & Ryan, 1985; Bialystok & Majumder, 1998; Diaz, 1985; Galambos & Hakuta, 1988; Galambos & Goldin-Meadow, 1990; Reder, Marec-Breton, Gombert & Demont, 2013; for contrary results, see Edwards & Christopherson, 1988). Similarly, bilinguals have also been found to have an advantage in lexical awareness (Ben-Zeev, 1977; Bialystok, 1988; Cummins, 1978; Edwards and Christopherson, 1988; Eviatar and Ibrahim, 2000; Feldman & Shen, 1971; Ianco-Worrall, 1972; Mohanty, 1994; for contrary results, see Ricciardelli, 1992; Rosenblum & Pinker, 1983). Lexical awareness can be defined as the ability to separate a word from its referent and

is often tested utilizing Piaget's sun/moon task (Piaget, 1929). In the cases of syntactic and lexical awareness, the task requires the individual to separate aspects of language and reorganize it, resulting in the need for greater control of selective attention (Bialystok, 1992; 2001).

Several factors have been found to influence metalinguistic awareness in bilingual children, namely bilingual proficiency (Al-Dossari, 2004; Galambos & Goldin-Meadow, 1990; Rauch et al., 2012) and language typology (Bialystok, 2006b). Higher levels of bilingual proficiency are associated with stronger metalinguistic skills (Barac et al, 2014; Cummins, 1976; 1981a). The theoretical assumption is that a certain level of proficiency in both languages must be reached for being bilingual to influence metalinguistic awareness positively. Having a more versatile linguistic reservoir, balanced bilinguals can draw on prior structures (e.g., grammar, pragmatics, lexicon, pronunciation, and orthography) and transfer them when learning a new language system (Cenoz & Todeva, 2009). This linguistic transfer, or the ability to learn structures in a new language based on previously acquired resources (Genesee, Geva, Dressler, & Kamil, 2006), is comparable to Cummins's *Interdependence Hypothesis* (2000). Investigating Spanish-English bilingual children, Galambos and Hakuta (1988) found that language proficiency influenced metalinguistic awareness. Similarly, Rauch and colleagues (2011) found significant advantages for high proficiency bilinguals (i.e., fully biliterate) compared to partial bilinguals and their monolingual peers. However, this advantage disappears when the individual background characteristics of socio-economic status, gender, general cognitive abilities and school track are taken into account. Contrary to the aforementioned findings, limited proficiency bilinguals who had only been exposed to a second language for six months also outperformed their monolingual peers in lexical awareness (Yelland et al., 1993).

In addition, language typology also seems to affect the development of metalinguistic awareness (Bialystok, 2006b). It is assumed that certain language groups and language

combinations support the development of metalinguistic awareness more than others. For example, Barac and Bialystok (2012) assessed the metalinguistic awareness of a sample of Spanish-English, French-English, Chinese-English and English monolingual children. The Spanish-English bilinguals significantly outperformed the other bilingual groups and the monolingual group. The authors concluded that metalinguistic awareness may be more transferrable between languages with more structural similarities (i.e., French and English) compared to languages with little or no structural overlap (i.e., Chinese and English).

In sum, despite the results being less robust and consistent than the findings of studies investigating executive functions, bilinguals have been found to have advantages on some metalinguistic tasks, specifically tasks calling for inhibition and selective attention. However, other factors, such as language combinations and proficiency, may affect this relationship. It has been proposed that heightened levels of metalinguistic awareness, as well as the differences in cognitive processes previously discussed (Section 2.2.1), support a bilingual's ability to learn an additional language (Kemp, 2001). In the following section, I will focus specifically on why these heightened mechanisms found in bilinguals may support successful foreign language learning.

## **2.3 Bilingualism and foreign language learning**

Anecdotal evidence has long supposed that if you know more than one language, learning a new language comes easier. In research, there have been several proposed explanations why bilinguals have advantages in additional language learning. In this section, I examine the relationship between bilingualism and foreign language learning more closely. Specifically, I discuss why bilinguals may be more successful language learners through their heightened metalinguistic awareness. Additionally, I briefly consider why language learning strategies may also aid additional language learning for bilinguals.

### 2.3.1 Metalinguistic awareness and additional language learning

As explored above (Section 2.2.2), metalinguistic awareness refers to an individual's understanding about language as an object (Alderson, Clapham, & Steel, 1997; Ellis, 2004). Referring to the ability “[...] to think about and reflect upon the nature and function of language” (Pratt & Grieve, 1984, p. 2), metalinguistic awareness is often proposed as crucial for successful foreign language learning (Jessner, 1999).

Metalinguistic awareness is important for the language learning process in several ways. Broadly speaking, metalinguistic awareness is critical for learning to talk about language (Roberts, 2011). Initially, native language acquisition is implicit (Hakes, 1980). It is learned through function, which stresses the purpose and context of language, followed by form, or the explicit learning of the formal rules of language. In contrast, second or foreign language learning is often developed through explicit learning of formal structures (Roberts, 2011; Vygotsky, 2012). There is often a lack of contextual cues to aid learning and thus the learner needs to focus deliberately and consciously on the language form (Skehan, 2002), especially in the early stages of language learning (Roberts, 2011). Because form and function are reversed, foreign language learning forces the learner to focus attention on relevant features of the target language (Doughty & Williams, 1998; Sanz, 2012), increasing the importance of metalinguistic awareness in the learning process (Jessner, 2008a; Roberts, 2011; Tunmer & Myhill, 1984; Vygotsky, 2012). Studies investigating samples of ‘good language learners’ reported that successful language learners attend more to form (e.g., grammatical structures or sentence structures) than less successful language learners (Naiman, Fröhlich, Stern & Todesco, 1978; Rubin, 1975), and this focus on form supports the learning process (Seliger, 1975; Thomas, 1988; Schmidt, 1994).



Measures of metalinguistic awareness have been found to be a strong predictor of language learning outcomes in second language learners (Brooks & Kempe, 2013; Dufva & Voeten, 1999; Sparks, Patton, Ganschow, & Humbach, 2009). This positive association between metalinguistic awareness and additional language outcomes has not only been found with monolinguals learning a second language but also for bilinguals learning a third language (Hofer & Jessner, 2016; Kemp, 2001; Rauch et al., 2012). Similarly, Ter Kuile and colleagues (2011) found that bilinguals outperformed their monolingual peers in tasks of metalinguistic awareness, as measured through a test of an unknown language (also see McLaughlin & Nayak, 1989).

There is some evidence that language proficiency affects this relationship between metalinguistic awareness and foreign language learning. For example, Rauch and colleagues (2011) found that metalinguistic awareness acts as a mediating factor especially for bilinguals with high proficiency (i.e., biliteracy) in both their languages. This supports the theoretical assumption that metalinguistic awareness fosters foreign language learning. For bilingual samples, there is some evidence that proficiency does positively impact this relationship. Therefore, it can be postulated that bilinguals, as they have been found to have heightened levels of metalinguistic awareness, should have advantages in foreign language learning.

### **2.3.2 Learning strategies in foreign language learning**

Another explanation as to why bilinguals potentially have advantages in learning additional languages is their increased use of learning strategies (Cenoz, 2013). Despite challenges in defining the construct (Dörnyei, 2010a), research in learning strategies may provide further insight into why bilinguals may have advantages in additional language learning.

Language learning strategies, as a construct which strongly overlaps with metalinguistic awareness, developed out of the ‘good language learner’ literature of the 80’s and 90’s in an attempt to explain why some language learners were more successful than others (Dörnyei, 2009). Despite various interpretations as well as the debate on its validity as a construct (for discussion, see Dörnyei, 2010a, pp. 162 – 166), language learning strategies can be described as “any thoughts, behaviors, beliefs, or emotions that facilitate the acquisition, understanding, or later transfer of new knowledge and skills” (Weinstein, Husman, & Dierking, 2000, p. 727).

Despite a broad and ambiguous definition as well as dubious validity, there is agreement that language learning strategies support certain learners’ effective language learning (Cohen, 2014; Dörnyei, 2010b; Ehrman, Leaver, & Oxford, 2003). As Oxford (2002) argues, “[...] these strategies can facilitate the internalization, storage, retrieval, or use of the new language” (p. 124). Several taxonomies of language learning strategies have been developed over the years with two of the most well-known and highly compatible by O’Malley and Chamot (1990) and Oxford (1990). Subdivided into cognitive, metacognitive, social and affective strategies, the questionnaires ask individuals to reflect about their strategy use. These measures have given insight into the black box of active and conscious learning of a second language (Dörnyei, 2010a). Indeed, empirical studies have shown that the more language strategies employed, the higher the foreign language proficiency. This is true of both monolingual (for review, see Oxford, 1999) as well as bilingual samples (Wharton, 2000).

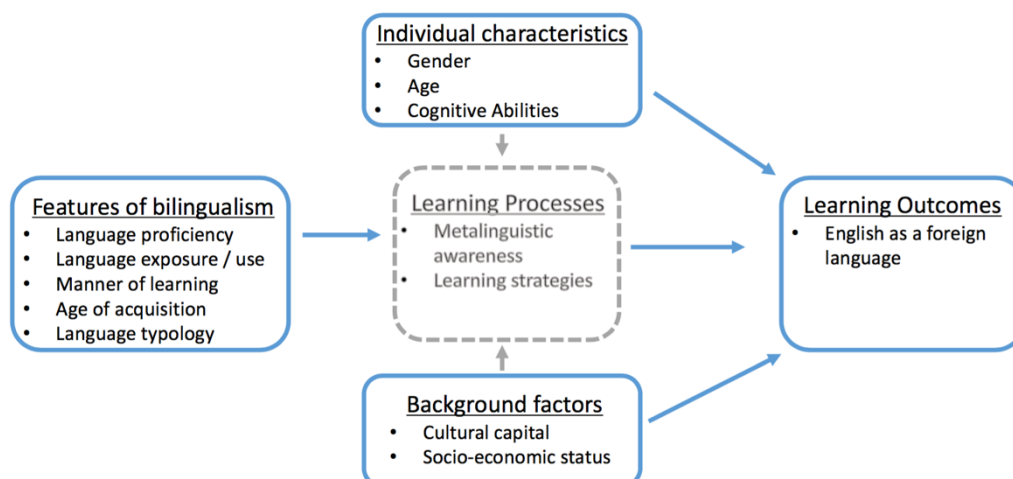
The theoretical assumption is that bilinguals, as they have developed abilities required to cope with their more complex linguistic environment (Kemp, 2001), will use an increased number of learning strategies (Ramsay, 1980) as well as more appropriate strategies resulting in more effective language learning (Bowden, Sanz, & Stafford, 2005). Indeed, several studies have shown a positive relationship between bilingualism and the number and use of language learning strategies (Kemp, 2007; Psaltou-Joycey & Kantaridou, 2009). Furthermore,

bilinguals learning an artificial language employed more appropriate learning strategies than their monolingual counterparts although background factors were not taken into account (Nayak, Hansen, Krueger, & McLaughlin, 1990). This evidence suggests that because language learning strategies are positively associated with foreign language learning, and because bilinguals utilize more appropriate language learning strategies, bilinguals may have an easier time learning a foreign language.

In sum, it has been suggested that bilinguals have advantages in foreign language learning due to their heightened levels of metalinguistic awareness. In addition, it has been proposed that increased learning strategies, which as a construct overlaps with metalinguistic awareness, also can help bilinguals be more successful with learning additional languages.

#### **2.4 Factors affecting the relationship between bilingualism and additional language learning**

Bilingualism is a complex phenomenon, and the context in which languages are developed play an important role in a child's cognitive and linguistic development (e.g., Vygotsky, 2012). Thus far, I have presented how bilinguals may have advantages in foreign language learning because of their heightened levels of metalinguistic awareness, as well as other cognitive and linguistic processes and mechanisms. However, bilingualism does not automatically lead to advantages (Bialystok, 2001). There is a plethora of linguistic, sociolinguistic, social psychological, and educational factors associated with bilingual language development, and these factors can have effects on language learning outcomes (Cenoz & Valencia, 1994; Hufeisen, 2010). As mentioned above, some of these factors potentially reduce and even reverse the additive effects of knowing and using two languages. In the following, I examine several of these factors, utilizing a research model adapted from Stern (1983), who developed this model for second language teaching and learning (Figure 2.2).



*Figure 2.2.* Research Model: adapted from the second language learning model by Stern, 1983, p. 338

Originally designed to explain why certain groups of language learners are more successful than others (Stern, 1983), the current model has been adapted to show the relationship between bilingualism and English foreign language achievement. It is similar to the theoretical model by Mohanty (Section 2.2) in that bilingualism is assumed to affect learning processes, specifically metalinguistic awareness. This, in turn, impacts academic outcomes, namely foreign language learning. The current research model expands this linear path found in Mohanty's model (Figure 2.1) by adding several categories of factors, namely individual characteristics, features of bilingualism, and background factors. In the following sections, I will focus the discussion on the specific factors, their definitions, how they are operationalized, and their potential effect on foreign language learning outcomes. Additionally, I will discuss the possible variability of the model over time.

#### 2.4.1 Individual characteristics and background factors

As discussed above (Section 2.4), it is not just language factors that influence language learning outcomes. Rather, there are a variety of individual and background factors that also have direct and indirect effects on learning outcomes. The study of individual

differences is a well-researched branch of second language acquisition (Dörnyei, 2010a). In fact, it is argued that language learner characteristics have a greater effect on second language acquisition than the acquisition of the first language (L1) (Bowden et al., 2005). Despite the numerous factors proposed to influence differences between language learning, I will briefly mention the most important – age, gender, and general cognitive abilities – and discuss why it is important to control for them before discussing background factors in more detail.

Individual factors, specifically age and gender, play a role in the language learning process (August & Hakuta, 2005). The age of the language learner is often discussed in education as a central factor in foreign language learning (Jessner, 2008b). How old an individual is when learning a language may affect other cognitive, social and affective factors although there is a lack of consensus if this favors younger or older learners (for discussion, see Dörnyei, 2009; Long, 1990; Singleton, 2001). In empirical research, age is usually measured using birth year and month as reported either by a parent, teacher or the student (e.g., DESI-Konsortium, 2008). In second language learners, age is negatively associated with learning outcomes (Collier, 1987). This has been found to be true for bilingual minority language learners, who have a noticeably higher repetition rate (Kim, 2011). Gender, also usually reported by parents, teachers, or students, has also been shown to have an effect on language learning. The general trend is that girls outperform their male counterparts (Ellis, 1994; Kiss and Nikolov, 2005). General cognitive abilities, or general intelligence, is often associated with academic achievement (Karch, Gottschling, Spengler, Hegewald, & Spinath, 2013). Measures of general cognitive abilities usually are a multiple choice paper-pencil test (e.g., Kognitive Fähigkeitstest, Heller & Perleth, 2000). Often divided into subtests, measures of general cognitive abilities are often used to account for systematic differences between groups (e.g., Hess, Göbel, & Hartig, 2008). The factors of age, gender, and general cognitive abilities, because they may differ between the samples and lead to bias

in the results, should be controlled when investigating the relationship between bilingualism and foreign language learning.

Besides individual characteristics, the context affects a child's cognitive and linguistic development (Vygotsky, 2012; Wald, 1984). This is especially true with factors such as socio-economic status, one of the most widely used background variables in educational research (Sirin, 2005). Socio-economic status can be defined as an individual's ranking according to access to or control over wealth, power, and social status (Mueller & Parcel, 1981; also see Baker, 2014). As a multidimensional construct, it is operationalized in several ways, often through parental income, education or occupation (Sirin, 2005). Large-scale assessments, like IGLU, often utilize indices like the ISEI, which ranks professions hierarchically (Ganzeboom & Treiman, 1996). The various operationalizations of socio-economic status, although strongly related to each other, have been argued to capture different aspects of the intended construct (Akukwe & Schroeders, 2016).

In theory, students from higher socio-economic status have parents who have more resources to invest in their scholastic achievement (Ream & Parlardy, 2008). Indeed, socio-economic status is positively correlated with learning outcomes (Marks, 2006). Additionally, low socio-economic status is associated with lower levels of language proficiency in all children (Hoff, 2013). However, other have found that the association between socio-economic status and literacy skills declines with age (D'Angiulli, Siegel, & Maggi, 2004). In some studies investigating bilingual children in immigrant communities, socio-economic status has been found to be a factor that explains a significant portion of the achievement gap between immigrant and non-immigrant students (e.g., Oller & Eilers, 2002; Stanat & Christensen, 2006; Walter, 2008). In second language learning, higher socio-economic status has been associated with higher second language outcomes (Reese, Garnier, Gallimore, & Goldenberg, 2000). However, there is a lack of consensus regarding socio-economic status and third language outcomes of school-aged children. While some studies found a positive

relationship (e.g., Rauch et al., 2012), others have found no significant correlation between socio-economic status and additional language outcomes (e.g., Cenoz & Valencia, 1994; Sanz 2000).

The relationship between context and language learning outcomes is not necessarily explained entirely through socio-economic status, as it is also closely tied to other factors of family background such as cultural capital (Akukwe & Schroeders 2016). Cultural capital is a broad concept developed by Bourdieu (1973) to capture the impact of culture on the class system (for discussion, see Lamont & Lareau, 1988). Cultural capital can be subdivided between objective, institutional, and internal capital (Bourdieu, 1985) and is often measured through questionnaires on parental education, cultural interests and activities, such as visiting a museum, or the number of cultural goods, like number of books at home (Akukwe & Schoeders, 2016; Rolff, Leucht, & Rösner, 2008). Theoretically, it is proposed that there is a positive association between cultural capital and learning outcomes, as students from families with higher cultural capital have access to cultural goods more so than students from families with lower cultural capital. This enables higher cultural capital students to have access to resources that further their academic learning (Roscigno & Ainsworth-Darnell, 1999) and to be perceived as better students (Wildhagen, 2009; for critique, see Kingston, 2001). As "instruments for the appropriation of symbolic wealth socially designated as worthy of being sought and possessed" (Bourdieu, 1977, p. 488), cultural capital has been shown to have a large impact on educational achievement (Chiu & McBride-Chang, 2010; DiMaggio, 1982; DiMaggio & Mohr, 1985; Dumais, 2002). Specifically, the number of cultural goods has been found to be positively associated with majority language as well as foreign language outcomes (Haenni Hoti et al., 2011; Rolff et al., 2008). Furthermore, the number of cultural goods has also been found to vary significantly between immigrants and their non-immigrant peers (Chiu, Pong, Mori, & Chow, 2012).

In sum, there are several individual and background factors that may play a role in additional language learning. Specifically, I have discussed how the individual factors of age, gender, and general cognitive abilities as well as the background factors of socio-economic status and cultural capital may affect foreign language outcomes and, partially, may systematically differ between immigrant bilingual and non-immigrant monolingual groups. However, to date, few empirical studies have considered these factors, potentially creating biased results.

#### **2.4.2 Features of bilingualism and foreign language outcomes**

Bilingualism is not a homogeneous phenomenon that affects individuals in similar ways. Rather, the bilingual experience is a dynamic one, in which several features not only play an important role in learning outcomes, but also often interact with each other (Luk & Bialystok, 2013). This is specifically the case for the factors of (1) language proficiency, (2) language exposure and use, (3) manner of learning, (4) age of acquisition and (5) language typology. These characteristics can impact to what extent metalinguistic awareness is developed, subsequently influencing additional language learning (also see Section 2.3.1). In this following I will discuss why some features of bilingualism, some of which were introduced in Section 2.1, may have an impact on additional language learning.

(1) The construct of language proficiency, or the level of skill in a language, has been a central topic for both research and the greater society, especially with regard to bilingual students with immigrant backgrounds (e.g., Cummins, 1980; Edele, Seuring, Kristen, & Stanat, 2015). For bilinguals, language proficiency is complicated by the experience of two languages and therefore may result in a dominant language, i.e., a strong first language (L1) or second language (L2). Bilingual language proficiency may also mean having balanced abilities in both languages (Peets & Bialystok, 2015). Language proficiency can be measured



in several ways, namely through formal proficiency tests or self-reporting questionnaires (e.g., LEAP-Q; Marian, Blumenfeld, & Kaushanskaya, 2007). Proficiency tests, when they are properly constructed and meet psychometric requirements, can provide a reliable measurement of ability (Edele et al., 2015). However, it has been found that subgroups of students who speak a minority language at home and are tested in the majority language may have construct-irrelevant variance thus affecting the tests' construct validity (Abedi, 2002). Furthermore, formal assessments have been found to underrepresent the language abilities for bilingual children (Peets & Bialystok, 2015). The advantage of self-reporting measures is that they capture the multidimensionality of bilinguals' proficiency (Luk & Bialystok, 2013). However, self-reporting questionnaires have been found to be systematically biased in certain groups and only mildly correlated with formal assessments (Edele et al., 2015).

Language proficiency is proposed to affect additional language learning in that skills in a known language can be transferred to the target language (cf. *the Interdependence Hypothesis*, Cummins, 2000). Furthermore, language proficiency impacts both cognitive and metalinguistic development (Bialystok, 2001). Bilinguals who have high proficiency have shown heightened levels of metalinguistic awareness (Section 2.2.2). As metalinguistic awareness has been found to be a predictor of foreign language learning, bilinguals who have higher proficiency in one or both languages may have advantages in learning a foreign language.

(2) As mentioned above, language proficiency can interact with other features of bilingualism, namely language exposure, or the quantity of language input, as well as language use, quantity of language output (Pearson, 2007). To provide insight into bilingual language patterns (Baker, 2011), language exposure and use is usually measured with parent or student questionnaires (e.g., Deanda, Arias-Trejo, Poulin-Dubois, Zesiger, & Friend, 2016) although daily records (e.g., Place & Hoff, 2011) are also utilized. Increased exposure to a specific language, or augmented time on task, can result in improved proficiency in that

language (Oller, Pearson, & Cobo-Lewis, 2007) and increased usage (i.e., *the input-proficiency-use cycle*, Pearson, 2007). This is especially the case with bilingual students who speak minority languages, as the mode and frequency that parents use to interact with their children is normally the primary source of usage in that language and can vary greatly (De Houwer, 2007; Mancilla-Martinez & Lesaux, 2011; Pearson, 2007).

Language exposure and use has been found to influence the proficiency of known languages (Scheele, Leseman, & Mayo, 2010) and therefore can affect learning outcomes. Furthermore, the patterns of language use, or specifically how often a bilingual switches between languages, may force an individual to reflect upon features of languages, honing her/his metalinguistic awareness. Therefore, language exposure and use both potentially have an effect on additional language learning outcomes.

(3) Not only is the quantity of exposure and use important but also the type of language input. Languages can be learned naturally in the home (e.g., one's mother tongue) or through formal instruction (e.g., foreign language instruction) or both. This is similar to Krashen's *Input Hypothesis* (1985), which stressed the difference between acquisition, when a language is developed similarly to first language, and learning, when a language is gained through conscious attention to the understanding of the rules of language. The distinction between formal and informal learning is usually identified through initial questionnaires, and to date has primarily been used in group comparison experimental designs (e.g., Thomas, 1988; Roehr & Gánem-Gutiérrez, 2009). Despite lack of consensus (for discussion, see Dörnyei, 2009) formal learning seems to improve language outcomes, as it develops a learner's inner visualization or mental imagining of lexical and structural input (Fabbro, Naatanen, & Kujala, 1999). Formal learning also promotes an attention to form and the ability to pay attention to the relevant aspects of a language input that supports metalinguistic skills (De Angelis, 2007; De Bot, Jaensch, & Mayo, 2015; Jung, 2013; Sanz, 2000; Thomas, 1988).

Language learning through formal training has been found to be a strong predictor of metalinguistic awareness (Roehr & Gánem-Gutiérrez, 2009). Although formal instruction does not necessarily result in literacy as classes can be for communicative purposes, it provides structured training to develop the skills needed to learn a foreign language (Kemp, 2001). As formal instruction is positively associated with metalinguistic awareness and skills, it can be proposed that formal instruction in a first or second language can impact learning an additional language.

(4) Another factor of bilingualism that may influence learning outcomes is age of acquisition. Normally measured through parent or student questionnaires (e.g., Hesse, Göbel, & Hartig, 2008), simultaneous and sequential bilinguals have been found to have varying proficiency profiles (Butler & Hakuta, 2006) as well as different form-function mapping between their two languages (Cenoz, 2003; Hamers & Blanc, 2000; Jessner, 2008a). De Groot (1993) suggests that while successive bilinguals separate both conceptual and lexical systems, simultaneous bilinguals share a conceptual system and divide the lexical system between languages. Simultaneous bilinguals are likely to have more similar patterns of exposure in both languages (Thordardottir, 2011) as well as more experience manipulating the two languages (Kalashnikova & Mattock, 2014). Therefore, they may have a greater understanding of similarities and differences between languages (Reder et al., 2013). Whether a bilingual has learned both languages from birth or acquired a second language after the first few years potentially impacts learning outcomes, specifically foreign language learning.

(5) A final feature of bilingualism that may affect additional language learning is language typology, which can be defined as the classification of languages according to their structural characteristics (i.e., phonological and writing systems) (Proctor, August, Snow, & Barr, 2010). Differences between known and target language typologies have been hypothesized to account for differences in target language development (Dressler, & Kamil, 2006; Geva & Siegel, 2000). It has been suggested that some combinations of languages may

have the potential to support language learning more than others due to analogies in linguistic properties (De Angelis, 2007). Specifically, it has been found that L1 typology has an effect on L2 reading (Jarvis & Pavlenko, 2008). This suggests there may be systematic differences between language groups, as their unique language typology of known language may affect their development in a new language.

In sum, the interacting features of bilingualism, namely language proficiency, language exposure and use, manner of learning, age of acquisition, and language typology can influence learning processes and outcomes, specifically foreign language learning. For bilingual learners, especially those in immigrant communities, there is heterogeneity potentially within and between bilingual samples. Not taking these factors into account may create biased results.

### **2.4.3 Foreign language learning achievement and development**

Thus far, I have proposed that there may be a positive relationship between bilingualism and foreign language learning and that a variety of factors can impact this relationship. To this point, I have focused the discussion primarily on the static nature of these components. However, language acquisition and learning is, by nature, a dynamic development of a variety of factors (Herdina & Jessner, 2002).

Learning a language “[...] is a complex process that happens through and over time” (Ortega & Iberri-Shea, 2005, 26). It can be assumed that through formal exposure (e.g., foreign language instruction) and use, a student’s competence will increase over time in the target language. However, similar to other learning outcomes (e.g., Han, 2012), this can be dependent on a number of variables.

One such factor could be if a student is bilingual. As discussed above, bilinguals have unique patterns of cognitive and linguistic development, specifically regarding metalinguistic awareness that may influence the development of foreign language skills over time. However, similar to constructs like language aptitude (Dörnyei & Skehan, 2003; Sawyer & Ranta, 2001) and working memory (Serafini & Sanz, 2016), it has been suggested that metalinguistic awareness supports language learning particularly in the early stages of language learning (Carlisle, Beeman, Davis, & Scharim, 1999; Roberts, 2011). Therefore, it may be the case that the achievement in foreign language learning may differ for bilingual and monolingual students specifically at the beginning of the learning process.

In sum, several factors may play an important role in the relationship between bilingualism and foreign language outcomes. These factors are not independent of each other and often vary systematically between groups with immigrant and non-immigrant backgrounds. However, despite strong theoretical underpinnings, these factors have not been used systematically in empirical research. This may create bias between studies comparing monolingual and bilingual students. As the three empirical studies of this thesis (Chapters 4, 5, & 6) investigate some aspect of bilingualism on foreign language learning, in the following section, I will focus the empirical state of the art on that relationship. I will pay specific attention to the aforementioned factors, and show that further research is needed to clarify the relationship between bilingualism and foreign language achievement.

## **2.5 Bilingualism and foreign language learning: empirical state of the art**

Thus far, I have discussed how bilinguals have heightened cognitive and linguistic skills, including metalinguistic awareness. These skills may positively affect their scholastic achievement, specifically their learning a foreign language. Despite these theoretical

underpinnings, empirical research yields an unclear picture about this relationship (for discussion, see Cenoz, 2013). This lack of consensus potentially rests on the fact that previous research has not taken into account essential individual and background factors as well as factors relating to the bilingual experience. Furthermore, varying empirical results may also be accounted for in the fact that this relationship has almost only been investigated using cross-sectional data. In the following, I present the empirical research of the effect of bilingualism on additional language learning, highlighting and discussing why the aforementioned factors may explain the lack of consensus in previous research.

### **2.5.1 The importance of individual and familial background characteristics**

To date, empirical investigations about bilingualism and additional language learning have been largely inconclusive. One reason may stem from the varying sociolinguistic contexts in which bilingualism is developed. Another reason may be the fact that individual background characteristics have not been considered. As discussed above (Section 2.4.1), these variables can affect learning outcomes. This is especially true for immigrant students in Europe, who largely come from disadvantaged groups (Hörner & Werler, 2007).

Studies in sociolinguistic settings which support both languages of the examined bilinguals (i.e., bilingual education) have been found to show advantages in foreign language learning (L3). For example, with a sample of 320 17-19 year olds from the Basque Country where there is the possibility to receive instruction in school in Basque as well as Spanish, Cenoz and Valencia (1994) found a significant positive relationship between Basque-Spanish bilingualism (compared with Spanish monolingualism) and foreign language English achievement given similar levels of cognitive abilities, age, motivation and exposure to English as a foreign language. Adding the factor of bilingualism resulted in a four percent increase in explained variance in English achievement. These findings were replicated for

English as a foreign language with 124 Catalan-Spanish bilingual and 77 Spanish monolingual secondary school students, controlling for exposure and motivation (Sanz, 2000).

Both Spanish studies utilized a three-point categorical variable for socio-economic status. However, as neither investigation found a significant correlation between socio-economic status and English achievement, the variables for socio-economic status were only reported in the descriptive statistics and not used in the regression analyses that assessed the relationship between bilingualism and English foreign language achievement. Furthermore, these studies were conducted with samples where all three languages were officially supported in school with potentially very little variation of socio-economic status in the sample.

In contrast, studies investigating foreign language learning among bilingual samples, whose minority language was not taught in schools, yield an unclear picture. Some empirical research has found no differences between the bilingual and monolingual samples, and even disadvantages for the bilingual group. For example, Sanders and Meijer (1995), based on a match sample for socio-economic status and cognitive abilities, found no difference in English measures (grammatical judgement, spontaneous language use, word comprehension and word recognition) between Turkish-Dutch, Arabic-Dutch, and Dutch monolingual fifth graders. Similarly, no differences were found between a heterogeneous bilingual and Dutch monolingual group of 14-year-olds with regard to English vocabulary, grammar, and word recognition (Schoonen et al., 2002; van Gelderen et al., 2003). Furthermore, Dutch monolinguals outperformed their immigrant bilingual peers in English reading and sentence verification. Also in the Netherlands, there were no significant differences found between Italian-French bilinguals and French monolinguals learning Dutch (Jaspaert & Lemmens, 1990). Aside from the study from Sanders and Meijer (1995), the other Dutch studies did not take any background factors into account.

The German English Student Assessment International (DESI), utilizing a sample of approximately 11,000 ninth graders, did consider individual background characteristics. Controlling for a variety of individual and background factors, bilinguals from immigrant communities outperformed German monolinguals in English as a foreign language measures (listening comprehension, grammar, reading and text writing skills; Hesse et al., 2008). The results of this study suggest that given similar socio-economic background, general cognitive abilities, gender, and school track, speaking a minority language at home is positively associated with English foreign language achievement (Klieme, 2006).

A Canadian study, in part, replicates these results. Bérubé and Marinova-Todd (2014), investigating a sample of 55 multilingual sixth graders found a significant correlation between parental socio-economic status and L3 French reading comprehension. However, the study only included a sample of multilingual children without a monolingual comparison. This study suggests socio-economic status, as well as other background factors, may play an important role in understanding the relationship between bilingualism and foreign language learning. While these factors may not play such an important role in all samples (e.g., Sanz, 2000), the contrast between the Dutch findings (e.g., Schoonen et al., 2002) and those of the DESI study (Hesse et al., 2008) suggests the importance of these factors with samples of bilingual students from immigrant communities, as group membership and socio-economic factors may be confounded with each other and create biased results.

In sum, there is a lack of consensus whether bilingual students, especially in immigrant communities, have advantages in additional language learning when compared to their monolingual peers. This lack of consensus may be due to the fact that individual and background factors have not been taken into account systematically across studies. As group membership and these factors may be confounded with each other, the lack of these variables in the analyses may obscure results giving rise to misleading conclusions.



### 2.5.2 The variability between features of bilingualism

Another explanation with regard to the lack of consensus of empirical studies investigating additional language learning of bilingual students might be due to the heterogeneity of the bilinguals in immigrant communities. Bilinguals, especially in immigrant communities, often have heterogeneous profiles with regard to language proficiency, exposure, manner of training, age of acquisition, and specific language groups (Cenoz, 2013; De Angelis, 2007). The variation across and between bilingual samples can lead to contrasting results when exploring the relationship between bilingualism and foreign language outcomes.

Most studies have found that language proficiency in the minority (L1) as well as majority language (L2) has a positive influence on foreign language outcomes. For example, immigrant bilinguals in Canada were found to have advantages in L3 French foreign language outcomes only when they have high proficiency (i.e., literacy) in their home language (Swain, Lapkin, Rowen, & Hart, 1990), paralleling other results in varying sociolinguistic contexts which also found a positive association with L1 competencies in L3 outcomes (Muñoz, 2000; Lasagabaster, 2000; Sagasta Errasti, 2003; Sanz, 2008). The limited studies which explore the effect of majority language proficiency on foreign language outcomes have also found a positive association. In the Swiss context, L2 competencies significantly predicted L3 outcomes (Haenni Hoti et al., 2011). In the context of immigrant bilingualism, a sample of 139 Turkish-German bilingual students' German reading proficiency (L2) was positively correlated with L3 English reading achievement although their English reading achievement did not differ from that of their monolingual peers ( $n = 121$ ) (Rauch, Jurecka, & Hesse, 2010). Overall, this suggests that proficiency in a majority language does have an impact on further language learning (De Angelis, 2007). However, it remains unclear to what extent different levels of majority language proficiency impact foreign language learning.

Potentially overlapping with language proficiency, minority language exposure may vary across language minority groups. Some studies show a positive relationship between minority language exposure and L3 outcomes. Investigating a sample of eighth graders in Toronto attending an English-French bilingual program, Bild and Swain (1989) found that bilingual students outperformed their monolingual peers in oral measures of L3 proficiency. Specifically, the frequency of minority language exposure at home was positively related to L3 French outcomes. Another Canadian study parallel's these findings. 51 ESL ninth graders outperformed 40 multilingual Canadian-born students as well as 44 monolingual students on measures of French listening and reading comprehension (Mady, 2007). The foreign-born ESL students mostly reported having daily exposure at home to their minority language, while only few Canadian-born multilingual students reported using their home language daily. In contrast, one of the first empirical investigations examining the national population of Swedish eighth graders ( $n = 69,903$ ; Mägiste, 1984) found that immigrant bilingual students who only used their native language at home did not differ from their Swedish monolingual classmates in English as a foreign language achievement. Immigrant bilingual students who spoke both languages at home did outperform their Swedish monolingual peers. The Canadian studies suggest that L1 frequency of use may be positively associated with foreign language outcomes. However, the Swedish study suggests the opposite. Overall, these studies suggest that levels of minority language exposure may be a significant factor in foreign language achievement.

Another factor that may affect the relationship between bilingualism and foreign language learning in immigrant communities is the manner in which a minority language is developed. To date, there has been one study showing the effect of formal training in a minority language in comparison to only learning it informally in the home. Thomas (1988) investigated a sample of Spanish-English bilinguals and English monolingual college students learning French. The bilingual group outperformed their monolingual peers only when they

received formal training in their minority language, Spanish. Abu-Rabia and Sanitsky (2010) also partially replicated these results. The analysis showed that Russian-Hebrew sixth-graders in a minority language support program outperformed their Hebrew monolingual peers in English foreign language learning (Abu-Rabia & Sanitsky, 2010). The sample was matched for socio-economic status, and both groups had similar levels of Hebrew proficiency. However, there was no Russian-Hebrew bilingual non-formal support group to compare to the bilingual groups.

To date only two studies have examined the effects of age of acquisition on additional language learning outcomes. Both simultaneous and successive bilinguals outperformed their monolingual peers from a German national representative sample of 11,000 ninth graders in English listening comprehension, grammar, reading and text writing skills after controlling for socio-economic status, cognitive abilities, gender and school track (Hesse et al., 2008). However, also in the German context, another study found only advantages for simultaneous bilinguals when compared to their successive bilingual and German monolingual peers taking into account confounded background characteristics of socio-economic status, cognitive abilities and school track (Göbel, Rauch, & Vieluf, 2011). One reason for these varying results may stem from the small successive bilingual groups size in the later study, resulting in a lack of statistical power to make comparisons with the groups. Furthermore, as the successive bilinguals were divided into language specific groups (Turkish-Kurdish/German, Russian/German, Polish/German, and a composite 'other' bilingual group), this proposes that there might be significant differences between bilingual groups with diverse language backgrounds.

Also supporting this proposition is a Canadian study of 90 fourth graders (Bérubé & Marinova-Todd, 2012). Divided into either the alphabetic ( $n = 20$ ), syllabic ( $n = 13$ ), or monolingual group ( $n = 57$ ), the authors found significant differences in French reading achievement between the alphabetic and syllabic bilingual groups despite no significant

differences being found between the alphabetic and monolingual groups. Furthermore, Bild and Swain (1989) found that while all bilinguals outperformed their monolingual peers in French as a foreign language, the bilinguals who spoke a romance language outperformed their non-romance language bilingual peers. This suggests that there may be variation across different language minority groups and that language typology may play a role in learning an additional language.

The lack of consensus of the aforementioned studies may be due to the fact that the features of bilingualism vary across and within samples, and these factors have only intermittently been examined in previous analyses. A categorical bilingual group may mask heterogeneity in the bilingual samples. Previous research investigating bilingual features of bilingual proficiency, exposure, manner of learning and age of acquisition have only hinted at the potential significance of these factors.

### **2.5.3 Possible differential patterns of growth**

A third explanation for the lack of consensus of empirical studies investigating bilingualism and additional language learning might be the fact that almost all studies to date have been cross-sectional. While this provides insight into the relationship between bilingualism and foreign language learning, it fails to address the possible differential patterns of growth in additional language learning for the bilingual and monolingual groups.

The only known longitudinal investigation compared a sample of heterogeneous language minority fourth-graders and their English monolingual peers learning French from the beginning to the end of fourth grade (Bérubé & Marinova-Todd, 2012). The authors found a significant advantage for the 20 alphabetic language minority students (i.e., Afrikaans, Croatian and Mandarin) and 57 English monolingual students compared to 13 syllabic language minority students (i.e., Cantonese, Japanese, and Mandarin) on French listening and

reading outcomes. The analysis, which did not control for background characteristics, did not show any significant interactions between group and time, indicating similar growth patterns between the groups over time.

While this study provides a first step to exploring this relationship over time, the small sample size may affect the conclusions drawn as there might not be enough statistical power to explore group differences. Furthermore, the study includes points of measurement that only span one academic year, which may not allow for differential growth patterns to develop between the groups.

### 3 Gaps in the literature and goals of the present study

This thesis proposes that bilinguals may have advantages learning a foreign language. The rationale behind this is that bilinguals, as individuals who know and use two languages, have heightened levels of cognitive and linguistic functions, namely metalinguistic awareness (Section 2.2). This enhanced metalinguistic awareness, which fosters the ability to focus on and analyze form in the target language, should support the foreign language learning process (Section 2.3). However, there are a variety of factors that potentially impact this process (Section 2.4).

Despite the general theoretical underpinnings that suggest bilinguals should have advantages in additional language learning, the empirical literature yields an unclear picture (Section 2.5). This lack of consensus in the empirical literature hints at the significance of other factors that play a role in this process. To shed light on the relationship between bilingual and foreign language learning, this thesis focuses on two central overarching questions.

3.1 Are there advantages for bilinguals in immigrant communities learning a foreign language in school?

3.2 Under what conditions is immigrant bilingualism advantageous when learning a foreign language in school?

To shed light on these two research questions, I concentrate on three aspects of this topic in my investigation. The first aspect is the importance of individual and family background factors. As discussed above, individual differences as well as the context potentially have a strong impact on foreign language outcomes, especially for bilinguals in immigrant communities. These factors have explained a significant portion of the achievement gap between immigrant and non-immigrant students (Stanat & Christensen, 2006; Walter, 2008). However, to date, empirical research examining bilingualism and

foreign language learning has only sparsely addressed the importance of these factors, with many studies not addressing them at all, potentially leading to biased results. Further investigations are needed to consider the key factors, namely background factors as well as individual characteristics.

Secondly, bilinguals in immigrant communities are a specialized group in that they have large variability with regard to how they acquire, develop and use their languages, which may lead to contradictory outcomes. To date, empirical studies have only partially addressed the varying bilingual features and how this variation might influence foreign language outcomes.

Thirdly, it remains unclear if the relationship between bilingualism and foreign language achievement is stable throughout the language learning process or if bilinguals with their unique cognitive patterns have skills that support learning at certain stages of the language acquisition process. Although discussed as a potential reason for varying results (for discussion, see Cenoz, 2013), to date almost all empirical studies comparing bilingual and monolingual language learners have been cross-sectional and therefore only able to show results at one point in time. Longitudinal investigations are needed to show if there is a bilingual advantage over time or if the relationship between bilingualism and foreign language learning varies over time.

I examine these three aspects in the following three studies. The first study (Chapter 4) examines English foreign language proficiency in sixth-grade immigrant bilinguals and their German monolingual peers. Specific attention is paid to the importance of confounding background characteristics as well as majority language proficiency. In doing so, this study directly addresses the aforementioned first aspect, regarding individual and family background characteristics, as well as the second aspect, focusing on the majority language proficiency.

The second study (Chapter 5) explores the differences between immigrant bilinguals and their German monolingual peers longitudinally from sixth to eighth grade. Specific attention is paid to the importance of minority language use as a proxy for minority language proficiency, and how this might affect the foreign language development. This study focuses primarily on the third aspect of my investigation, while also examining the second in lesser detail.

The third study (Chapter 6) investigates a sample of immigrant bilingual and German monolingual eighth and ninth graders in their English listening and reading outcomes. Specifically, the analysis examines the impact of manner and age of bilingual acquisition and learning as well as language use practices. Specific attention is paid to potential varying features within the bilingual sample that may affect their language learning outcomes as well as important individual and background factors.



#### **4 Study 1: The effect of speaking a minority language at home on foreign language learning**

Maluch, J. T., Kempert, S., Neumann, M., & Stanat, P. (2015). The effect of speaking a minority language at home on foreign language learning. *Learning and Instruction*, 36, 76-85. <https://doi.org/10.1016/j.learninstruc.2014.12.001>

##### **Abstract**

The study investigates the effect of immigrant bilingualism on learning English as a foreign language, controlling for confounding background variables and examining the effect of proficiency in the instructional language at school. Using a sample of 2835 German 6th-graders (Arabic-German:  $n = 105$ , Chinese-German:  $n = 110$ , Polish-German:  $n = 57$ , Turkish-German:  $n = 383$ , heterogeneous bilingual:  $n = 284$ , and monolingual German group:  $n = 1896$ ), we examined if speaking another language at home in addition to the instructional language at school presents an advantageous condition for learning English as a foreign language. Controlling for cognitive abilities, age, gender, socio-economic status, parental education, and indicators of cultural capital, the analysis revealed a general positive trend between bilingualism and English foreign language achievement. This positive trend differs significantly between bilingual groups with different home languages. The strongest predictor for foreign language learning revealed to be proficiency in the instructional language.

Keywords: Bilingualism Multilingualism, Foreign language learning, Third language acquisition, L2-L3 relationships

## 4.1 Introduction

The growing proportion of immigrant students is changing the linguistic landscape in schools. Throughout Europe, immigrant students tend to be, on average, less successful in school than their non-immigrant peers (Stanat & Christensen, 2006). In particular students with immigrant backgrounds lag behind their native peers in reading skills in the language of instruction at school. This is true even after controlling for socio-economic background characteristics (OECD, 2010), which are factors that have been shown to play an important role in academic achievement (Scheerens & Bosker, 1997). In Germany, the discrepancy is particularly noticeable for first generation immigrant students, as well as for students who primarily speak a minority language other than German at home (e.g., Stanat, Rauch, & Segeritz, 2010).

Despite this achievement gap, some students with immigrant backgrounds, namely those who are functionally bilingual in the language of instruction at school and a minority home language, have resources that could potentially impact their foreign language learning in positive ways. Indeed, under certain circumstances bilingual students were shown to have an advantage when learning an additional language (e.g., Brohy, 2001; Cenoz & Valencia, 1994; Sanz, 2000). Bilingualism is associated with unique patterns of cognitive and linguistic processes, which differ from those of monolinguals and may foster foreign language learning. In fact, bilingual students, whose languages are officially supported by the education system and developed through formal instruction in school, tend to show significant advantages in additional language learning (Cenoz, 2003). However, it is less clear if bilingualism in other contexts, such as bilingualism due to immigration, is associated with positive foreign language learning outcomes as well.

In the present study, we seek to determine whether there is a relation between immigrant bilingualism and foreign language learning outcomes and to what extent the

predicted pattern holds across bilingual groups with different instructional language proficiency and diverse home languages. In the following, we will first discuss why bilinguals can be expected to have advantages in learning additional foreign languages. Subsequently, we argue that current research potentially masks important group differences in language learning.

#### **4.1.1 Cognitive and linguistic consequences of bilingualism**

Cognitive and linguistic differences between bilinguals and monolinguals have been studied in applied linguistics, psychology, and education. Since the 1960s, bilingualism has been shown to be positively related to various cognitive functions. In the landmark study by Peal and Lambert (1962) with a matched sample, bilingual children outperformed monolinguals in verbal and nonverbal tests of cognitive ability. Subsequently, bilinguals have repeatedly been shown to score higher than monolinguals on tests of various cognitive flexibility and processing functions (for reviews, see Adesope, Lavin, Thompson, & Ungerleider, 2010; Bialystok, 2009; Hamers & Blanc, 2000). Bialystok (2010) proposes that bilinguals have higher levels of executive control - the interrelated processes of inhibition, working memory, and cognitive flexibility - due to their need to switch between two language systems flexibly in varied contexts and with different interlocutors. These cognitive consequences of bilingualism are observable in non-verbal tasks (such as the Simon Task) that require controlled attention or the inhibition of routine responses. In these tasks bilinguals typically outperform monolingual controls (e.g., Bialystok, Craik, Klein, & Viswanathan, 2004).

In addition to advantages in general cognitive functions, bilingualism seems to be positively associated with metalinguistic awareness (Thomas, 1988), defined as “[...] the ability to focus attention on language as an object in itself or to think abstractly about

language [...]” (Jessner, 2006, p.42). Studies investigating metalinguistic awareness have found that bilinguals have advantages on several metalinguistic tasks compared to monolinguals, such as applying morphological rules to unfamiliar forms (e.g., Barac & Bialystok, 2012) or explicit noticing of implicitly learned grammatical rules (e.g., Reder, Marec-Breton, Gombert, & Demont, 2013). The theoretical assumption is that bilinguals can draw upon two language systems, providing them with a larger linguistic reservoir compared to monolinguals. From this linguistic reservoir, which includes metalinguistic awareness, knowledge can potentially be transferred between languages and thus may be helpful when acquiring a new language (cf. the construct of common underlying proficiency by Cummins, 1981b; 2000). Indeed, research has shown that metalinguistic awareness is a significant predictor of foreign language reading outcomes (Dufva & Voeten, 1999; Rauch, Naumann, & Jude, 2011; Zhang & Koda, 2013). However, this relation can be complicated due to the relative proficiency level of the two languages (De Angelis, 2007; Koda, 2007). Also, individual language properties, such as differences between languages with alphabetic or logographic orthographies can play a significant role in the development of metalinguistic skills (Bialystok, 1997). It has been shown that language combinations as well as relative proficiency and exposure explain noticeable variance in tasks examining executive functions and metalinguistic awareness (Bialystok & Barac, 2012). For these reasons, it is useful to pay particular attention to the specific language groups as well as language proficiency to better understand the underlying mechanisms.

#### **4.1.2 Factors affecting language learning**

Despite the potential benefits of bilingualism discussed above, it is widely acknowledged that bilingualism does not automatically lead to cognitive and linguistic advantages (Bialystok, 2001). The sociocultural context in which language(s) are developed

plays an important role in a child's cognitive and linguistic development (e.g., Vygotsky, 2012). This is especially true for such factors as socio-economic status and cultural background, which are highly correlated with language proficiency, and have the potential to mask or even negate the positive effects of bilingualism (Cenoz & Valencia, 1994; Jessner, 2008b; Sanz, 2000). Low socio-economic status is typically associated with lower levels of language proficiency for all children. In the case of immigrant bilinguals, their lower language proficiency in the majority language may directly impair the development of possible bilingual advantages (Diaz, 1983). Furthermore, as background factors can systematically differ between immigrant groups (Müller & Stanat, 2006), it is important not only to take them into account but also to consider immigrant bilinguals not as a homogeneous group.

In addition to sociocultural background factors, immigrant bilingualism differs from other forms of bilingualism because the majority language is often fostered at the expense of the minority home language (Cenoz, 2003), creating unknown 'levels' of bilingualism. Despite the emphasis on becoming proficient in the majority language, immigrant bilinguals have been found to have difficulties mastering the language of instruction in school (Esser, 2006). As international and national studies show, students who speak another language at home tend to lag behind their monolingual peers in the majority language of the community (OECD, 2010), and this gap in the language of instruction can affect their academic performance across learning domains (Haag, Heppt, Stanat, Kuhl, & Pant, 2013). It may have significant effects on further foreign language learning as well for several reasons. Firstly, weak majority language students might experience difficulties in comprehending explicit information (i.e., grammar rules, explanation of abstract vocabulary) about the foreign language, as the teacher normally uses the majority language to transmit this explicit information to the student. Secondly, students who are weak in the majority language have limited resources with which to engage linguistic transfer, i.e., the ability to learn skills in a new language based on previously acquired language resources (Genesee, Geva, Dressler, &

Kamil, 2006).

In conclusion, bilingualism may lead to advantages in additional language learning, yet several factors can affect this process, especially background characteristics and language proficiency. Failing to take these factors into account may be leading to biased conclusions in empirical studies and potentially masking possible advantages for immigrant bilingual groups.

#### **4.1.3 Immigrant bilingualism and language learning: empirical evidence**

As mentioned above, a variety of factors can influence bilingual development and consequently additional language learning, namely background characteristics (i.e., socio-economic status, cultural capital) as well as individual language characteristics and proficiency. Studies in which both languages of the examined bilinguals are officially supported by the education system through bilingual or foreign language instruction typically show significant advantages of bilinguals in third language acquisition. For example, with a sample of 17-19 year olds from the Basque Country, Cenoz and Valencia (1994) found a significant positive relation between being a Basque-Spanish bilingual (compared to a Spanish monolingual) and English language ability given similar levels of general cognitive abilities, age, motivation and exposure to the foreign language. This positive association was also replicated for English language achievement with a sample of Catalan-Spanish bilinguals and Spanish monolinguals (Sanz, 2000), as well as with French achievement in a sample of Romansch-German bilingual and Romansch monolingual children (Brohy, 2001). These results, replicated across several sociolinguistic contexts, suggest that when schools support the formal development of both languages (i.e., leading to high proficiency in both languages), bilingualism is positively associated with further language learning.

Studies examining foreign language learning among immigrant bilingual samples have yielded an unclear picture. In contrast to students enrolled in multilingual programs,

immigrant bilinguals' home language is typically developed outside the formal school system and supported largely through the efforts of the family. For example, in the national population of Swedish eighth graders ( $n = 69.903$ ), a heterogeneous group of immigrant bilingual students who use only their native language at home showed no advantages compared to their Swedish monolingual classmates on a standardized English test (Mägiste, 1984). However, students who used both Swedish and another language at home outperformed the Swedish monolingual students suggesting that the development in the instructional language leads to positive transfer in third languages. In a study examining bilingual immersion programs, Swain, Lapkin, Rowen, and Hart (1990) found that in a Canadian setting, speaking what they termed 'a heritage language' at home only had an advantage in French when the students had a certain level of proficiency (i.e., literacy) in their home language. However, neither study took into account sociocultural background factors in the analyses.

In the Netherlands, Sanders and Meijers (1995) examined Turkish-Dutch and Arabic-Dutch bilingual fifth and sixth graders. Based on a sample matched for cognitive abilities and socio-economic status, the authors found no differences between the bilingual and monolingual groups in a variety of English language skills (grammatical judgment, spontaneous language use, word comprehension and word recognition). These findings partially mirror the results of another Dutch study, where no significant differences were found between a sample of monolingual 14-year olds and their mixed bilingual classmates with regard to English vocabulary, grammar, and word recognition (Schoonen et al., 2002; Van Gelderen et al., 2003). Instead, the monolinguals significantly outperformed their immigrant bilingual peers in two English language measures of reading and sentence verification as well as Dutch reading proficiency, vocabulary and grammatical knowledge. Yet, again, in none of the two aforementioned studies with samples of immigrant bilingual students did the authors control for background characteristics of the students, such as socio-

economic status, which has been found to be a significant factor in the achievement gap of immigrant and non-immigrant students (e.g., Stanat & Christensen, 2006; Walter, 2008). As group membership and sociocultural factors may be confounded with each other, this may obscure results.

The German English Student Assessment International (DESI) did control for important background factors and provide strong contrary evidence to these previous studies. In a national representative sample of approximately 11,000 ninth graders, a heterogeneous group of bilingual students outperformed their monolingual peers in English listening comprehension, grammar, reading and text writing skills (Hesse, Göbel, & Hartig, 2008). In fact, the results of this study suggest that given similar social background, general cognitive abilities, gender and school track, speaking a minority language at home is positively associated with English language learning (Klieme, 2006). Even students with an exclusively non-German language home environment significantly outperformed their non-immigrant background monolingual classmates. These findings present strong evidence that, given comparable background characteristics as their monolingual peers, immigrant bilinguals may have advantages in additional language learning even if they lag behind in the language of instruction used at school. However, because of the heterogeneity of the immigrant bilinguals in the study, it is unclear if this is the case for all bilingual groups.

In a reanalysis of DESI with a sample of successive bilinguals controlling for general cognitive abilities, school track and socio-economic status, Turkish-German, Russian-German and Polish-German successive bilingual students had no significant advantage in their English proficiency compared to their German monolingual peers, but a significant positive effect was found for a heterogeneous compound bilingual group (Göbel, Rauch, & Vieluf, 2011). Because the division between successive and compound bilingual groups lead to small bilingual group sizes, it is unclear if these results reflect a lack of differences between the successive bilingual and monolingual groups or inadequate statistical power. Similarly



comparing Turkish-German bilinguals and German monolinguals, Rauch, Jurecka, and Hesse (2010) found no effect of bilingualism on English language reading achievement after controlling for school track and socio-economic status. These contrasting results between the three DESI analyses suggest that the effect of bilingualism may vary across groups.

In addition to the large contrast in sociocultural and linguistic background characteristics, which might account for the varying results in the aforementioned studies, another important factor that can affect foreign language learning is the proficiency level in the language of instruction. Most studies to date have concentrated on the relation between bilinguals' first and second languages. For example, in a sample of language minority speakers, Spanish literacy skills at the entry of school resulted in higher English literacy skills 6e8 years later (Reese, Garnier, Gallimore, & Goldenberg, 2000). To date, only a few studies have investigated the relation between second language ability and additional foreign language learning. In the Swiss context, Haenni Hoti et al. (2011) found that second language competencies in English (L2) played a significant role in predicting both foreign language French (L3) listening and reading comprehension. Similarly, in the context of immigrant bilingualism, German second language reading competencies was highly correlated with proficiency in English as a foreign language for Turkish-German students (Rauch et al., 2010). This suggests that the proficiency in the language of instruction may be an important factor for foreign language learning.

In sum, there is a lack of clear evidence on the relation between immigrant bilingualism and additional language learning outcomes, and further investigations are needed taking into account the key factors in this process, namely the potentially confounded effects of sociocultural background variables and language of instruction proficiency. To establish a basis for less ambiguous interpretations, bilingual individuals with different instructional language proficiency as well as diverse language backgrounds should not be treated as a homogeneous group, as separation according to proficiency and language combinations

account for differences with respect to linguistic properties and sociocultural factors between groups. Further, the consideration of confounding variables, such as socio-economic status, is pivotal for adequate comparisons between various groups.

#### **4.1.4 Research questions**

In the present study, we explore the possible benefits of immigrant bilingualism with respect to foreign language achievement. Specifically, the study explores the following research questions:

1. Does speaking another language at home (L1), as well as the majority language at school (L2), provides an advantage in learning English (L3) at school? To what extent does the majority language at school play a role in foreign language achievement for immigrant bilingual students?

Previous research (e.g., Cenoz & Valencia, 1994; Hesse et al., 2008) suggests that, once controlling for individual and familial background factors, the bilingual students will, on average, have higher scores in English as a foreign language compared to the monolingual group. Therefore, we hypothesize similar advantages for the bilingual students in the present sample (Hypothesis 1a). However, as other studies have found, the expected advantage of bilingualism depends also on the individuals' proficiency in the language of instruction (Haenni Hoti et al., 2011). Because of the strong association between bilingual students' instructional language and foreign language achievement (Rauch et al., 2011), we expect an advantage for bilinguals over monolinguals if they have relatively stronger skills in the language of instruction. Furthermore, it is theorized that bilingual students with weaker majority language proficiency in contrast do not have a sufficient linguistic reservoir to support positive transfer. Therefore, we expect that they demonstrate no advantages and will

lag behind their monolingual peers as well as their bilingual peers with strong majority language proficiency (Hypothesis 1b).

2. To what extent do different bilingual language groups vary regarding their proficiencies in English as a foreign language (L3)?

Despite the general positive association between immigrant bilingualism and foreign language learning that we expect to find (Hypothesis 1a), this general pattern should differ significantly between bilingual language groups. Theory suggests that some combinations of languages may have the potential to support foreign language learning more than others due to analogies in linguistic properties and alphabetic scripts between the languages (De Angelis, 2007). However, to date little is known about specific combinations of languages and their respective outcome compared to other combinations. As an explorative hypothesis, we expect that given similar background characteristics and instructional language proficiency groups will generally differ with regard to their advantageous potential. Specifically, we test the hypothesis that combinations of languages with similar orthographic scripts (i.e., Polish-German and Turkish-German) as the dependent variable L3 will have the highest potential compared to combinations which differ in their scripts (i.e., Arabic-German and Chinese-German).

## **4.2 Methods**

### **4.2.1 Participants**

The following analyses are secondary analyses of data from the Assessment of Reading and Mathematics Development Study (ELEMENT), which followed a cohort of children from the fourth grade to the sixth grade (Lehmann & Lenkeit, 2008). Data were collected from a representative sample of students from a major European city, whose

population has about 15% of students who speak another language than German at home (Senate Administration for Education, Science, & Research, 2008). This investigation focuses on data from the sixth grade elementary school sample. Although after the fourth grade, there is the option of attending the Gymnasium, the university-bound school track, the majority of students (93%) attend the elementary school (Grundschule) until the end of the sixth grade (Lehmann & Lenkeit, 2008). The study's sample is representative for the public elementary school students ( $N = 2946$ ).

To identify bilingual groups, we analyzed the language spoken at home as well as the frequency of the language spoken at home as reported by the parents and students. Inclusion into one of the language groups was determined when the parents reported that a language other than German (the specific language was also identified) was regularly spoken in the home. If the parents' information was missing (24%), the information provided by the student was used. For 111 students, there was no language information from either the parents or the students. The final sample included in our analysis consists of  $N = 2835$  students nested in 134 elementary school classes (48.5% female;  $M_{\text{age}} = 12.6$  years;  $R_{\text{age}} = 10.7\text{-}15.3$  years). From the aforementioned criterion, we identified the monolingual group ( $n = 1896$ ) and the bilingual group ( $n = 939$ ). We further differentiated the bilingual students into four bilingual language groups based on the information about the languages spoken at home provided by the parents (Arabic-German:  $n = 105$ , Chinese- German:  $n = 110$ , Polish-German:  $n = 57$ , Turkish-German:  $n = 383$ ). All the other bilingual groups, which were not large enough to be analyzed separately, were combined into a composite 'other' bilingual group (languages including French, Italian, Russian, Vietnamese and others;  $n = 284$ ). Given our substantive interest in patterns across groups, we included this group in the analyses to inquire if it shows similar trends as the other bilingual groups.

In a second approach, to analyze the role of instructional language proficiency in the context of a potential bilingual advantage in L3 learning, the bilingual group was divided into

five proficiency groups from a standardized competency scale. Based on the results of the German reading test (Baumert, Lüdtke, Trautwein, & Brunner, 2009; Lehmann & Lenkeit, 2008), which consisted of 32 questions about four texts and scaled using one-parameter item response theory in ConQuest (Wu Adams, & Wilson, 1998), the bilingual group was subdivided into five groups (Bilingual German Level 1:  $n = 27$ , Bilingual German Level 2:  $n = 120$ ; Bilingual German Level 3:  $n = 273$ ; Bilingual German Level 4:  $n = 294$ ; Bilingual German Level 5:  $n = 225$ ).

Within the bilingual students, 41% of the parents reported that their children were raised bilingually from birth (early bilinguals). The rest of the bilingual children were successive in their bilingual development. However, by the time they entered first grade, 87% of the parents of bilingual students reported that their children had good German skills, which was similar to that of the monolingual group (85%). When asked about their bilingual language practices, bilingual children reported that they mostly spoke German with their friends (80%) and classmates (73%). Among their parents, grandparents and siblings, most students reported speaking at least a little German as well as a minority language in their home environment. Very few bilingual students reported having solely minority language home environments (12%).

## **4.2.2 Measures**

### **4.2.2.1 English language achievement**

English language achievement was assessed with a Cloze test (Lehmann & Lenkeit, 2008). The test consists of four texts with 91 word completion questions measuring reading proficiency, vocabulary, grammar and spelling simultaneously. The items were scaled based on one-parameter item response theory in ConQuest (Wu et al., 1998). We used weighted likelihood estimates (WLEs) for individual person parameters. The WLEs were scaled with a

mean parameter estimate of  $M = 100$  and a standard deviation of  $SD = 20$ .

#### 4.2.2.2 Control variables

In our analysis, we utilized the control variables of general cognitive abilities, gender, age, socio-economic status, parental education, and cultural capital. As general cognitive abilities might systematically differ across groups, we used a composite score of two subtests of the CFT4-12R: verbal and figural analogies (Heller & Perleth, 2000). This test consists of 25 picture and 20 word tasks subtests and was administered in the fourth grade. The test-retest reliability for this age group is  $r_{\text{analogies}} = 0.83$  and  $r_{\text{figural}} = 0.93$  (Heller & Perleth, 2000).

Gender and age were reported in the fifth and sixth grade student questionnaires.

Several aspects of students' social and cultural background were assessed with the parent and student questionnaire. To measure the family's socio-economics status, we used the International Socio-Economic Index (ISEI; Ganzeboom & Treiman, 1996), with the highest score of the two parents' socio-economic status (HISEI) serving as an indicator of family socio-economic status. The highest education of the parents was measured on a five-point scale with one indicating no qualification and five indicating a college-bound school diploma. Finally, to operationalize cultural capital, we used the number of books at home as a proxy variable, which was assessed on a four-point scale with one indicating 0-25 books and four indicating over 200 books.

#### 4.2.2.3 Missing data and statistical analyses

As is usually the case with longitudinal large-scale data, there is a certain number of missing values in the dataset. This primarily stems from the lower response rate (60%) of the parents compared to the performance instruments as well as the attrition rate between fourth and sixth grade (7%). Consequently, we conducted all analyses using five imputed datasets, in which the missing values were replaced by plausible values (Lehmann & Lenkeit, 2008). The multiple imputation was based on a specified background model, which included the individual-level factors of grades, self-concept, interest and motivation as well as the

classroom-level factors of achievement, socio-economic status and percentage of students with immigration background (Lehmann & Lenkeit, 2008). The results of the analyses for the five datasets were combined using option type = imputation in MPlus 5.21 (Muthen & Muthen, 1998; 2008). All multiple regression analyses were conducted in MPlus 5.21 taking into account the nested nature (students in classes) of the dataset (type = complex). The descriptive statistics reported below are based on the first imputed dataset with Bonferroni adjustment for all multiple comparisons.

### 4.3 Results

#### 4.3.1 Descriptive statistics

To investigate the relation of bilingualism and foreign language learning, we first conducted descriptive analyses with the dependent variable English language achievement and the background control variables for the monolingual and bilingual groups (see Table 4.1). The dependent variable English proficiency varies significantly between the monolingual and bilingual groups ( $t = 7.74, p < .001$ , 95% CI [4.34, 7.28],  $d = .33$ ) with the monolingual group having noticeably higher levels of English proficiency. This is also the case for the control background characteristics of socio-economic status ( $t = 19.05, p < .001$ , 95% CI [9.98, 12.27],  $d = 0.78$ ), parental education ( $t = 9.74, p < .001$ , 95% CI [0.40, 0.60],  $d = 0.41$ ), and cultural capital ( $t = 27.70, p < .001$ , 95% CI [1.00, 1.15],  $d = 1.08$ ). Furthermore, the German monolingual group has noticeably higher German proficiency than their bilingual peers ( $t = 17.31, p < .001$ , 95% CI [7.24, 9.09],  $d = 0.69$ ).

Table 4.1

*Sample means (and standard deviations) of the dependent and control variables for bilingual and monolingual students*

	German Monolingual n=1896	Bilingual Group n=939
English ability	97.28 (19.13)	91.12 (18.55)
Age at sixth grade	12.49 (0.49)	12.71 (0.70)
Socio-economic status	50.30 (14.80)	38.80 (14.59)
Parental education	3.64 (1.09)	3.13 (1.39)
Cultural capital	2.75 (1.03)	1.67 (0.96)
German proficiency	112.46 (12.02)	104.29 (11.74)

Note: Descriptive statistics were calculated using the first imputed dataset

We next examined the individual bilingual language groups more closely (Table 4.2). On the dependent variable English proficiency, there is significant variation across language groups ( $F(5, 2829) = 28.84, p < .001, \eta_p^2 = .22$ ). The Chinese-German and Polish-German groups performed similarly to the German monolingual group, while the Turkish-German and Arabic-German groups performed below the monolingual group.

Table 4.2

*Sample means (and standard deviations) of the dependent and control variables by language group*

	German Monolingual n=1896	Arabic - German n=105	Chinese - German n=110	Polish - German n=57	Turkish - German n=383	Other bilingual n=284
English ability	97.28 (19.13)	83.00* (19.60)	100.63 (17.40)	102.24 (17.08)	88.51* (17.01)	91.40* (18.41)
Age at sixth grade	12.49 (0.49)	12.78* (0.74)	12.55 (0.57)	12.57 (0.54)	12.65* (0.64)	12.67* (0.80)
Socio-economic status	50.30 (14.80)	36.25* (14.00)	41.46* (13.89)	42.77* (13.67)	37.23* (13.53)	40.03* (16.18)
Parental education	3.64 (1.09)	2.86* (1.46)	3.45 (1.42)	4.07 (1.15)	2.76* (1.33)	3.41 (1.29)
Cultural capital	2.75 (1.03)	1.49* (0.83)	1.76* (1.09)	2.09* (1.01)	1.56* (0.90)	1.75* (0.98)
German proficiency	112.81 (11.85)	99.29* (11.45)	111.13 (10.84)	111.69 (10.39)	101.32* (10.80)	106.02* (11.45)

Note: Descriptive statistics were calculated using the first imputed dataset

Bonferroni corrected multiple comparisons with monolingual reference group: \* $p < .01$ ;

With regard to the background variables, there are noticeable between-group differences for the measure of HISEI, with the monolingual group having the highest HISEI, on average, and the Turkish-German and Arabic-German showing the lowest HISEI mean



scores ( $F(5, 2829) = 80,42, p < .001, \eta_p^2 = .35$ ). In a similar vein, Turkish-German, Arabic-German as well as other bilingual group show lower parental education than the other groups ( $F(5, 2929) = 44,93, p < .001, \eta_p^2 = .27$ ). Another marked difference is the relatively low level of cultural capital (operationalized with the reported number of books at home) of the Arabic-German group and the Chinese-German group in comparison to all the other groups ( $F(5, 2929) = 151.13, p < .001, \eta_p^2 = .46$ ). The German monolingual group has a larger number of books at home, on average, than all other groups.

#### **4.3.2 Bilingualism and English achievement**

Given our substantive interest in immigrant bilingualism and foreign language achievement (research question 1a), we fit two regression models testing if immigrant bilingualism is positively associated with English foreign language achievement (Table 4.3). First, we specified an uncontrolled model with the bilingual group as a dichotomous variable compared to the monolingual reference group (Model A). Similar to the results of the descriptive statistics, membership to the bilingual group is negatively associated English achievement. However, this negative relation is reversed once the background characteristics of general cognitive abilities, age, gender, socio-economic status, parental education, and cultural capital have been taken into account (Model B). Given comparable individual and familiar background characteristics bilingual group membership is positively associated with English foreign language achievement.

Table 4.3

*Multiple regression models explaining English achievement of bilinguals*

Variable	Model A	Model B	Model C	Model D
Intercept	97.28***	92.02***	90.00***	91.15***
Bilingual (=1)	-5.94***	2.68**		
Bilingual German Level 1			-16.45	-13.60
Bilingual German Level 2			-13.83	-10.31
Bilingual German Level 3			-5.76	-4.37
Bilingual German Level 4			3.45	2.25
Bilingual German Level 5			17.09~	12.49
General Cognitive Abilities		6.10***		3.30***
Age <sup>1</sup>		-5.67***		-3.66***
Gender (girls = 1)		4.89***		4.40***
HISEI <sup>2</sup>		2.21***		0.90
Parent Qualification <sup>2</sup>		2.26***		0.74
Cultural Capital <sup>2</sup>		1.46***		0.57
Explained Variance (R <sup>2</sup> )	0.02	0.30	0.34	0.41

~p&lt; .10; \* p&lt; .05; \*\* p&lt; .01; \*\*\* p&lt; .001

Note: <sup>1</sup> Centered; <sup>2</sup> z-score

To investigate the effect of majority language proficiency in the bilingual groups (Hypothesis 1b), we next repeated the regression analyses with five ‘dummy’ variables for bilingual groups with different levels of German proficiency compared to the monolingual reference group. In Model C, we fit an uncontrolled model with the bilingual groups. As shown in Table 4.3, there is a general trend that for bilingual students the higher the level of German reading is associated with increased achievement in English. Bilingual students with weak German skills (Levels 1-3) have weaker English language achievement than their monolingual peers. Conversely, bilingual students with strong German skills (Level 4-5) have higher English achievement than their monolingual peers. This trend remains once background characteristics have been taken into account (Model D) although the differences between groups are not statistically significant.

### 4.3.3 Patterns in English achievement across bilingual language groups

To investigate immigrant bilingualism and English achievement in more detail, we differentiated between five bilingual language groups (research question 2). We fit four multiple regression models testing if immigrant bilingual group membership is positively associated with English foreign language achievement across the bilingual groups (see Table 4.4).

Table 4.4

*Multiple regression models explaining English achievement of bilingual language groups*

Variable	Model A	Model B	Model C	Model D
Intercept	97.29***	93.17***	92.04***	91.94***
Arabic-German	-14.61***	-7.00**	-3.12	1.02
Chinese-German	3.15~	4.44**	7.08***	6.08***
Polish-German	5.44*	6.19**	7.30***	6.80***
Turkish-German	-8.26***	-2.08~	1.90~	5.01***
Other bilingual	-5.40***	0.65	2.86*	3.71**
General Cognitive Abilities		6.90***	5.91***	2.40***
Age <sup>1</sup>		-6.83***	-5.60***	-3.64***
Gender (girls = 1)		4.67***	4.87***	3.94***
HISEI <sup>2</sup>			2.22***	1.07*
Parent education <sup>2</sup>			2.08***	1.29**
Cultural Capital <sup>2</sup>			1.45***	0.35
German Reading Proficiency <sup>2</sup>				9.56***
Explained Variance (R <sup>2</sup> )	0.05	0.26	0.30	0.46

~ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

Note: <sup>1</sup> grand mean centered; <sup>2</sup> z-score

Model A represents an uncontrolled model of English Language ability with the five bilingual groups as independent ‘dummy’ variables compared to the monolingual reference group. In Model B, we added the individual control factors of general cognitive ability, age, and gender. In Model C, the family characteristics HISEI, parental education and cultural capital were included in the model as additional control factors, and finally, in Model D, we controlled for German language proficiency.

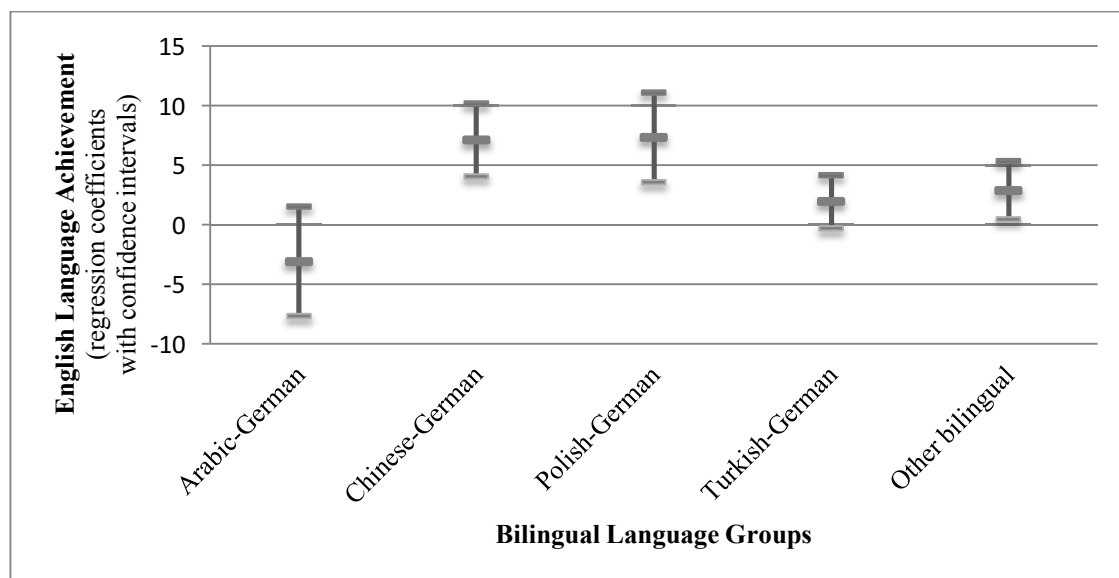
In Model A, we specified an uncontrolled model with the different language groups as independent variables. As the descriptive statistics showed, there is significant inter-group variation among the bilingual groups. The Polish-German group performs significantly higher than the monolingual group. The Chinese-German group does not display any significant advantages or disadvantages compared to the German monolingual group. The Turkish-German and Arabic-German bilingual groups score significantly lower than the monolingual reference group. Overall, the membership in the monolingual or a bilingual group explains five percent of the variance in students' English language achievement. However, because of the marked differences in background variables the descriptive statistics revealed, we next included these potentially confounding factors in the subsequent models to hold their impact constant on the relation between bilingual group membership and English language achievement.

In Model B, we controlled for students' age, gender and general cognitive abilities. All three variables add substantive explanatory power to the model ( $R^2 = 0.26$ ). While positive effects were found for cognitive abilities and for the female gender, there was a negative effect of age on English language achievement, probably resulting from students with lower proficiency levels repeating grades. After controlling for these background factors, the difference in magnitude between the monolingual group and the bilingual groups that had an advantage in Model A (Chinese-German and Polish-German) increased moderately, resulting in a larger advantage for the two bilingual groups. For the bilingual groups who had a significant disadvantage in Model A (Turkish-German, Arabic-German and Other Bilingual), the disparity with the monolingual groups diminished noticeably. Indeed, once controlling for general cognitive abilities, gender and age, the Turkish-German bilingual group and the Other Bilingual group have, on average, no longer significant disadvantages and similar levels of English achievement as their monolingual peers.

Next, we added family background characteristics to the model (Model C). As

expected, HISEI as well as parents' school education play an important role, as does the cultural capital of the family. This model explains 30% of the variation in English language ability. Given similar socio-economic status, parental education, cultural capital, general cognitive abilities, age and gender, three of the five bilingual groups have a significant advantage in English language achievement in comparison to their monolingual peers, while the remaining bilingual groups do not differ significantly from their monolingual peers. The bilingual group with the largest advantage is the Polish-German group, the Chinese-German group continues to have a significant advantage, and the heterogeneous bilingual group now also shows a significant advantage in their English language achievement compared to their monolingual peers. There is no longer a significant disadvantage for the Turkish-German or the Arabic-German group, demonstrating that once confounded background variables are controlled, these two bilingual groups perform similarly to their monolingual peers.

Figure 4.1 depicts the results for Model C, illustrating the pattern for each group in comparison to the German monolinguals as the reference group. Given similar individual and familial background characteristics, the Chinese-German, Polish-German and heterogeneous bilingual groups show significant advantages in their English language achievement in comparison to their monolingual peers with a non-significant advantage for the Turkish-German group. The Arabic-German group, who performed significantly lower than all other groups in Model A, did not perform significantly different from their monolingual classmates after controlling for background variables. Despite differences between groups, Model C shows strong evidence that, controlling for confounded background variables, most bilingual students, on average, tend to have higher English languages achievement than their monolingual counterparts in the sixth grade.



Note: Monolingual references group mean = zero

*Figure 4.1.* Group differences (with 95% confidence intervals) in English foreign language achievement across different bilingual groups compared with monolingual classmates controlling for individual and familial background characteristics.

As a final step (Model D, Table 4.4), we included German language proficiency in the regression analysis of English language achievement remaining the background variables used in the previous regression models. Confirming the importance of the instruction language found in the first analysis (research question 1b) German language proficiency turns out to have a strong positive relation with English language achievement with a noticeable increase of explained variance ( $R^2 = 0.46$ ). Further, entering German reading proficiency into the model and therefore given comparable German reading proficiency between the monolingual and bilingual groups, all bilingual groups except the Arabic-German group, have a strong significant advantage in their English language achievement. The regression coefficients for the Chinese-German, Polish-German and other bilingual groups change slightly from Model C to D. However, the coefficient of the Turkish-German group alters noticeably and now has a strong significant advantage to their monolingual counterparts. Although no significant advantage is detected in the Arabic-German group, whose German skills were comparable to those of the Turkish-German group (see Table 4.2), the Arabic-German group has comparable English language achievement to that of the monolingual

group.

#### 4.4 Discussion

In the present study, we examined if speaking an immigrant minority language as well as the majority language has a positive effect on English foreign language achievement. Additionally, analyses aimed at identifying the role of L2 proficiency in the context of a potential bilingual advantage in L3 learning and finally, whether the results hold true for different bilingual language groups. All comparisons of the different groups of elementary school students were conducted controlling for sociocultural background factors and general cognitive abilities.

To this end, we first evaluated bilingual and monolingual students' achievement in English as a foreign language. Because proficiency in the instructional language is often assumed to be an important determinant of additional language ability (De Angelis, 2007) and in the German context there is a significant difference in German language outcomes between students with and without an immigrant background (Stanat et al., 2010), we examined if and to what extent bilingual students with different proficiency in the instructional language, German, varied in their English language achievement. Further, we compared five bilingual groups' achievement in English as a foreign language with that of their monolingual peers.

Regarding our first research question the results provide evidence that immigrant bilingualism can have significant advantages for learning English as a foreign language. The general trend suggests that, given comparable background characteristics, children who speak a minority language at home have, on average, stronger foreign language achievement (Hypothesis 1a). These results reinforce the theoretical assumption that speaking another language at home supports the cognitive and metalinguistic development of individuals, which results in enhanced foreign language learning outcomes. However, it should be noted

that while being bilingual was found to be associated with higher English language achievement, bilingual group membership only accounted for a small portion of the overall explained variance ( $R^2 = .02$ ) compared to the background characteristics. Furthermore, the bilingual group had a relatively slight advantage ( $\beta = 2.68$ ), which can be interpreted as just over a quarter of a school year's achievement (Hill, Bloom, Black, & Lipsey, 2008). Our findings parallel those revealed in the DESI study (Hesse et al., 2008), which also found advantages for German bilingual students. At the same time, they contrast with the findings of earlier studies with immigrant bilinguals in the Netherlands (Schoonen et al., 2002; Van Gelderen et al., 2003), which found no advantages for the bilingual groups. Varying methodologies, specifically the lack of the consideration of potentially confounding background variables as well as statistical power of the varying samples in the two Dutch studies, could explain these inconsistent conclusions.

Although there is a general positive association, instruction language proficiency plays a major role in foreign language outcomes. In line with the hypotheses, the results of the group comparisons provide evidence that bilingual students with strong instructional language skills have advantages in learning English as a foreign language, whereas bilingual students who are weak in the instructional language, do not perform as well as their monolingual peers (given comparable background characteristics) (Hypothesis 1b). It should be noted that but despite a relatively large portion of explained variance, the group differences were not significant. This might be due to a lack of statistical power of the five subgroups. These results replicate earlier findings, which conclude that only students that are strong in the language of instruction have benefits in learning an additional language (Mägiste, 1984).

While there was a general positive trend for the bilingual students, this pattern varied across the five bilingual groups in our subsequent analyses (Hypothesis 2). Contrary to our hypotheses, which focused on linguistic typology and distance between the languages of the bilingual groups and English, the Chinese-German students had a strong and significant



advantage in their English achievement ( $\beta = 7.08$ ) as did the Polish-German students ( $\beta = 7.30$ ). Both groups' achievement was almost 0.40 of a standard deviation, which can be translated to almost one year in achievement ahead of their monolingual peers (Hill et al., 2008). The strong performance of the Chinese-German group is rather surprising given the diverse linguistic properties of the two languages. In addition, there was an advantage found for the heterogeneous bilingual group. These results differ from those of Göbel et al. (2011), who found no advantage for the Polish-German bilinguals. The lack of differences for the Polish-German bilinguals in their study might be due to the relatively small sample size of the Polish-German group in comparison to the monolingual group.

After controlling for background factors, the Turkish-German students had a small advantage by trend, although this difference was not significant from the monolingual group ( $\beta = 1.90$ ). This replicates the findings of Sanders and Meijers (1995) as well as Rauch et al. (2010), who found that Turkish-German bilingual students did not significantly differ in their English achievement from their monolingual peers. However, as Sander and Meijers stress, these results can be interpreted as positive given the large lack of achievement gap between bilingual students and their monolingual peers found in other school subjects, which is also the case with the current sample (Lehmann & Lenkeit, 2008).

The one group who did not show any advantages was the Arabic-German students ( $\beta = 3.12$ ). It is notable that while this group initially had large disadvantages in their English achievement, the difference between Arabic-German bilingual and monolingual students was no longer significant after controlling for background variables. These results replicate the findings of Sanders and Meijers (1995), who found no significant differences in English achievement between Arabic-Dutch bilingual and Dutch monolingual students. This difference in the findings for the Arabic-Germans might be due to several factors. First, as theorized in the literature, this could be due to the language distance between the Arabic language and English. Yet, the Chinese-German students, whose home language has even

greater language distance, did not display this achievement gap. A more probable reason might be the less pronounced literacy experiences of Arabic immigrant children at home. Asbrand, Lang-Wojtasik, and Köller (2005), for example, explained weak Arabic literacy development with the extreme differences between spoken and formal (written) Arabic and the effect of a rather oral language culture of Arabic. This comparatively weaker literacy development might affect further language learning, both in the instructional language and in formal foreign language learning as Wagner, Spratt, and Ezzaki (1989) point out.

Finally, once German language had been entered into the model, all bilingual groups except the Arabic-German students had a significant advantage in their English achievement. Similar to other findings (i.e., Haenni Hoti et al., 2011; Rauch et al., 2010) and in line with the results of our first analysis these results show that the language of instruction is an important factor explaining a substantial portion of the variance ( $\Delta R^2 = 16\%$ ). Yet, given comparable levels of German proficiency between monolingual and bilinguals, almost all bilingual groups sustain or even increase their significant benefits in foreign language learning. This suggests that in the context of immigrant bilingualism, the language of instruction has specifically strong power in predicting foreign language outcomes. As the results show, a one-point increase in German language is associated with almost ten points on English achievement. However, as several of the bilingual groups have significant advantages in their English language achievement, speaking a minority home language also support the language learning under certain conditions.

It is interesting to note that while bilingual group membership did add significant explanatory power to the regression analyses, it explains less variance than that of the background characteristics taken together. This mirrors the findings of Cenoz and Valencia (1994) whose results, although showing significant advantages for bilingual students, had relatively smaller effect sizes for bilingualism than other background characteristics. In the present study, the most important predictor of foreign language outcomes remains the

language of instruction and background characteristics with bilingualism adding a small but significant explanation to English achievement. Further variation could be explained through variables assessing bilinguals' home language proficiency as well as affective and motivational factors.

Taken together these results have several strong implications for learning and instruction. Firstly, it is imperative for educators to be aware of the unique ability and linguistic resources of bilingual children in the foreign language classroom. Continued support for strong instructional language skills should be a priority in formal and informal learning environments (i.e., Stanat, Becker, Baumert, Lüdtke, & Eckhardt, 2012). This will improve all students' foreign language learning outcomes as well as in other subjects in school and especially assist with bilingual students' overall linguistic reservoir. Despite other individual and background characteristics that might result in varying learning outcomes, bilingual students' unique linguistic skills should be explicitly seen as a resource. As this study highlights, much of the achievement gap in foreign language learning between immigrant bilingual and monolinguals stems from the systematic individual and familial differences, such as parents' education. It should be noted that although membership to an immigrant bilingual group is positively associated with English language ability once controlling for these background factors, it is impossible for educators to parcel out all factors within a child. However, it is important to understand fully from where achievement gaps stem and which resources may potentially serve in a compensatory way. As this study successfully shows, immigrant bilingualism is not a hindering factor, but rather it can be positively associated with foreign language learning outcomes. This speaks to the general benefit of knowing and using two languages, even if one of the languages is not formally supported in the education system.

#### 4.4.1 Limitations and implications for future research

Despite the largely consistent findings, our study has several limitations. One limitation is the lack of a measure of home language proficiency. Group membership was based on the specification in the parental questionnaire which language was spoken regularly in the home. Although this is a more conservative estimate than the inquiring if the student has knowledge of another language, there was no measure directly assessing the level of proficiency in that language. Although a certain level of proficiency can be assumed if the students speak this language regularly at home, a measure of home language proficiency, and specifically literacy skills, is likely to explain further individual variation in and potentially also variation between bilingual language groups. A measure of home language literacy would be particularly salient, as theoretical assumptions often presupposes a certain level of proficiency in both languages for the cognitive and linguistic benefits of bilingualism to appear (Bialystok, 2001; De Angelis, 2007; Swain et al., 1990). While this investigation provides an important step in investigating different immigrant bilingual groups and their foreign language learning, further research should address the effect of home language proficiency, the language of instruction and that of third language learning in school for immigrant bilinguals.

Another important avenue for further research should focus on the mechanisms, namely metalinguistic awareness, that are expected to mediate the language learning process directly. This large-scale study provides evidence that speaking a minority language - even one that is not explicitly taught in the education system - can provide a student with unique skills and abilities, which are especially salient for education in the foreign language classroom. With further research into these mechanisms and their effect on language learning, educators can better tap into the abilities of their students, and curricula can more accurately reflect needs of not only monolingual but the increasing population of bi- and multilingual children present in the classroom. As educational systems around the world are increasing

tackling the changing demographics in the classroom, the importance of identifying not only potential weakness, but strengths, is increasingly important for successful learning. As immigrant bilingual students are often labeled as facing difficult challenges, it is also important to remember that those challenges are coupled with benefits, which in some areas of learning, can further their academic success.

## 5 Study 2: Bilingualism as a resource for foreign language learning of language minority students?

Maluch, J. T., Neumann, M., & Kempert, S. (2016). Bilingualism as a resource for foreign language learning of language minority students? Empirical evidence from a longitudinal study during primary and secondary school in Germany. *Learning and Individual Differences*, 51, 111-118. <https://doi.org/10.1016/j.lindif.2016.09.001>

### Abstract

This study investigates the effect of bilingualism on the achievement in English as a foreign language from elementary to secondary school. Using longitudinal data of 1032 German students from sixth to eighth grade, we examined if speaking both a minority language at home and the instruction language presents an advantageous condition for English foreign language development. Controlling for confounded background characteristics, the regression analyses revealed that, although a significant advantage of bilingualism is found in elementary school, it disappears as students proceed into secondary school, yielding differential gains for the language minority and monolingual groups. Moreover, the level of exposure to the minority language plays an important role for the English achievement development for bilingual students as they proceed into secondary school.

Keywords: bilingualism, language minority learners, foreign language learning, language development

## 5.1 Introduction

There is a growing population of students with immigrant background in schools in many western countries. The academic development of these students tends to vary from their monolingual peers (Stanat & Christensen, 2006). While some students with immigrant backgrounds follow trajectories parallel to those of native students, most lag behind their native peers, with the achievement gap across subjects widening, as students advance through school (Han, 2012; Mancilla-Martinez & Lesaux, 2011). In Germany, there is clear evidence that a particularly wide cross-sectional achievement gap in educational outcomes exists for first generation immigrant students as well as those who primarily speak a minority language other than German in the home (Stanat, Rauch, & Segeritz, 2010). However, there is conflicting evidence concerning longitudinal outcomes of students who speak a minority language at home, and if minority language students' trajectories are similar to those of their German monolingual peers (Neumann, Becker, & Maaz, 2013).

Despite discrepancies in academic outcomes, some students with immigrant backgrounds, namely those who speak both a minority language and the majority language of the classroom, have resources that may positively impact certain areas of their academic achievement, specifically their foreign language learning. Bilingualism is associated with unique patterns of cognitive and linguistic processes that differ from those of monolinguals and possibly foster foreign language learning. Accordingly, bilingual students have been shown to have an advantage in learning an additional language (e.g., Brohy, 2001; Cenoz & Valencia, 1994; Maluch, Kempert, Neumann & Stanat, 2015; Sanz, 2000). However, it is often assumed that these advantages are only found under specific circumstances, for example, when both languages are supported in formal instructional environments (e.g., bilingual education; Cenoz, 2003; Jessner, 1999). It remains unclear if these advantages in foreign language learning also apply to bilingual language minority students (e.g., whose

majority language is taught in the school [L2] while speaking a minority language at home [L1]) and how the patterns of foreign language (L3) development differ between bilingual and monolingual students over time.

### **5.1.1 Cognitive and linguistic consequences of bilingualism**

Numerous investigations have shown that bilingualism is positively related to various cognitive functions, namely heightened levels of executive functions - the interrelated process of inhibition, attentional control and working memory (for review, see Adesope, Lavin, Thompson, & Ungerleider, 2010; Barac, Bialystok, Castro, & Sanschez, 2014; Bialystok, 2009; Hamers & Blanc, 2000). These cognitive functions have been found to be enhanced in bilingual children, especially those with balanced proficiencies (Barac et al, 2014; Martin-Rhee & Bialystok, 2008). Throughout elementary school, bilingual children seem to retain this heightened level of executive functions when compared with their monolingual classmates (Barik & Swain, 1976; Hakuta & Diaz, 1985), and this advantage continues into young adulthood (Bialystok, 2006a).

In addition to advantages in general cognitive functions, bilingualism seems to be positively associated with linguistic processes, namely aspects of metalinguistic awareness (Thomas, 1988), defined as “[...] the ability to focus attention on language as an object in itself or to think abstractly about language [...]” (Jessner, 2006, p.42). Most metalinguistic skills appear parallel with literacy development (Homer, 2009) – with some metalinguistic skills (i.e., phonological awareness) appearing earlier (Bialystok, 2006b). Studies investigating metalinguistic awareness have found that bilinguals have advantages on several metalinguistic tasks, such as applying morphological rules to unfamiliar forms (e.g., Barac & Bialystok, 2012) or judging grammatically correct but semantically inaccurate sentences, as well as separating a word from its referent (Ben-Zeev, 1977; Ianco-Worrall, 1972; for



review, see Bialystok, 2006b). Heightened metalinguistic awareness in bilingual children emerge early, and they retain this advantage throughout elementary school (Bialystok, 1986). Proficiency in both languages has been shown to moderate the development of these skills (Bialystok, Peets, & Moreno, 2012), while variability in findings are also associated with the use of the two languages as well as instructional context (Barac et al., 2014).

A possible explanation for these advantages might be that bilinguals are experienced language learners. Bilinguals are equipped with contrasting linguistic knowledge about two languages, compelling them to compare and analyze the structural aspects of language earlier and in more advanced ways than monolinguals (Bruck & Genesee, 1995). Additionally, bilingualism requires the individual to coordinate two language systems including to attend to relevant features of linguistic in- and output (Bialystok, 2009; Sanz, 2012). This kind of training leads to cognitive advantages in executive functions which may be relevant in two major components of metalinguistic tasks: analyzing and attending (linguistic) information (Bialystok, 2001). As a result of extended experiences with two languages and heighten levels of metalinguistic awareness bilingualism presents an advantageous condition for L3 learning. Indeed, several studies have identified metalinguistic awareness as a significant predictor for children learning a second language (Dufva & Voeten, 1999; Zhang & Koda, 2013) as well as for bilingual children learning a third language (Rauch, Naumann, & Jude, 2011).

### **5.1.2 Moderating factors of bilingualism on foreign language learning**

Despite the aforementioned benefits, which may help bilinguals in language learning, it is widely acknowledged that not all types of bilingualism lead to advantages (Bialystok, 2001). Jessner (1999) postulates that for bilinguals to develop cognitive and linguistic advantages, both languages should be formally supported in the education system

leading to balanced bilingual profiles (i.e., Lambert's additive context (1973)). This is not normally the case for bilingualism due to immigration. For language minority students, who often come from homes with fewer sociocultural resources (Stanat & Christensen, 2006), the majority language is normally fostered in school, while the minority language is not (Cenoz, 2003). This can result in unbalanced language competencies between each of their respective languages (compared with children in bilingual education programs) and enormous heterogeneity in their linguistic profiles (Genesee & Lindholm-Leary, 2012).

One major source of this variability, which has direct influence on the development of the minority L1, is exposure to that language (Oller, Pearson, & Cobo-Lewis, 2007). The mode and frequency of a minority language that parents use to interact with their children can vary greatly (De Houwer, 2007; Mancilla-Martinez & Lesaux, 2011; Pearson, 2007), and it should have direct and reciprocating effects on bilingual language development (i.e., *the input-proficiency-use cycle*, Pearson, 2007). The exposure to the minority language can have significant consequences on proficiency and, in turn, bilingual cognitive and linguistic development including L3 achievement. Furthermore, it may also be assumed that in the case of L3 learning a bilingual advantage is rather prominent at the beginning of this process (i.e., in primary school). The differences in metalinguistic awareness and knowledge between bilingual and monolingual children may decline over time because L3 instruction in the classroom also imparts metalinguistic knowledge to monolingual children.

### **5.1.3 Bilingualism and foreign language learning: empirical findings**

Almost all research to date examining the relationship between bilingualism and L3 learning is cross-sectional. Based on the few studies that examine bilingualism and metalinguistic awareness longitudinally (Bialystok, 1986; Bialystok, Peets, & Moreno, 2012), it can be hypothesized that bilingual children, in contexts where all three languages

are supported with explicit language learning (i.e., bilingual immersion programs with additional L3 instruction), would continue to show advantages in their L3 skills in secondary school compared to monolingual students. Indeed, this has been found to be the case in several cross-sectional studies across samples varying in setting and age (Abu- Rabia & Sanitsky, 2010; Brohy, 2001; Cenoz & Valencia, 1994; Sanz, 2000). However, with regard to other forms of bilingualism, namely that of language minority students, there is conflicting empirical evidence regarding the possible benefits of bilingualism on L3 development.

Exploring possible advantages for language minority students in L3 learning, Maluch and colleagues (2015) investigated a sample of sixth-grade bilingual and monolingual students learning English as a L3 in Germany. Despite significant language group differences (Arabic-German, Chinese-German, Polish-German, and Turkish-German), the cross-sectional analysis revealed a general positive trend for the bilingual groups after controlling for confounding sociocultural background factors and general cognitive abilities. Similarly, with a German national representative sample of 11,000 ninth graders, a heterogeneous group of language minority students outperformed their monolingual peers on measures of English as L3 (listening comprehension, grammar, reading and text writing skills), controlling for important cognitive and family characteristics (Hesse, Göbel, & Hartig, 2008).

In contrast, Sanders and Meijers (1995) examining Turkish-Dutch and Arabic-Dutch fifth and sixth graders, found no differences between the language minority and monolingual groups. Based on a sample matched for cognitive abilities and socio-economic status (SES), the language minority groups did not differ from their Dutch monolingual peers in a variety of English language skills (grammatical judgment, spontaneous language use, word comprehension, and word recognition). This mirrors the lack of group differences in English L3 outcomes between 13- and 14-year-old Dutch language minority learners and

monolinguals reported by Van Gelderen and colleagues (2003), as well as between Turkish-German and German monolingual students in the same age-group (Rauch, Jurecka, and Hesse, 2010).

The only longitudinal study that, to our knowledge, investigated third language learning in bilinguals (Bérubé and Marinova-Todd, 2012) does not resolve the aforementioned studies' contrasting results. Examining a sample of heterogeneous language minority students and monolingual students in English (L2) /French (L3) immersion from the beginning and end of the fourth grade, the authors found no significant advantage neither for the 20 alphabetic language minority students (i.e., Africans, Croatian, & Vietnamese) nor 17 syllabic language minority students (i.e., Cantonese, Japanese, & Mandarin) compared to 57 English monolingual students on task of listening and reading comprehension. The authors did not find any significant interactions between group and time, indicating not only the lack of differences in L3 learning outcomes between the two bilingual and monolingual groups, but the similar growth patterns between the groups over time. In the analyses, however, background characteristics (i.e., SES or parental education) were not taken into account. A potential reason for this discrepancy between results in these studies might be due to the background characteristics considered in the analyses as well as variability of L1 exposure across the language minority group samples.

Some studies examining samples of language minority students and L3 learning analyze the factor of minority language exposure more closely. Investigating a national sample of Swedish eighth graders ( $N = 69,903$ ), Mägiste (1984) found that immigrant bilinguals showed no advantages compared to their Swedish monolingual classmates on a standardized English test. However, when language minority students were divided by their L1 use, those who used both Swedish and another minority language at home outperformed the Swedish monolingual students as well as those who only spoke a minority language at home. This suggests that additional factors, namely L1 use, might account for differing

outcomes among language minority groups. Bild and Swain (1989) found that eighth grade minority students (speaking Italian or a Non-Romance language) in an English (L2)/French (L3) bilingual program outperformed their monolingual English speaking peers on oral measure of French proficiency. Moreover, in contrast with Mägiste, the authors found that the frequency of minority language use in the home was positively associated with third language outcomes. Like with elementary school samples, secondary school samples provide conflicting empirical evidence regarding possible patterns of language minority students' L3 development.

In sum, there is a lack of clear evidence concerning the L3 learning outcomes of language minority students. One possible explanation might be the differing use of background variables, which vary systematically across groups, and could create a bias for some samples. Another possible reason might be that the relationship between bilingual and L3 learning might be a question of development rather than of correlation that is constant over time. Metalinguistic awareness might be utilized in early phases of L3 learning giving bilingual students differential learning curves. Therefore, longitudinal investigations are needed to shed light on potential differential patterns over time. Additionally, to establish a basis for less ambiguous interpretations, language minority individuals with different language use profiles should not be treated as a homogeneous group. As a few studies have concluded (e.g., Mägiste, 1984; Bild & Swain, 1989), it is important to consider the language input in the students' home environment to gain insight on the actual language profiles of the L1. Furthermore, taking into account confounding variables, such as home factors like parental education, is pivotal for adequate comparisons between language minority and monolingual students.

#### **5.1.4 The Current Study**

In the present study, we explore differences between language minority students and their monolingual peers in L3 learning development from elementary to secondary school. We aim at determining if speaking another language at home, in addition to the majority language used at school, is advantageous for the development of English from elementary to secondary school and if the degree of minority language home exposure significantly affects L3 achievement over time. Previous research suggests that, after controlling for individual and family background factors, the language minority students will tend to reach higher achievement levels in a L3 (Hesse, Göbel, & Hartig, 2008). However, as only one study (based on a very small sample and within one school year) (e.g., Berube & Marinova-Todd, 2012) has examined this longitudinally, it remains unclear if this relationship is maintained over time, especially from elementary to secondary school. By using a longitudinal sample spanning a two-year time-period from the end of grade 6 in elementary school to the end of grade 8 in secondary school, the present study addresses the question, if and to what extent bilingualism fosters the L3 achievement development of language minority students over two years of schooling. Specifically, we investigate if there are differences in eighth grade English achievement between language minority and monolingual groups after controlling for prior achievement and other background variables.

## **5.2 Methods**

### **5.2.1 Participants**

We performed secondary analyses of data from the Assessment of Reading and Mathematics Development Study (ELEMENT, Lehmann & Lenkeit, 2008), which followed a cohort of children from elementary to secondary school. For the fourth to sixth grades in

the elementary school, data were collected from a representative sample of students from a major German city, whose population includes about 15% of students who speak another language than German at home (Senate Administration for Education, Science & Research, 2008). The eighth grade sample is a follow-up subsample in the secondary school of students from the sixth grade sample. In the sixth grade, participation in the study was mandatory for all students, while in the eighth grade, students participated voluntarily with an incentive. This investigation focuses on the longitudinal data from the sixth grade elementary school sample, who again participated in the study in the eighth grade ( $N=1142$ ).

The definition for language minority students used in the present study includes all children who were exposed to two languages in early childhood (Bialystok, 2001). To operationalize this definition, the children's language background was measured by a combination of the language they spoke at home and the frequency with which they used that language, as reported by the parents in the fourth grade (as this was the only measurement point, where the language background was assessed in detail). The first criterion was if another language than German was spoken at home as determined by the parents in the fourth grade. Because there was a very high correlation between parents and student responses, students' responses were used in case of missing answers. Home languages represented among the language minority students were Turkish, Arabic, Chinese, Polish, French, Italian, Russian, Vietnamese and others. The second criterion was a four-point scale of the relative amount of German and the minority home language that was spoken in the home as reported by the parents (only German, mostly German but often another language, mostly another language, only another language). This variable was used in the analyses to capture the variability in the exposure to the two languages, which may lead to proficiency differences in both languages (Scheele, Leseman, & Mayo, 2010). Based on these two measures, four dummy variables were created to represent the children's L1 profile: German monolingual ( $n = 820$ ), mixed dominant German ( $n = 119$ ), mixed

dominant non-German ( $n = 63$ ), non-German only ( $n = 30$ ). The distribution of minority language use was similar between the largest language minority groups (see Table 5.1). For 110 students, there was no language information. Thus, the final sample in both sixth and eighth grades consists of ( $N=1032$ ; 51% girls). All participants were enrolled in monolingual German public education and started English as a L3 instruction in the third grade, therefore receiving three years of exposure to English at the time of the first point of measurement. Within the bilingual students, 34% of the parents reported that their children were raised bilingually from birth (early bilinguals). The rest of the bilingual children were successive in their bilingual development beginning German in the first five years.

Table 5.1  
*Students' Language Background*

	Mixed Dominant German	Mixed Dominant non-German	non-German Only
Turkish ( $n = 70$ )	52.9%	38.6%	8.6%
Arabic ( $n = 29$ )	58.6%	24.1%	17.2%
Chinese ( $n = 39$ )	48.7%	28.2%	23.1%
Other ( $n = 67$ )	58.2%	26.7%	14.9%

After sixth grade of elementary school, students attended different secondary school tracks, which offer differentiated leaving certificates. The proportions between the university- bound track (Gymnasium) and the more vocational orientated non-university tracks were relatively similar between all language minority and monolingual groups with about 40% of each group attending the Gymnasium. In grades 7 and 8 students of all tracks received three hours per week in first L3 instruction, which was English for about 97 Percent of the students. In the sixth grade, the students stem from 134 elementary school classes and in the eighth grade from 210 secondary schools.



## 5.2.2 Measures

### 5.2.2.1 English language achievement

English language achievement was assessed with a pen-and-paper Cloze test in the sixth and eighth grades. This instrument was developed not only for this study, but was also implemented in other large-scale assessments in German (i.e., The Hamburg Learning Outcomes Study; Lehmann & Lenkeit, 2008). The sixth-grade test consists of four texts with 91 word completion questions measuring reading proficiency, vocabulary, grammar and spelling compositely (Lehmann & Lenkeit, 2008). The eighth-grade test consists of four texts with 97 word completion questions. To link the two points of measurement, two of the texts were administered in both the sixth and eighth grade forms. From those texts, 34 items were used as anchor items to link the two forms. The items were scaled based on one-parameter item response theory in ConQuest (Wu, Adams & Wilson, 1998) using the entire sixth grade sample. We then scaled the eighth grade sample anchoring the data with the values from the 34 common items. We used weighted likelihood estimates (WLEs) for individual person parameters. The WLEs were scaled with a mean parameter estimate of  $M = 100$  and a standard deviation of  $SD = 20$  in the sixth grade ( $KR20_{\text{sixth grade}} = 0.98$ ;  $KR20_{\text{eighth grade}} = .99$ ).

### 5.2.2.2 Control variables

In our analyses, we included the control variables of general cognitive abilities, age, gender, SES, parental education, and number of books. General cognitive abilities were measured with the CFT4-12R (Heller & Perleth, 2000). This test consists of 25 picture and 20 word analogy items and was administered in the fourth grade ( $\alpha = 0.75$ ). The test-retest reliability for this age group is  $r_{\text{analogies}} = 0.83$  and  $r_{\text{figural}} = 0.93$  (Heller & Perleth, 2000). The age and gender of the students was reported by the teacher. Several aspects of students' social and cultural background were assessed with the parent and student questionnaire. To measure the family's SES, we used the International Social-Economic Index (ISEI; Ganzeboom & Treiman, 1996), with the highest score of the two parents' socio-economic

status (HISEI) serving as an indicator of family SES. To measure parental education, we used a five-point scale (one indicating no qualification; five indicating a university-bound school diploma) as reported by the parents. To operationalize cultural capital, we used the estimated total number of books at home as a proxy variable, which was assessed on a five-point scale (one indicating 0-25 books; four indicating over 200 books) as reported by the students.

### 5.2.3 Statistical analysis

As is usually the case with longitudinal large-scale data, there are a certain number of missing values in the dataset. This primarily stems from the lower response rate (60%) of the parent questionnaire compared to the other instruments. Consequently, we conducted all analyses using five generated datasets, in which the missing values were replaced by plausible values (Schafer & Graham, 2002). The multiple imputation was based on a specified background model, which included individual-level factors of grades, scales of self-concept, interest and motivation as well as the classroom-level factors of achievement, SES and percentage of students with migration background (Lehmann & Lenkeit, 2008). The results of the analyses for the five datasets were combined using the option (type = imputation) in MPlus 6.1 (Muthén & Muthén, 1998-2010).

As pointed out above, the eighth-grade sample was a subsample of the sample in the sixth grade. To examine the representativeness of the follow-up subsample, key variables were compared from the two samples (see Table 5.2). As shown with the effect sizes, there is a slight positive bias from the sixth to eighth grades in several background and achievement factors, which should be considered when interpreting the results.

Table 5.2

*Descriptive statistics for selected student characteristics in the main (sixth grade) and follow-up subsample (eighth grade)*

	sixth grade (N=2944)		eighth grade (N=1142)		Cohen's <i>d</i>
	M	SD	M	SD	
English Achievement (sixth grade)	100.00	20.00	102.07	18.87	0.14
Parental education	3.47	1.22	3.61	1.16	0.12
Cultural capital	2.40	1.13	2.63	1.09	0.21
Gender (% of girls)	0.48	0.50	0.51	0.50	0.06

The purpose of this study was to examine achievement gains in English as a L3 from elementary school to secondary school from language minority students and their monolingual peers. To answer our research questions, we first computed descriptive statistics to appraise the language, and familial factors that could play a role in further language acquisition. Then, using multiple regression analyses we investigate the cross-sectional differences in English achievement between language minority students and monolingual students in the sixth and eighth grades controlling for further individual background characteristics. Finally, we examine the achievement gains for the different language groups with regression analyses with eighth grade English achievement as the dependent variable controlling for English achievement in the sixth grade and additional background characteristics. The descriptive statistics were computed with Stata 10.0 using the first imputed dataset (StataCorp, 2007). The regression analyses were conducted in MPlus 6.1 taking into account the imputed and nested nature of the dataset (students in classes) by using the Mplus-options ‘type = imputation’ and ‘type = complex’ (Muthén & Muthén, 1998).

### 5.3 Results

#### 5.3.1 Differences between Bilingual and Monolingual Groups

To begin investigating the development of English as a L3 achievement for language minority students, we computed descriptive statistics for the sample by language group, focusing on systematic differences in L1 use patterns and background characteristics, which might affect language learning development.

We first compared the dependent variable, English language achievement, between the sixth and eighth grade for all language groups (see Table 5.3). In the sixth grade, no substantial differences existed between the language groups. From the sixth to the eighth grades overall, all groups showed noticeable gains. The monolingual and the mixed dominant German groups had noticeably greater gains ( $d_{monolingual} = .56$ ;  $d_{MDG} = .55$ ) in English achievement than the other two groups. In contrast to the sixth grade, noticeable differences emerged between the groups in the eighth grade.

Table 5.3  
*English Language Achievement in the sixth and eighth grade by language group (Means and Standard Deviations)*

	sixth grade		eighth grade		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Monolingual (n=820)	103.45	18.97	115.43	23.63	0.56
Mixed Dominant German (MDG) (n=119)	99.62	20.14	111.34	22.71	0.55
Mixed Dominant non-German (MDNG) (n=63)	99.75	16.08	107.61	21.32	0.42
non-Germany only (NGO) (n=30)	101.22	19.24	107.29	25.83	0.27

We then examined familial background characteristics across groups (see Table 5.4). There was noticeable heterogeneity between the monolingual and language minority groups as well as between the three language minority groups. These differences emerge for both cultural capital and parental education.

Table 5.4  
*Means (and Standard Deviations) of selected familial background characteristics by language group*

	Monolingual (n=820)	Mixed Dominant German (n=119)	Mixed Dominant non-German (n=63)	non-German Only (n=30)
Cultural capital	2.85 (1.00)	1.81 (1.00)	1.73 (1.03)	1.73 (0.94)
Parental education	3.71 (1.08)	3.26 (1.33)	3.21 (1.52)	3.10(1.21)

The descriptive statistics revealed possible differential gains for language minority students in English as a L3. However, due to the systematic differences between the groups in background characteristics between the language minority and monolingual groups that might confound achievement scores, further analyses were necessary to control for these potentially confounding factors.

### 5.3.2 Cross-sectional Prediction of English Achievement in the Sixth and Eighth Grades

Based on the preliminary results for English language achievement and the group differences in background factors, we first regressed English language achievement in the sixth grade on the dummy variables for each language minority groups, using the German monolinguals as the reference group, and controlling for general cognitive abilities, age, gender, number of books and parental education. This model explained 27% of the total variance of English achievement in grade six ( $R^2$ ). Given similar levels of these background factors, two of three language minority group had significant advantages in English achievement compared to their monolingual peers ( $b_{MDG} = 3.43, p = .05$ ;  $b_{MDNG} = 5.83, p = .006$ ;  $b_{NGO} = 6.65, p = .02$  (see Table 5.5). Furthermore, there was a slight trend that the more a minority language is used in the home, the higher, on average, the L3 learning outcome is in the sixth grade.

Table 5.5

*Multiple regression models of English language achievement at sixth and eighth grades controlling for general cognitive abilities, age, gender, socio-economic status, cultural capital and parental education (N=1032)*

	sixth grade		eighth grade	
	$\beta$	SE	$\beta$	SE
Intercept	98.47***	(1.02)	111.11***	(1.44)
Mixed Dominant German	3.43*	(1.70)	4.90*	(2.02)
Mixed Dominant non-German	5.83**	(2.08)	3.26	(3.03)
Non-German Only	6.65*	(2.79)	1.70	(3.94)
KFT <sup>1</sup>	6.11***	(0.57)	7.33***	(0.69)
Age <sup>1</sup>	-3.28***	(0.64)	-3.28***	(0.63)
Gender (girls = 1)	5.03***	(0.94)	4.34**	(1.31)
Socio-Economic Status <sup>1</sup>	1.72*	(0.66)	1.91*	(0.81)
Cultural Capital <sup>1</sup>	2.02**	(0.66)	2.98***	(0.71)
Parental education <sup>1</sup>	2.56***	(0.59)	2.65***	(0.74)
R <sup>2</sup>	0.27		0.26	

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note: <sup>1</sup> *standardized value*

In the next step, we repeated the regression analysis for English achievement in the eighth grade, again controlling for general cognitive abilities, age, gender, number of books and parental education. The analysis revealed a very different picture for the eighth grade (see Table 5.5). This model explained almost the same amount of the total variance as in the sixth grade ( $R^2 = 26\%$ ). Unlike in sixth grade, the mixed dominant German group was the only group that had a significant advantage in English achievement in comparison to the monolingual group ( $b_{MDG} = 4.90, p < .02$ ). The mixed dominant non-German and non-German only groups were not significantly different than their monolingual peers ( $b_{MDNG} = 3.26, p = 0.28$ ;  $b_{NGO} = 1.70, p = 0.67$ ).

Taken together, in the sixth grade, speaking a minority language at home is associated with significant advantages in L3 achievement, with the slight trend that the more exposure a student has to the minority language, the higher his or her English language achievement, on average. However, in the eighth grade, the pattern is more complex.

Speaking a minority language at home is only associated with advantages in English language achievement when students mostly are exposed to German at home.

### 5.3.3 Differential Achievement Gains

Given our substantive interest in differential gains of English as a L3 for language minority and monolingual students, we added prior achievement in grade 6 to our regression models to predict achievement in grade 8 (see Table 5.6). In Model A, we specified a model without control variables to investigate the relationship between achievement in sixth and eighth grade over all students. As expected, there was a strong positive association ( $b_{\text{english\_6th}} = 16.48, p < .001$ ) that explained over half of the variation in English language achievement in the eighth grade ( $R^2 = .53$ ).

Table 5.6  
*Multiple regression models of English language achievement in grade eight controlling for prior achievement in grade 6, general cognitive abilities, age, gender, socio-economic status, cultural capital and parental education (N=1032)*

	Model A		Model B		Model C	
	$\beta$	SE	$\beta$	SE	$\beta$	SE
intercept	114.20***	(0.75)	115.76***	(0.85)	110.01***	(1.12)
English achievement (sixth grade) <sup>1</sup>	16.48***	(0.61)	16.26***	(0.62)	12.41***	(0.71)
Mixed Dominant German			0.70	(1.47)	-0.11	(1.34)
Mixed Dominant non-German			-4.61*	(2.26)	-2.65	(2.50)
non-German Only			-6.80**	(2.70)	-5.44*	(2.45)
KFT <sup>1</sup>					1.44**	(0.49)
Gender (girls = 1)					0.85	(0.91)
Socio-Economic Status <sup>1</sup>					0.31	(0.57)
Cultural Capital <sup>1</sup>					0.84	(0.60)
Parental Education <sup>1</sup>					0.54	(0.62)
School track (academic track = 1)					12.49***	(1.33)
$R^2$	0.528		0.532		0.631	

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note: <sup>1</sup> standardized value

In Model B, we tested if there are different achievement gains between the different language minority groups and their monolingual peers (reference group) without controlling for potentially confounding background factors. We next added individual and background factors that potentially have confounding effects on academic achievement. Controlling for general cognitive abilities, gender, SES, number of books, and parental education as well as the potentially confounding factor of Gymnasium (academic track) attendance, we fit a final model (Model C). In this model, language minority students who speak mostly German in the home showed similar patterns of L3 development ( $b_{MDG} = -0.11, p < .94$ ) as did language minority students who speak primarily a language other than German ( $b_{MDNG} = -2.65, p < .29$ ). Students who only speak a minority language at home, in contrast, had significant less gains from elementary to secondary school in their English achievement ( $b_{NGO} = -5.44, p < .03$ ).

## 5.4 Discussion

In the present study, we tested the assumption if speaking a minority language as well as the majority language of the community has positive effects on English L3 development in the first two years of secondary schooling. In particular, we aimed at investigating the differences in English from elementary to secondary school for language minority students with different profiles of L1 exposure compared to their monolingual peers.

The cross-sectional results revealed complex patterns from elementary to secondary school. In the sixth grade, language minority students significantly outperform their monolingual peers in English as a L3 after controlling for background variables. This holds across all three language minority groups supporting the assumption that bilingualism



represents a resource (i.e., via metalinguistic awareness) that helps with L3 learning. In the eighth grade, the general trend reveals no positive relationship between bilingualism and L3 outcomes. The only language minority group that significantly outperforms the monolingual group is the one that speaks mostly German at home, suggesting that higher levels of achievement are due to their relatively higher majority language competence while maintaining an adequate level in their minority language.

The sixth grade findings mirror other studies exploring the relationship between bilingualism and L3 learning (Hesse et al., 2008; Maluch et al., 2015). The lack of differences found in the secondary school between the monolingual and language minority groups parallel the results reported by van Gelderen and colleagues (2003), Rauch and colleagues (2010) and Sanders and Meijers (1995). These varying cross-sectional results across samples could be dependent of several factors. Firstly, it could reflect the variation of background factors used in analyses. Although several studies controlled for sociocultural background factors that might confound results (e.g., Hesse et al., 2008), others did not (e.g., van Gelderen et al., 2003) creating potentially biased results. An additional reason for varying cross-sectional results might be bilingual linguistic variation, which could account for cross- sample differences. Most samples include heterogeneous groups of bilingual students with different L1, and therefore, differing results might reflect language-specific variation that is masked within samples (e.g., Maluch et al., 2015). Knowing and speaking certain languages results in differing linguistic and metalinguistic skills (e.g., language with shallow vs. deep orthographies; Koda, 2007), and this variation might account for divergent results across samples. Furthermore, differing cross-sectional findings might reflect variation in L3 input. Classroom and curricular goals might differ significantly within and across grade levels resulting in varying results.

In addition to general trends in the sixth and eighth grade in L3 learning, we also investigated if the degree of L1 exposure affected L3 learning. In the sixth grade, a slight

trend was revealed that the more a minority language is spoken in the home, the higher the student's English language achievement, on average, although the differences between language minority groups were not statistically significant. In the eighth grade, the pattern of L3 outcomes disappears. In the sixth grade, the cross-sectional findings mirror that of Bild and Swain (1989), who detected a positive association between L1 frequency and L3 learning outcomes. Conversely, in the eighth grade, the results reflect Mägiste (1984), who found that immigrant students who used mostly the majority language (Swedish) at home significantly outperformed their monolingual peers in English. This varying pattern could reflect different cognitive and linguistic skills needed in the sixth and eighth grade L3 classroom. Earlier learning in elementary school might rely on stronger metalinguistic skills, which language minority students with more balanced profiles potentially possess. In contrast, later learning potentially relies more heavily on specific linguistic knowledge, which is explicitly taught in the majority language. Further research should use larger group sample sizes potentially to shed a more conclusive light into this emerging trend.

These cross-sectional results in this study foreshadow differential achievement gains between monolingual and language minority groups. Between the sixth and eighth grade, all students make gains in their English language achievement. Similar to the North American context where annual gains in math, science and social studies from the sixth to seventh grades ranged between  $d = .27 - .30$  and seventh to eighth grades between  $d = .25 - .32$  (Bloom, Hill, Black, & Lipsey, 2008), the gains over two years in this sample was  $d = 0.54$ . However, as shown in the final longitudinal model there is a general trend that all three language minority groups display comparatively less growth compared to monolinguals, with a significant effect of the non-German only group. This does not suggest that language attrition occurred in these two years for the language minority groups. However, their growth was significantly less pronounced than that of their monolingual classmates, and by eighth grade the language minority groups do not outperform their

monolingual classmates in L3 learning. This projects a different picture than the results from Bérubé and Marinova-Todd (2012), who reported no difference between groups over time. However, it is difficult to compare the present study to that of Bérubé and Marinova-Todd, as in the later study, the length of time between the two points of measurement was within one school year in elementary school, while this current followed the students over two years in secondary school. Thus, Bérubé and Marinova-Todd focus on younger learners in the fourth grade, who are still in earlier stages of their overall literacy development.

There are several possible explanations for the differential patterns between monolingual and language minority students in their English as a L3. Firstly, the results from the sixth grade suggest that language minority students, despite not having formal training in school in their L1, do have cognitive and linguistic advantages that support their L3 learning in elementary school. However, as the cognitive and linguistic potential of the language minority students is not explicitly reinforced and promoted in the monolingual classroom setting, these skills are not further developed, and the advantages found in the earlier grades are slowly indistinguishable in the mainstream classroom. Secondly, as the monolingual students develop L3 skills over time, they are congruently acquiring cognitive and linguistic skills (i.e., metalinguistic awareness) similar to those of their minority language peers, which support their language learning outcomes. In other words, as the monolingual students move towards “bilingualism” their cognitive and linguistic skillset converges with that of their language minority peers. Thirdly, the findings could also reflect a combination of both aforementioned explanations. As language minority and monolingual students are together in the classroom, and instruction methods are similar for all students within a classroom, later learning in secondary school reflects the norming influence of the classroom despite different skillsets in earlier learning in elementary school.

One limitation of the present study was the availability of only two points of data.

Especially an additional achievement measurement in English in grade 3 or 4 in elementary school could have revealed more differentiated patterns of growth. However, the present data provides an insightful first step in examining differential change over time between bilinguals and monolinguals. The central variable for L1 exposure of the minority language students was one of usage and measured at only in the fourth grade. This makes the assumption that language use remained constant over time. Further research should investigate a more objective measure of L1 proficiency, including the respective literacy skills. Theory suggests that literacy skills in two languages (biliteracy), not just bilingualism, are the key to success in L3 learning (Bialystok, 2001). However, to date few empirical investigations have examined this factor (i.e., Swain, Lapkin, Rowen, & Hart, 1989).

Despite these limitations, there are several pedagogical implications. Mainly, educators should not only be aware of the unique skills of language minority students that could potentially reinforce their L3 learning, but they should also utilize them in the classroom through more differentiated learning. As Jessner (2008) indicates, the multilingual classroom creates complexity with numerous possibilities for learning. More individualized curriculum would be one step to approaching this complexity. In addition, current monolingual-centered L3 curricula might better tap into maximizing the development of the special cognitive and linguistic mechanisms of bilingualism – functions that seem to be there in elementary school. Drawing connections between a language minority student's previously learned languages (i.e., both the home and majority language) will create an explicit link between language characteristics supporting the promotion of metalinguistic awareness (c.f. the multilingual processing model by Meißner, 2004).

Furthermore, as this study successfully shows, bilingualism is not a hindering factor, but it can facilitate learning in a L3. This speaks to the general benefit of knowing

and using two languages, even if one of the languages is not formally supported in the education system. As schools become more diverse with regard to students' skills and needs, multilingual students should not be categorized in terms only of deficit, but rather also seem as having unique language learning patterns. To this end, language minority students can be made aware of and learn to utilize their skills, resulting in higher overall academic achievement.

## 6 Study 3: Bilingual profiles and third language learning

Maluch, J.T. & Kempert, S. (2017). Bilingual profiles and third language learning: the effects of the manner of learning, sequence of bilingual acquisition, and language use practices. *International Journal of Bilingual Education and Bilingualism*, 1-13.  
<https://doi.org/10.1080/13670050.2017.1322036>

### Abstract

This study investigates the effect of bilingualism on learning English as a foreign language (L3), examining the impact of manner and sequence of bilingual acquisition and learning as well as language use practices in language minority children. With a sample of 1295 German eighth and ninth graders (bilingual:  $n = 456$ , monolingual:  $n = 839$ ), we examined if certain aspects of bilingualism present an advantageous condition for learning English as a foreign language in bilingual language minority students. Controlling for socio-economic status, indicators of cultural capital, and gender, the regression analyses revealed higher L3 listening and reading outcomes for bilinguals who received formal instruction in their minority language, had acquired both languages in their first three years, and switched more often between their two languages, when compared to their other bilingual and monolingual peers. The discussion focuses on the importance for bilingual children in immigrant communities to have high proficiencies in both majority and minority languages in order to develop advantages in foreign language learning.

Keywords: bilingualism; language minority learners; foreign language learning; multilingualism; third language acquisition

## 6.1 Introduction

As immigration increases, the incidence of bilingualism is growing, creating a more diverse linguistic landscape in classrooms. Some bilinguals tend to have less school success than their monolingual peers (Stanat, Rauch, and Segeritz, 2010). However, bilinguals have resources that could potentially impact their learning in positive ways. Bilingualism is associated with specific advantages in the cognitive and linguistic development (Barac et al., 2014). This variation may foster learning in some subjects, namely additional language learning (L3). Certain types of bilinguals, such as bilinguals who have high proficiency in both languages, have been found to have significant advantages in L3 learning across different contexts (for review, see Cenoz, 2013). However, it is frequently argued that in immigrant communities because the majority language is officially fostered while the home minority language is not, immigrant bilingualism is unlikely to lead to advantages, as the two languages are in competition (Cenoz, 2003; De Angelis, 2007; Sanz, 2000; Sanz, 2012). Indeed, there is a lack of consensus concerning potential advantages in L3 learning among language minority students.

In the present study, we investigate bilingualism and its effect on L3 learning. Specifically, we examine the bilingual factors that affect the relative proficiency in bilinguals' two languages and how these factors potentially influence their L3 outcomes. In the following, we will first discuss why bilinguals, specifically those with high bilingual proficiency, can be expected to have advantages in L3 learning. Subsequently, we argue why current research masks important differences between different forms of bilingualism in L3 learning.

### 6.1.1 Cognitive and linguistic consequences of bilingualism

Interest in the cognitive and linguistic variation in bilinguals has a long, multidisciplinary history. Since the 1960s, bilingualism has been positively associated with a variety of cognitive functions (e.g., Peal and Lambert, 1962). Research has repeatedly shown that bilinguals score higher than monolinguals in tests of cognitive flexibility and processing functions (for reviews, see Adesope et al., 2010; Barac et al., 2014; Hamers & Blanc, 2000). Bialystok (2010) proposed that bilinguals develop higher levels of executive functions – the interrelated processes of inhibition, working memory, and attentional control – as they need to switch between two language systems with different interlocutors and in diverse contexts. These cognitive consequences are observable in non-verbal tasks (such as the Simon Task) that require controlled attention and inhibition of routine responses. In these tasks, bilinguals typically outperform monolinguals (e.g., Bialystok et al., 2004), and higher proficiency levels of bilingualism have a stronger association than those with lower or unbalanced proficiencies (Bialystok, 1988; Bialystok & Majumder, 1998; Dillon, 2009; Ricciardelli, 1992). Additionally, students who acquire their L2 sequentially (i.e., in their first year of immersion) did not differ in their cognitive abilities than their monolingual peers (Carlson & Meltzoff, 2008).

In addition to advantages in non-verbal cognitive functions, bilinguals seem to have heightened levels in some aspects of metalinguistic awareness (Thomas, 1988), defined as ‘[...] the ability to focus attention on language as an object in itself or to think abstractly about language [...]’ (Jessner, 2006, 42). Some studies have found bilingual advantages on metalinguistic tasks, especially on tasks that requires individuals to apply morphological rules to unfamiliar forms (e.g., Barac & Bialystok, 2012; Davidson, Raschke, & Pervez, 2010) or notice implicitly learning grammatical rules explicitly (e.g., Reder et al., 2013). As metalinguistic abilities enable an individual to ‘[...] see through the meaning of a language to its underlying structure’ (Barac et al., 2014, 704), bilinguals can reflect about language in a



more abstract way (Jessner, 2006; Ransdell, Barbier, & Niit, 2006). The theoretical assumption is that bilinguals, especially bilinguals with high proficiencies in both languages, can draw from two language systems and thus have a broader linguistic repertoire and can think more abstractly about language than monolinguals (Cenoz, 2013; De Angelis, 2007). However, these advantages have not been found in all metalinguistic tasks. For example, there is little evidence that bilingual children have lasting advantages in phonological awareness past the first grade (Bruck & Genesee, 1995; Yelland, Pollard, & Mercuri, 1993). In older children, some studies have found heightened levels of phonological awareness (Campbell & Sais, 1995; Eviatar & Ibrahim, 2000) while others found no differences between the monolingual and bilingual groups (Bialystok, Majumder, & Martin, 2003).

This linguistic repertoire can be used when encountering a new linguistic system (i.e., Nayak et al., 1990) and thus should support L3 learning. Indeed, research has shown metalinguistic skills to be a significant predictor of foreign language outcomes in both L2 (Dufva & Voeten, 1999; Zhang & Koda, 2013) and L3 learners (Bérubé & Marinova-Todd, 2012; Rauch, Naumann, & Jude, 2012). However, this relation may depend on several factors, namely how both languages acquired and develop as well as how often they are used (i.e., Cenoz, 2013). For this reason, it is important to investigate bilinguals not as a homogenous group, but to take into account specific aspects of bilingualism to understand the effects.

### **6.1.2 Bilingual factors affecting language learning**

Despite the potential benefits of bilingualism which may support L3 learning, it is widely acknowledged that bilingualism does not automatically lead to advantages (Barac & Bialystok, 2012). Rather, bilingualism is a complex phenomenon, and the context in which languages are developed play an important role in a child's cognitive and linguistic development (e.g., Vygotsky, 2012). The linguistic, sociolinguistic, social psychological, and

educational variables associated with language learning can have strong effects on bilingual development (Cenoz & Valencia, 1994; Hufeisen, 2010). This is especially true for the relative proficiency in both languages (cf. the construct of common underlying proficiency by Cummins 2000). Proficiency in both languages can positively impact the cognitive and linguistic development thus affecting additional language learning (Sanz, 2008).

How both languages are acquired can affect the overall proficiency as well as metalinguistic development (Thomas, 1988). Languages can be learned naturally in the home (i.e., one's mother tongue) or through formal instruction (i.e., foreign language instruction) or both. In immigrant communities, the minority language is normally informally acquired in the home and the student receives formal majority language instruction in the school. In addition, some language minority students receive minority language instruction, either in school mother tongue support or as an extracurricular training (to boost their skills in their minority language; Cenoz, 2013). Formal training in a minority language not only is associated with increased exposure to the minority language but also provides an analytical approach to language, which fosters metalinguistic awareness (De Angelis, 2007). Thomas (1988) proposes that formal training in two languages increases '[...] conscious awareness of language as a system that provides [...] additional advantages over bilinguals who have informally acquired [a language] at home' (Thomas, 1988, 235). This awareness can boost bilingual proficiency as well as support L3 learning.

A second factor that could affect bilingual development is the sequence of L2 acquisition. Simultaneous bilinguals, or those who have learned two languages from birth, and sequential bilinguals, or those who have learned one language followed by another, have varying proficiency profiles (Butler & Hakuta, 2004) as well as different form-function mapping between their two languages (Cenoz, 2003; Hamers & Blanc, 2000; Jessner, 2008b). Moreover, simultaneous bilinguals may have more balanced proficiencies in their two languages as well as more experience with manipulating two language systems due to their

time on task in both languages (Kalashnikova & Mattock, 2014). Therefore, they may have a greater understanding of similarities and differences between languages (Reder et al., 2013). Indeed, simultaneous bilinguals have been found to have both enhanced cognitive functions (Thomas-Sunesson, Hakuta, & Bialystok, 2016) as well as metalinguistic skills (Reder et al., 2013). In contrast, sequential bilinguals have been found to have enhanced levels of attentional control but do not seem to have advantages in metalinguistic skills (Kalashnikova & Mattock, 2014). The developmental difference may have an important effect on L3 learning.

Additionally, language use practices might also play an important role in bilingual development. Specifically, how often a bilingual activates and utilizes the two languages, i.e., switches between languages. As explained, the controlled switching between languages is considered as cognitively demanding and a constant training of the related cognitive functions (Prior & Gollan 2011; Verreyt et al., 2016). Although the construct of executive functions and metalinguistic awareness seem to be unrelated at first glance, there are theoretical assumptions that claim that they are indeed connected (e.g., the analysis and control framework; Bialystok, 2001; Bialystok & Ryan, 1985; Bialystok, Peets, & Moreno, 2012). The approach identifies two processes that are executed in order to solve metalinguistic tasks: analysis of representational structure (analysis) and control of attention (control). The component analysis refers to the process in which implicit (linguistic) knowledge structures become explicit and therefore accessible. The component control is responsible for channeling attentional resources to the relevant (linguistic) stimuli or representations. Particularly, the control component but also the analysis component shares very much conceptual overlap with core features of executive functions. From this perspective, executive functions are a basis for metalinguistic awareness and, at least partly, outcomes (and therefore differences) in metalinguistic tasks as well as L3 learning can also be explained by means of executive functions. Thus, frequent controlled switching and the associated cognitive

processes may also impact L3 learning via metalinguistic skills (cf. Bialystok, 2007).

In conclusion, bilingualism may lead to advantages in L3 learning, yet several factors may play a role in this process. Failing to take these factors into account may be leading to biased conclusion in empirical studies and potentially masking possible advantages for language minority students.

### **6.1.3 Bilingualism and L3 learning: empirical evidence**

As mentioned above, bilinguals can have advantages in L3 learning, but this advantage manifests itself only under certain conditions. Specifically, studies which have examined bilingual groups in which both languages were officially supported in school, the community, and at home have found that bilinguals outperform their monolingual classmates in foreign language outcomes (i.e., Brohy, 2001; Cenoz & Valencia, 1994; Sanz, 2000).

Studies with samples investigating bilinguals in immigrant communities have yielded an unclear picture. Some studies have found that bilinguals outperform their monolingual classmates in additional language learning. For example, immigrant Russian-Hebrew bilingual sixth graders outperformed Hebrew monolinguals in English reading achievement (Abu-Rabia & Sanitsky, 2010). Additionally, investigating a sample of bilingual and monolingual sixth graders, Maluch and colleagues (2015) found a positive trend for language minority students in L3 English as a foreign language controlling for confounding background characteristics.

While some studies investigating language minority students have found advantage in L3 outcomes, others have found no differences between bilingual and monolingual students. No significant differences were found between a Dutch sample of bilingual 14-year olds and their monolingual classmates in English as a foreign language (Schoonen et al., 2002; van Gelderen et al., 2003). Similarly, minority language first graders showed no significant

differences from their English monolingual classmates in several measures of French achievement (Au-Yeung et al., 2015). Sanders and Meijers (1995) investigated Turkish-Dutch and Arabic-Dutch language minority fifth and sixth graders. Based on a matched sample for cognitive abilities and socio-economic status, the authors found no differences between groups in a variety of L3 English language measures.

This lack of consensus may be due to several factors. Firstly, with bilinguals in immigrant communities, language proficiency in the two languages may differ. This can be influenced how the two languages have been acquired and how they are used. Additionally, it is often that sociocultural background characteristics, which can greatly vary between monolingual and language minority groups, are not taken into account in the analyses. The aforementioned varying results may be due to the heterogeneity of the bilinguals in immigrant communities. For example, Swain et al. (1990), comparing monolingual and minority language students in French as a foreign language, found that the minority language students with relatively high proficiency in their minority language (i.e., literacy) resulted in significant advantages. In the German context, only high proficiency Turkish-German students outperformed both their monolingual classmates in English reading proficiency (Rauch, Naumann, and Jude, 2012).

Only one study to date has investigated the role of how a language is learned. Thomas (1988) examined a sample of college students learning French as a foreign language who were either Spanish-English bilinguals or English monolinguals. The bilingual group had higher French outcomes. Moreover, bilinguals who received formal training in both Spanish and English had significantly higher outcomes in French grammar. These results were interpreted by the authors to indicate that formal training supports metalinguistic awareness resulting in higher foreign language outcomes than languages that are learned informally. However, as this is the only study to date and with a sample of college students, more studies are needed to substantiate this finding among varying samples of bilinguals, specifically with

a sample at an earlier stage of language development.

To date only two studies investigated the effects of sequence of bilingual acquisition on L3 outcomes. Controlling for important background factors and with a sample of 11,000 ninth graders in Germany, a heterogeneous group of immigrant bilinguals outperformed their monolingual peers in English as L3 listening comprehension, grammar, reading and text writing skills (Hesse, Göbel, & Hartig, 2008). Furthermore in all measures of English, simultaneous and sequential bilinguals outperformed their monolingual peers, with simultaneous bilinguals outperforming the sequential bilinguals although significance tests between the bilingual groups were not reported. Conversely, simultaneous bilinguals significantly outperformed sequential Turkish-German, Russian-German, and Polish-German sequential bilingual and monolingual peers controlling for background variables (Göbel, Rauch, & Vieluf, 2011). There was no difference between the sequential and the monolingual groups except that of the sequential group with mixed languages. While the aforementioned studies suggest that simultaneous bilinguals have significant advantages in L3 learning, it remains unclear if sequential bilinguals differ from their monolingual peers.

Addressing the cognitive demands of language switching as a key source for bilingual advantages in executive functional (i.e., Prior & Gollan, 2011), no studies to date consider the extent of this behavior and its impact on additional language learning directly. Partly this may be due to the difficulties of operationalizing and measuring switching on a behavioral basis. The pure behavior of language switching may speak for or against a favorable basis for the positive effects of bilingualism. It may be that frequent switching represents high usage and therefore high proficiency in both languages. At the same time, switching often may stem from low proficiency and the need to ‘lend’ words from the other language. However, frequent controlled switching can be considered cognitive training in executive functions. Considering code switching in the analyses of the effects of bilingualism on L3 learning may produce new insights on the specificity of bilingual effects.

In sum, there is a lack of consensus regarding the relation between bilingualism and L3 learning outcomes with immigrant samples. This lack of consensus among studies investigating immigrant bilingual groups may stem from the heterogeneity of the bilingual group. Further investigations are needed taking into account important factors in the bilingual profiles, namely manner of learning, sequence of acquisition, and code switching practices (Cenoz 2013). Furthermore, the consideration of confounding background characteristics is pivotal for adequate comparisons between groups.

#### **6.1.4 The current study**

In the present study, we explore the possible benefits of immigrant bilingualism for L3 achievement and seek to identify those factors associated with bilingualism that may moderate successful acquisition of an additional language. Specifically, the study explores the following research questions:

Which factors of bilingualism and bilingual acquisition are advantageous for English foreign language learning? Specifically, how does manner of learning, sequence of bilingual acquisition and code switching practices affect English listening and reading achievement in immigrant bilingual students?

As metalinguistic skills support foreign language learning, and bilingual students have been shown to have heightened levels of metalinguistic skills, bilingual students should have advantages in foreign language outcomes once sociocultural factors are taken into account. Specifically, formal reinforcement through training in the minority language should create positive conditions for the development of metalinguistic skills, leading us to hypothesize that formal training will be associated with higher L3 outcomes. Furthermore, simultaneous

bilingual, who have known and used two language since the initial stages of language development should have higher metalinguistic skills resulting in higher L3 outcomes. Lastly, because increased use of both languages should lead to higher executive function and metalinguistic skills, which have been found to lead to higher L3 outcomes, bilingual students who switch between languages more often should have higher foreign language outcomes.

## 6.2 Methods

### 6.2.1 Participants

The data are part of the Pilot Study of the 2015 German National Comparative Study, which assessed a representative sample of eighth and ninth graders from eight federal states in Germany ( $N = 2341$ ; female = 50%,  $m_{\text{age}} = 16$  years). Participants attended 126 schools either in the university-bound track (32%) or the vocational track. This investigation focuses on English as a foreign language, and examines a subsample of bilingual and monolingual students.

Participants completed comprehensive questionnaires to focus on aspects of their bilingual language acquisition and use. Inclusion into the bilingual group was determined when students reported knowing and using a language other than German. To focus on bilinguals, students who reported speaking more than two languages regularly were removed from the sample. Those who reported only German were included into the monolingual group. The final sample was  $N = 1295$  students ( $n_{\text{bilingual}} = 456$ ; 44% female;  $n_{\text{monolingual}} = 839$ ; 54% female), who attended 107 schools.

We further differentiated the bilingual students based on the information they provided on their bilingual profiles, namely in which setting they learned and developed their minority language skills and how often they use and switch between their minority and majority



(German) languages. First, we established subgroups to investigate the manner of learning of the minority language. Based on student responses, we identified one group in which besides speaking a minority language at home students reported attending formal instruction outside the school curriculum in that language ( $n = 230$ ) and a second group in which the minority language had only been acquired in the family ( $n = 217$ ). Next, we subdivided the bilingual group into two groups based on the bilinguals' responses to the age they learned the two languages. The simultaneous group reported learning both German and a minority language from birth ( $n = 210$ ). The sequential group reported learning a second language after three years of age ( $n = 195$ ). Finally, we established subgroups to capture bilingual language use practices. Specifically, we identified how often students switched between their languages. Non-switchers ( $n = 23$ ) reported never switching between their languages on a normal day. Seldom switchers ( $n = 103$ ) reported switching between their languages infrequently. 183 bilinguals reported switching between their languages on a daily basis but different languages with different interlocutors (often switchers), and continuous switchers ( $n = 114$ ) reported that they switched between their languages daily within the same conversation and the same interlocutor.

## 6.2.2 Measures

### 6.2.2.1 Dependent variable: English foreign language listening and reading comprehension

As part of a larger comparison study conducted at the Institute for Quality Educational Improvement, we administered a 60-minute paper-pencil test with listening and reading subtests normed to assess the German National Educational Standards (NES) based on the Common European Framework of References for Languages (CEFR). The tasks were developed, calibrated and validated in order to assess English as a first foreign language in German secondary schools (Rupp et al., 2008). Addressing a variety of themes in various

formats, the tasks were compiled in blocks and rotated in a multi-matrix design. The items were scaled based on a one-parameter item response theory in ConQuest (Wu, Adams, & Wilson, 1998). We used weighted likelihood estimates (WLEs) for individual person parameters, scaling the sample ( $M = 100$ ,  $SD = 20$ ).

#### **6.2.2.2 Control variables**

In our analysis, we included the control variables of socio-economic status, number of cultural capital, school track, and gender, which have been found to explain substantial amounts of variance in school-related competencies. Highest parental post-secondary qualification, as an indicator of family socio-economic status, was measured using an eight-point continuous scale from one indicating no qualification to eight indicating a doctorate). Parental qualification was reported by the student. Cultural capital was assessed using the number of books at home question (five-point scale: one: 0–10 books, two: 11–50 books, three: 51–100 books, four: 101–200 books, and five: over 200 books). The school track and gender of the students were reported by the teacher. School track was operationalized with a dichotomous measure whether the student attended the university-bound track or one of the vocational tracks.

#### **6.2.3 Statistical analysis**

We analyzed all data using Stata 10.0 (StataCorp, 2007). For the ordinary least-squares linear regression analyses, we adjusted the standard error taking into account the hierarchical nature (students in classes) of the dataset.

## 6.3 Results

### 6.3.1 Descriptive statistics

To investigate the relationship between foreign language learning and factors of bilingualism, we first conducted descriptive analysis of English listening and reading competence as well as the control variables of parental qualifications and number of books at home for the monolingual and bilingual groups (Table 6.1). The dependent variables of English listening and reading competence differs significantly between the monolingual and bilingual groups (listening:  $t = 2.45$ ,  $p = 0.01$ , 95% CI [5.00, 0.56],  $d = 0.14$ ; reading:  $t = 2.89$ ,  $p = 0.004$ , 95% CI [5.38, 1.03],  $d = 0.17$ ) with the bilingual group having higher levels of both listening and reading competence. The monolingual group has, on average, more books at home ( $t = 5.34$ ,  $p < 0.001$ , 95% CI [0.26, 0.57],  $d = 0.31$ ) as well as higher parental qualifications ( $t = 2.81$ ,  $p = 0.01$ , 95% CI [0.10, 0.56],  $d = 0.17$ ).

Table 6.1

*Sample means (and standard deviations) of the dependent and control variables for bilingual and monolingual students*

	German Monolingual n= 839	Bilingual Group n= 456
English listening	95.52 (19.35)	98.29 (19.67)
English reading	95.20 (19.07)	98.41 (19.05)
Books at home	3.24 (1.32)	2.82 (1.29)
Parental education	4.88 (1.62)	4.55 (2.14)

We next examined the English listening and reading competence as well as the background variables of the bilingual groups more closely (Table 6.2). On the dependent variables of English listening and reading competence, there is noticeable difference between the subgroups. Bilinguals who have received instruction in their minority language have

higher scores in both listening and reading English language outcomes than those who only use their minority language in the family (listening:  $t = 6.64, p < 0.001$ , 95% CI [15.32, 6.76],  $d = 0.63$ ; reading:  $t = 5.86, p < 0.001$ , 95% CI [13.57, 6.76],  $d = 0.56$ ). The analyses revealed no significant differences between the simultaneous and sequential groups in their English language outcomes (listening:  $t = 0.67, p < 0.50$ , 95% CI [-2.51, 5.13],  $d = 0.07$ ; reading:  $t = 0.55, p < 0.58$ , 95% CI [-2.64, 4.72],  $d = 0.05$ ). While no differences were found between the four language use groups in listening:  $F(3,419) = 1.25, p = 0.29, \eta^2 = 0.009$ , the groups differed in their reading outcomes:  $F(3,419) = 4.62, p = 0.003, \eta^2 = 0.03$  with the trend that the more a bilingual switched between languages the higher the English listening and reading outcomes.

Table 6.2

*Sample means (and standard deviations) of the dependent and control variables by bilingual groups*

	English listening	English reading	Books at home	Parental education
<b>Manner of Acquisition</b>				
Formal (n=230)	104.05 (20.29)	103.47 (19.54)	3.04 (1.32)	4.77 (2.21)
Family (n=217)	92.23 (17.09)	93.30 (16.95)	2.58 (1.23)	4.23 (2.03)
<b>Sequence of acquisition</b>				
Simultaneous (n=210)	100.00 (19.57)	99.78 (18.68)	2.85 (1.24)	4.46 (2.10)
Sequential (n=195)	98.69 (19.56)	98.74 (18.97)	2.92 (1.35)	4.63 (2.23)
<b>Language use</b>				
non-switchers (n = 23)	93.07 (23.57)	87.03 (23.74)	3.09 (1.38)	5.06 (2.01)
seldom switchers (n = 103)	97.97 (18.72)	98.92 (18.67)	3.04 (1.38)	4.70 (2.07)
often switchers (n = 183)	99.49 (20.40)	98.86 (18.29)	2.76 (1.29)	4.48 (2.12)
continuous switchers (n = 114)	101.02 (17.42)	102.59 (17.51)	2.75 (1.35)	4.45 (2.27)

Examining the background variables, books at home differed noticeably between students who attended formal training in their minority language ( $t = 3.72, p < 0.001$ , 95% CI [0.70, 0.22]) with no differences between the groups with different sequence of acquisition ( $t = 0.53, p < 0.60$ , 95% CI [-0.33, 0.19]) or language use practices ( $F(3,412) = 1.52, p < .21, \eta^2 = 0.01$ ). There are also significant differences in parental education between the manner of acquisition groups ( $t = 2.45, p = 0.02$ , 95% CI [0.98, 0.11]) with no differences between the

sequence of acquisition groups ( $t = 0.75, p = 0.46, 95\% \text{ CI } [-0.63, 0.29]$ ) or the language use groups ( $F(3,355) = 0.59, p < .62, \eta_p^2 = 0.005$ ).

The descriptive differences revealed differences not only between the bilingual and monolingual groups but between the bilingual groups when subdivided according to formal training, sequence of acquisition, and language use practices. Furthermore, due to some systematic differences in background characteristics between groups, further analyses were necessary to control for these potentially confounding factors.

### **6.3.2 Bilingualism and English as a foreign language**

Given our central research question with the focus on the associations between the characteristics of bilingualism and foreign language learning, we fit a series of regression models testing if specific factors of bilingualism are positively associated (compared with their monolingual peers) with English foreign language listening and reading comprehension (Table 6.3). Models A and G investigated the effects of formal learning versus only familial acquisition with the monolinguals as the reference group not controlling for background factors. The uncontrolled models reveal strong advantages for the bilinguals who in addition to speaking a minority language at home had formal instruction in that language compared to the monolingual group. In listening, the bilinguals who spoke the minority language only in the home environment scored significantly lower than their monolingual peers. The factors of formal training and only acquisition in the home environment accounted for four percent of the total variation in English listening and three percent of total variation in English reading comprehension. With the inclusion of background characteristics, the disadvantage of the bilingual family group compared to the monolingual group disappears showing no significant differences between the monolingual and bilingual family groups (Models B and H). With the addition of background characteristics, the significant advantage for the bilingual formal

group in both listening and reading remain abate with less magnitude.

Then, we conducted the regression analyses again investigating the sequence of acquisition with the monolinguals as a reference group. The uncontrolled models (Models C and I) show similar results with a significant positive association between simultaneous and sequential bilinguals and English foreign language comprehension. However, once the background variables are taken into account (Model D and J) the strong positive association found in the sequential group disappears completely and the sequential group does not differ from the monolingual group with regard to both their English foreign language listening and reading comprehension. The positive association found in the simultaneous bilingual group with regard to their English listening and reading comprehension remains with a significant advantage compared to the monolingual group.

Finally, we regressed English language listening and reading outcomes on the factor of language switching behavior, which we operationalized through a series of dummy variables with the monolinguals as the reference group. In the uncontrolled models (Models E and K), the bilinguals who switched between their languages often and within the same conversation had significant advantages in English as a foreign language listening and reading comprehension. The bilinguals who never switched or seldom switched between their languages did not differ from their monolingual peers in their foreign language outcomes.

Table 6.3

*Multiple regression models explaining English competence achievement in bilinguals and monolinguals*

	Listening						Reading					
	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J	Model K	Model L
Intercept	95.52***	84.35***	95.19***	83.96***	95.19***	83.34***	95.20***	84.99***	94.99***	84.98***	94.93***	84.33***
Formal	8.54***	4.55**					8.27***	3.59*				
Family	-3.29*	-0.20					-1.90	1.23				
Simultaneous			4.81**	3.84*					4.79**	3.70*		
Sequential			3.50~	1.26					3.75*	0.94		
Non-switching					-2.12	-2.96					-7.90	-7.20
Seldom switching					2.78	0.24					4.00~	-0.72
Often switching					4.30*	4.27**					3.94*	3.41*
Continuous switching					5.82**	5.13**					7.66**	6.45***
Gender (girls =1)	-1.05			-1.03		-1.12		1.44		1.42		1.20
Books at home	2.62***			2.69***		2.81***		2.24***		2.25***		2.39***
Parental Qualifications	-0.02			-0.04		-0.02		-0.22		-0.24		-0.21
School Track (Gym =1)	16.39***			17.15***		16.95***		16.81***		17.37***		17.04***
Explained Variance (R <sup>2</sup> )	0.04	0.27	0.01	0.27	0.01	0.28	0.03	0.26	0.01	0.26	0.02	0.27

~p &lt; .10; \*p &lt; .05; \*\*p &lt; .01; \*\*\*p &lt; .001

## 6.4 Discussion

In the present study, we examined whether speaking a minority language as well as the majority language has a positive effect on English foreign language achievement. In particular, we aimed at investigating how specific factors of bilingualism, namely manner of minority language learning, sequence of acquisition, and language use practices were associated with foreign language outcomes. Controlling for background characteristics of books at home, parental qualification, school track, and gender, we compared monolingual students with subgroups of immigrant bilingual students.

To this end, we first evaluated English listening and reading achievement in bilingual and monolingual students, taking into account the factors of manner of learning, sequence of acquisition, and language use practices in the bilingual samples. The results revealed that, once controlling for background characteristics, bilingual students who receive some formal training in their home language have significant advantages in both English listening and reading achievement compared to bilinguals who acquired their L1 informally at home as well as their monolingual peers. These findings parallel the findings of Thomas (1988) who found that formal training in both Spanish (L1) and English (L2) resulted in higher French (L3) outcomes. As the present study differs greatly from that of Thomas with regard to sociocultural factors and participants' age, the results add substantial weight to the theoretical assumption that formal training enhances the analytic skills and conscious awareness of language (e.g., metalinguistic awareness). Additionally, students with formal training received more structured time on tasks, potentially increasing their proficiency in their minority language, which also enhances their further language learning.

Once controlling for background characteristics, simultaneous bilinguals have significant advantages in both English listening and reading achievement in comparison to their sequential bilingual and monolingual classmates. These advantages for simultaneous



bilinguals mirror earlier findings of Hesse, Göbel, and Hartig (2008) as well as Göbel, Rauch, and Vieluf (2011). The lack of differences found in the sequential bilingual group compared to the monolingual group partially parallels the results reported by Göbel, Rauch, and Vieluf (2011), most of whose language-specific sequential groups did not differ from the monolingual group. The advantage of the simultaneous group also supports the assumption that simultaneous bilinguals, who have had the opportunity to develop relatively high proficiencies in both languages, have acquired metalinguistic skills to foster their foreign language learning.

Finally, we examined how bilinguals' language use, specifically how often they switch between languages, can affect their foreign language outcomes. The analysis showed that bilinguals who rarely switch between their languages do not differ from their monolingual peers in foreign language listening and reading comprehension. However, those who used both their language more often (e.g., switching daily between conversations and within the same conversation) have significant advantages in English outcomes. This positive association remains even once controlling for background characteristics. Furthermore, students who switch within the same discussion between their languages was over 0.25 of a standard deviation, which translates into about a half school year of learning (Hill et al., 2008). Our analysis supports the assumption that frequent use in both languages, activates and trains executive functions (i.e., Verreyt et al., 2016), which are mandatory in additional language learning.

Taken together, these results reinforce the assumption that bilingualism per se does not lead to advantages but rather certain bilingual factors support the development of mechanisms that lead to bilingual advantages. Specifically, factors that lead to high proficiency in both the majority and minority language are beneficial in foreign language outcomes. Most important when bilinguals acquire their language early, are trained formally and use their language frequently, skills (i.e., metalinguistic skills) are developed that foster their additional language

learning. To some extent these mechanisms have been observed in earlier research on bilingualism and further language learning (i.e., Swain et al., 1990). However, for subgroups of immigrant bilinguals which differ from bilingual learners whose language are supported in school these interrelations are far less established and extends the present literature.

Despite the importance of these findings, the interpretation of the study's results has several limitations. Our main limitation was the lack of language proficiency measures in the sample's language first and second language. Rather, formal training, sequence of acquisition, and language use practices may be seen as a proxy for proficiency. Bilingual students self-identified whether they had attended a minority language extracurricular training class and how often they utilized both of their languages. The variable for code switching, although grounded in theory, is very distal and needs more experimental validation. Further experimental research may take a close look at the specific complexities of these factors, using more objective measures. Secondly, the present study did not have a measure for general cognitive abilities, which has been shown to be a significant factor in foreign language outcomes (i.e., Maluch et al., 2015). However, the nature of the largescale sample does lend itself to show general trends in the population that should be investigated further in a more experimental design.

Despite these limitations, there are several implications. Further investigations should examine the effectiveness of minority language training support. The present study successfully shows the importance of formal training in a home language on academic achievement, making a case for increased bilingual education programs in which both languages are supported in language minority settings. This strategy not only uses the potential for the development of bilingual language proficiency but also fosters the development of general language learning skills (i.e., metalinguistic skills). Educators should not only be aware of the unique skills of some types of bilingual students that potentially reinforce their achievement, but they should also utilize them in the classroom through

differentiated learning. As schools become more diverse with regard to students' skills and needs, multilingual students should not be categorized in terms only of deficit, but rather also seen as having unique language learning patterns. To this end, language minority students can be made aware of and learn to utilize their skills, resulting in higher overall academic achievement.

## 7 Findings, discussion, and implications

### 7.1 Summary of central findings

In Chapter 4, I examined if speaking a minority language at home in addition to the majority language at school provides an advantage in learning English as a foreign language. In addition, I investigated to what extent majority language proficiency affects foreign language achievement and to what extent bilinguals with different minority home languages differ in their foreign language proficiency. I expected that speaking a minority language at home in addition to the majority language at school should provide advantages in learning English as a foreign language, as knowing and using two languages supports metalinguistic development, which, in turn, facilitates additional language learning. However, this advantage would only be seen once confounded background characteristics were taken into account. Furthermore, as metalinguistic awareness has been found to be dependent on language proficiency (Barac et al., 2014), advantages for bilinguals would only be found when students had strong majority language proficiency. Finally, while some language combinations may support foreign language learning more due to analogies in linguistic properties and alphabetic scripts between languages (De Angelis, 2007), I expected that bilinguals with two orthographic scripts would have higher outcomes than those groups who have one non-orthographic script.

In line with the hypothesis, once confounding background characteristics were controlled for, there was a significant positive relationship between bilingualism and foreign language achievement. Being bilingual explained a relatively small but significant portion of the variance ( $R^2 = .02$ ). Also as expected, proficiency in the instruction language played a major role in foreign language outcomes. Bilinguals who had strong majority language skills showed advantages compared to their monolingual peers in English as a foreign language, while bilingual students who were weak in the instructional language did not perform as well

as their monolingual peers. Majority language proficiency accounted for a large portion of the explained variance in foreign language achievement ( $\Delta R^2 = .16$ ).

Finally, while there was a general positive trend between bilingualism and foreign language outcomes, this pattern varied across the five language-specific bilingual groups. Contrary to expectations, similarity in linguistic properties and scripts did not seem to play a role. Once controlling for confounding background characteristics, the Chinese-German and Polish-German groups had significant advantages in foreign language achievement. Finally, after controlling for majority language proficiency, all bilingual language groups except for the Arabic-German group significantly outperformed their monolingual peers in English as a foreign language. In sum, this study provides evidence that majority language proficiency and minority language group membership as well as background factors play a role in the relationship between bilingualism and foreign language achievement.

Study 2 (Chapter 5) explored the relationship between bilingualism and foreign language development as students progressed from elementary to secondary school, controlling for individual and familial background characteristics. In addition, I asked if and to what degree the amount of exposure of the minority home language affected this development. I expected that as bilingualism has been found to have heightened metalinguistic awareness, there would be a positive association between bilingualism and foreign language achievement in elementary school. It was unclear if this relationship would remain over time. It could be that bilinguals retained their heightened metalinguistic awareness compared to their monolingual peers into secondary school, or as their monolingual peers became more bilingual (i.e., through foreign language learning), there would be a difference between foreign language achievement for the two groups. With regard to exposure, the theoretical expectation was that more exposure in the minority language would result in higher levels of language proficiency (i.e., *the input-proficiency-use cycle*,

Pearson, 2007), which would support metalinguistic skills and thus positively affect additional language learning achievement.

As expected, the results of the analysis showed that, given similar background factors, bilingual students had a significant advantage in foreign language achievement in the sixth grade. This was the case for all three bilingual groups no matter how much exposure to their home language they reported. Furthermore, more minority home language exposure was associated with larger advantages in foreign language achievement although the difference was not significant. By the eighth grade, the advantage in achievement disappeared for two of the three bilingual groups. Contrary to expectations, the only bilingual group that had a significant advantage compared to their monolingual peers was that mostly German speaking bilingual group. The cross-sectional results foreshadowed the differential growth patterns between the bilingual and monolingual groups. While all students made gains in English as a foreign language, the bilingual groups showed less growth than their monolingual peers, although this change was only significant for the bilingual group that only spoke a minority language at home. This study offers evidence that the relationship between bilingualism and foreign language achievement is dynamic and changes over time. Also, as hypothesized, minority language exposure does explain differences in foreign language achievement.

Study 3 (Chapter 6) examined the relationship between bilingualism and foreign language listening and reading outcomes, taking into consideration specific features of bilingualism. Specifically, the study concentrated on the factors of manner of learning, age of bilingual acquisition, and language use practices. Controlling for background characteristics of books at home, parental qualification, school track, and gender, I compared subgroups of immigrant bilingual students and their monolingual peers. As metalinguistic skills have been found to support foreign language learning, and certain factors of bilingualism have been found to be related to heightened metalinguistic awareness, I expected that some bilinguals would have an advantage in listening and reading in English as a foreign language.

Specifically, those who had formal training in their minority language and simultaneous bilinguals would outperform bilinguals who had no formal training in their minority language and sequential bilinguals. Lastly, as increased use of both languages should lead to higher executive function and metalinguistic skills, which have been found to lead to higher L3 outcomes, bilingual students who switch between languages more often should have higher foreign language outcomes compared to bilingual students who do not switch often between their languages or their monolingual peers.

As hypothesized the results showed that, once controlling for background factors, bilingual students who reported receiving some formal training in their home language had significant advantages in both English listening and reading achievement compared to bilinguals who acquired their minority language (L1) solely in an informal environment as well as their monolingual peers. Also, as expected, simultaneous bilinguals had significant advantages in both English listening and reading achievement in comparison to their sequential bilingual and monolingual classmates. Finally, the exploratory analysis showed that bilinguals who rarely switch between their languages did not differ from their monolingual peers in foreign language listening and reading comprehension. However, those who used both their languages more often (e.g., switching daily between conversations and within the same conversation) had significant advantages in English outcomes. Taken together, this study concludes that these three features of bilingualism have a significant effect on additional language listening and reading outcomes.

## **7.2 Discussion**

Previous research has revealed that bilingual students under certain conditions, namely where both languages are officially supported in school and the wider community, have advantages at foreign language learning when compared to their monolingual peers. However,

studies investigating bilingual students from immigrant communities in which their L1 is not supported in school have had mixed results. This thesis explores the potential reasons for previous mixed results of bilinguals from immigrant communities learning an additional foreign language in school. Specifically, I focus on three explanatory areas: the influence of background factors, the effects of varying features within the bilingual sample, and the possibility of variation over time between bilingual and monolinguals in foreign language learning.

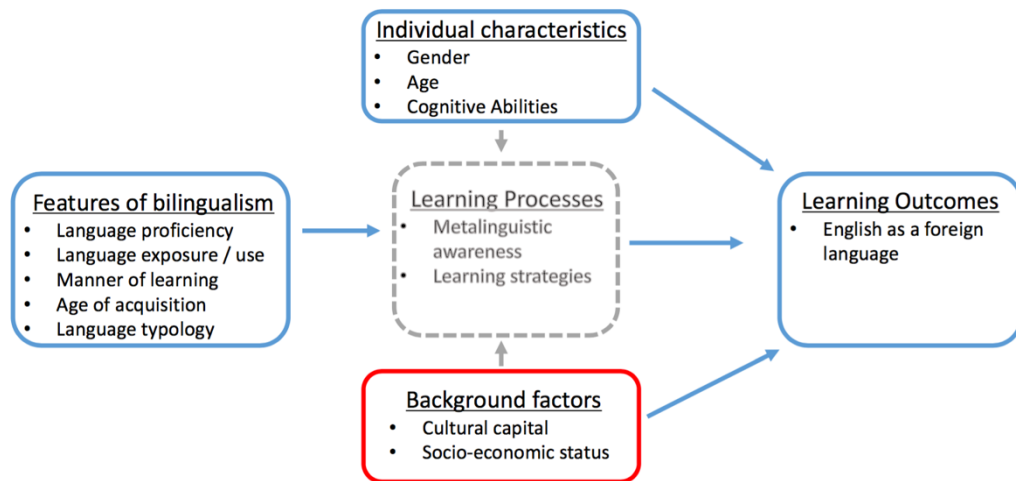
Primarily, this thesis provides evidence that one reason for previous lack of consensus between studies on bilingual and monolingual students learning a foreign language stems from individual background differences, which systematically differ between immigrant bilingual and non-immigrant monolingual groups. In previous studies, these factors have been only intermittently considered. Secondly, this thesis also shows that the lack of consensus in previous research may have resulted from variations within the bilingual group, namely factors related to language proficiency, typology, exposure, and use as well as acquisition and learning processes. Thirdly, this work provides evidence that the relationship between bilingualism and foreign language achievement changes over time.

### **7.2.1 The influence of individual background factors**

One main finding of this work is the importance for individual and familial background factors in foreign language outcomes (see Figure 7.1). In Study 1, belonging to the bilingual group explained 2% of the variance in English foreign language achievement. However, background factors accounted for a substantial portion of the variance ( $\Delta R^2 = 26\%$ ). The analyses in Study 3 presented a similar picture, where being in one of the bilingual groups accounted for a significant but relatively small portion of the explained variance ( $R^2 = 1\text{--}4\%$ ), while the background characteristics accounted for a sizable portion of the explained



variance in English foreign language listening and reading proficiency ( $\Delta R^2 = 23 - 27\%$ ). In both studies, while bilingual group membership did add significant explanatory power, background variables explained a much larger portion of the variation in English as a foreign language achievement.



*Figure 7.1.* Research Model: adapted from the second language learning model by Stern, 1983, p. 338

Not only did background factors account for a sizeable portion of variance in English foreign language achievement, but they also varied significantly between the monolingual and bilingual groups (Studies 1 & 3). Specifically, there is significant variation between the five language-specific bilingual groups compared to their German monolingual peers (Study 1). Furthermore, in Study 3 there were significant differences between the bilingual students who attended formal training in their minority language and those who did not. However, there were no significant differences between the bilingual age of acquisition groups or the language use groups.

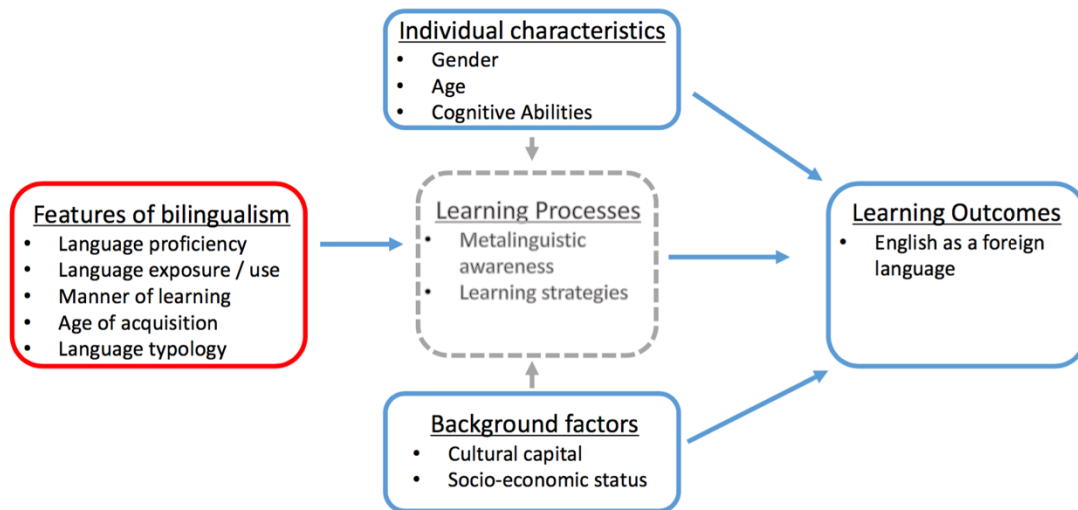
These findings parallel those of Hesse and colleagues (2008), who found that bilinguals in the German context significantly outperform their monolingual peers after controlling for socio-economic status, general cognitive abilities, gender, and school track. This study's results regarding background factors call into question previous findings that did

not include background characteristics in the study design (e.g., Jaspaert & Lemmens, 1990; Mägiste, 1984). For example, Schoonen and colleagues (2002), who found no bilingual advantages in L3 achievement, did not take into account background factors that systematically differ between the immigrant and native groups, thus most likely leading to biased results.

Based on previous research as well as the current studies, it can be concluded that background characteristics, which play a significant role in other academic outcomes as well (Scheerens & Bosker, 1997) and systematically differ between immigrant and nonimmigrant populations (Stanat et al., 2010), are important factors in foreign language learning outcomes. This thesis adds weight to studies that find a positive association between bilingualism and foreign language outcomes once controlling for background factors.

### **7.2.2 The effect of bilingual features**

Another finding is the importance of the varying features of bilingualism in foreign language outcomes (see Figure 7.2). Specifically, proficiency in a majority language, exposure and use, the manner of learning, and the age of acquisition were shown to be significant factors in foreign language learning for bilingual students. Additionally, I discuss the variation between bilingual language groups.



*Figure 7.2.* Research Model: adapted from the second language learning model by Stern, 1983, p. 338

Proficiency in the majority language proved to be a significant predictor in foreign language achievement across several bilingual language groups as well as for the monolingual group (Study 1). Overall, the continuous measure of majority language proficiency explained 16% of the variance in English foreign language achievement. Membership in the majority language proficiency groups explained 34% of the variance in English foreign language achievement. Belonging to the bilingual group with strongest majority language proficiency compared to the monolingual group ( $\beta = 12.49$ ) can be interpreted as over one year of difference in achievement (Bloom et al., 2008), although this difference was not statistically significant. This shows that being bilingual is positively associated with foreign language learning outcomes. However, it is only beneficial to be bilingual with strong majority language proficiency.

These findings parallel that of Haenni Hoti and colleagues (2011), who found L2 listening and reading outcomes to be a significant predictor of L3 listening and reading tasks, although the students in this study did not come from immigrant communities. Additionally, with bilingual immigrant students, Rauch and colleagues (2010) found that proficiency in the majority language was a significant predictor of foreign language outcomes, once controlling

for general cognitive abilities and school track. Taken together, these results indicate that bilingual students from immigrant communities who are strong in the majority language have benefits in learning an additional language.

While part of Study 1 focused on the effect of majority language proficiency in foreign language learning for bilingual students, Study 2 (Chapter 5) examined the importance of the minority language, namely exposure to the minority language. The results of Study 2 show that in elementary school, minority language exposure at home was positively associated with foreign language achievement. Belonging to the bilingual group that spoke mostly a minority language ( $\beta = 5.83^{**}$ ) or only a minority language ( $\beta = 6.65^{*}$ ) can be interpreted as over one-half year of difference in achievement (Bloom et al., 2008). However, this positive effect of minority language exposure disappeared in secondary school, where the results show no differences in foreign language learning between bilinguals who had more exposure in their minority language and their monolingual peers. The only bilingual group that is positively related to English language achievement is the bilingual group that reported mostly speaking German at home.

As an exploratory question, Study 3 explored the impact of bilingual patterns of use on foreign language outcomes. Specifically, students were asked how often they switched between languages. The results show a significant positive relationship between reported language switches and foreign language outcomes. Students who used both their language more often (i.e., switching daily between conversations and within the same conversation) had significant advantages in English outcomes. This positive association remained even after controlling for background characteristics. Students who switched within the same discussion between their languages were over 0.25 of a standard deviation, which translated into about one-half of a school year of learning (Hill et al., 2008). The analysis supports the assumption that frequent use in both languages may reflect high proficiency in both languages, which results in heightened metalinguistic awareness, thus supporting additional language learning.

Further evidence from Study 3 showed that bilinguals with formal training in a minority language had significant advantages in both foreign language listening and reading outcomes compared to bilinguals with no minority language formal training as well as their monolingual peers. Group membership in one of the three groups explained a small but significant portion of the variance ( $R^2_{\text{listening}} = .04$ ;  $R^2_{\text{reading}} = .03$ ). These findings parallel that of Thomas (1988), who found that bilinguals who received formal training in their L1 outperformed bilingual college students with no formal training as well as monolinguals in L3 outcomes. As the present study differs greatly from that of Thomas with regard to sociolinguistic factors and participants' age, the results add weight to the theoretical assumption that formal training enhances the analytic skills and conscious awareness of language (metalinguistic awareness). Additionally, students with formal training received more structured time on tasks, potentially increasing their proficiency in their minority language, which also may have enhanced their further language learning.

While the current thesis did not have a direct measure of minority language proficiency, the factors of exposure, use, and formal training may be interpreted as a proxy for minority language proficiency, as increased exposure, use and training in a formal setting can lend itself to higher competencies (Pearson, 2007). In this light, these findings support earlier results that show the importance of L1 proficiency in L3 learning (Bild & Swain, 1989; Lasagabaster, 2000; Sagasta Errasti, 2003; Sanz, 2008). These outcomes also allude to other analyses in the German context, which found a strong effect of Turkish reading (L1) on English (L3) reading (Rauch et al., 2010) controlling for school track and general cognitive abilities. The current study builds on previous research in that it reveals differential patterns for minority language speakers as they advance from elementary to secondary school, indicating that minority language proficiency may play a larger role in the earlier stages of foreign language learning.

While this thesis considered the minority and majority languages separately, it also examined the languages' importance in relation to one another. Study 3 investigated the importance of age of acquisition and the effects on foreign language listening and reading outcomes. Simultaneous bilinguals had significant advantages in foreign language listening and reading outcomes compared to bilinguals who learned a second language after the age of three (sequential) as well as monolingual German speakers.

These advantages for simultaneous bilinguals mirror earlier findings of Hesse and colleagues (2008) as well as Göbel and colleagues (2011). The lack of differences found in the sequential bilingual group compared to the monolingual group partially parallels the results reported by Göbel and colleagues (2011), most of whose language-specific sequential groups did not differ from the monolingual group. The analysis supports the assumption that early acquisition fosters the development of metalinguistic awareness through the more balanced exposure to both languages, resulting in heightened foreign language outcomes.

Regarding bilingual language groups, while bilinguals were found to have an advantage in foreign language achievement, only membership in some language groups were found to be associated with higher English foreign language outcomes (Study 1). Contrary to our hypotheses regarding linguistic typology and distance between languages in the bilingual groups, groups that had, on average, stronger majority language skills, also performed better in English foreign language outcomes. However, for the Arabic-German group, even controlling for majority language proficiency did not result in a significant advantage in English foreign language achievement ( $\beta_{\text{Arabic-German}} = 1.02, p = .55$ ). In other words, when the majority language was the same for all students, all language-specific bilingual groups had advantages except for the Arabic-German group. These results parallel those of other studies, which also found no advantages for the Arabic group (Sanders & Meijers, 1995). This may be due to the unique nature of modern Arabic, which differs greatly between its spoken and

written forms, creating a more challenging condition for the development of literacy skills (Asbrand et al., 2005).

Taken together, this thesis provides empirical evidence that bilingual characteristics related to minority and majority language proficiency as well as bilingual language use, acquisition experience, and language group membership can play a role in foreign language learning. It supports the assumption that language ability in both the minority and majority languages fosters metalinguistic awareness, which in turn, leads to advantages in foreign language learning.

### **7.2.3 Differences in foreign language learning over time**

Another finding of the current work is the differential patterns of development in bilingual and monolingual students between elementary and secondary school. Study 2 (Chapter 5) investigated the development of foreign language achievement in bilingual and monolingual students. While immigrant bilinguals outperformed their monolingual peers in sixth grade, by eighth grade there was no difference between the groups, with only the bilingual group that spoke mostly German at home having a slight but significant advantage in foreign language achievement. These findings show different patterns of growth in the bilingual and monolingual groups. Specifically, bilinguals who only spoke a minority language at home had a significantly smaller growth rate than their monolingual peers.

This shows a different picture than the results of the only other known longitudinal study from Bérubé and Marinova-Todd (2012), who reported no difference between bilingual and monolingual groups over time. As the authors indicate, the results should be seen as preliminary because of the length of time between the two points of measurement (one school year) as well as the small sample size (for discussion, see Bérubé, 2013). The current study

improves upon this by using a larger sample size and by analyzing two points of measurement two years apart from each other, providing a more robust analysis.

There are several possible explanations for the differential patterns between monolingual and language minority students in their English as a L3. Firstly, the results from the sixth grade suggest that language minority students, despite not having formal training in school in their L1, do have cognitive and linguistic advantages that support their L3 learning in elementary school. However, as the cognitive and linguistic potential of the language minority students is not explicitly reinforced and promoted in the monolingual classroom setting, these skills are not further supported, and the advantages found in the earlier grades are slowly indistinguishable in the mainstream classroom. Secondly, as the monolingual students develop foreign language skills over time, they are also acquiring cognitive and linguistic skills (i.e., metalinguistic skills) similar to those of their minority language peers, which support their language learning outcomes. In other words, as the monolingual students move towards “bilingualism”, their cognitive and linguistic skillset converges with that of their language minority peers. Thirdly, the findings could also reflect a combination of both aforementioned explanations. As language minority and monolingual students are together in the classroom, and instructional methods are similar for all students within a classroom, later learning in secondary school reflects the ‘norming’ influence of the classroom despite different skillsets in earlier learning in elementary school.

### **7.3 Limitations**

Despite these findings, this thesis has several limitations. One limitation is the lack of a measure for minority language ability and assessment of bilingual proficiency (Skutnabb-Kansas, 1984). Across the individual studies, I attempted to utilize stringent estimates to define the bilingual groups. In Studies 1 and 2, inclusion into a language group was



determined when a parent reported regularly speaking a minority language at home. The bilingual group in Study 3 was determined by students reporting that they knew and used a language other than German (and English). These estimates ensured that a certain level of proficiency could be assumed, but a measure of proficiency would be a more accurate operationalization. However, as I utilized large-scale assessments to investigate the research questions, it would have been almost impossible on the one hand to measure proficiency of numerous minority languages and at the same time focus on results from large, representative samples.

A second limitation is the lack of a measure of metalinguistic skills. A central argument of this thesis is that bilinguals, because of their heightened metalinguistic skills, have advantages in foreign language outcomes. The mediating effect of metalinguistic awareness in foreign language learning has been shown in other research (e.g., Rauch et al., 2011). However, despite the lack of this direct measure in the current work, the results indicate that it may be indeed the case that bilinguals with immigrant background have enhanced metalinguistic abilities, which foster their additional language learning. However, a measure for metalinguistic awareness would allow for more complex modelling (i.e., structural equation modelling) of the link between bilingualism and additional language learning.

A third limitation is the lack of longitudinal data with more times of measurements. While Study 2 investigated two points of measurement at sixth and eighth grade, and thus provided insight into the developmental patterns of students' progress from elementary to secondary school, future studies should begin with students at the initial stage of learning a foreign language with more points of measurement. This will allow for the analysis of differential learning patterns right from the early stages to track progress more closely. It would also enable for a more complex analysis like growth modelling (e.g., Singer & Willett, 2003).

#### **7.4 Implications for future research and praxis**

In this thesis, it was found that under certain conditions bilingual students in immigrant communities can have advantages in foreign language learning. Specifically, this is the case in elementary school during the earlier stages of foreign language learning. Advantages were also found when bilinguals knew the majority and minority languages well and used them often. Taken together, this has several implications for both research and praxis.

Primarily, it shows that the effect of bilingualism on additional language learning is a dynamic process and changes as students progress from elementary to secondary school. While bilingual students were found to have advantages in the earlier years, by secondary school these advantages all but disappeared (Study 2). This investigation is one of the first to examine the relationship between bilingualism and foreign language learning longitudinally. Further research is needed to investigate the longitudinal nature more closely, specifically with points of measurement from the onset of additional language learning. Detailed measures of metalinguistic awareness as well as measures of language proficiency would also enable analyses that test the interaction of multiple language proficiencies and metalinguistic skills, which have been theorized to be dynamic in nature (Herdina & Jessner, 2002). Based on previous studies regarding bilingual advantages in metalinguistic awareness (e.g., Biaylstok, 1986) as well as the current investigation, one would expect to see stronger advantages from the bilingual group in the initial stages of foreign language learning with these advantages diminishing over time. However, these differential growth patterns would most definitely interact with other factors, namely bilingual language proficiency, and could also be related to factors of language attrition and changing motivation.

Secondly, while some types of bilinguals had significant advantages in foreign language learning compared to their monolingual peers, the effect of bilingualism remains modest. In all three studies, individual and familial background characteristics accounted for a much greater portion of foreign language learning, confirming that background characteristics must be taken into account. Further research should explore the effect of other individual characteristics, namely affective factors and factors related to cultural identity, and their effect on language learning outcomes. Affective factors, which may differ systematically between groups (Mady, 2010), would account for more overall variation in foreign language learning (Amengual-Pizarro & Prieto-Arranz, 2015). Additionally, as cultural orientation has been found to have a significant impact on other learning outcomes (Edele, Stanat, Radmann & Segeritz, 2013), it may be expected to play a role in further language learning.

Thirdly, this thesis provides evidence that bilingualism is a multi-faceted phenomenon. Treating bilingualism as a dichotomy potentially masks important variations within the bilingual group, especially when investigating learning outcomes. Bilingualism's relevant facet or dimensions, which often correlate highly with each other, are challenging to capture (Luk & Biaystok, 2013). This current study attempts to address this issue by utilizing subgroups to capture more variation and obtain a more accurate picture. Central to further research is to address the multidimensional nature and use polynomial or continuous variables whenever possible when investigating bilingualism.

Also central to further investigations in bilingualism is the development of bilingual measures, specifically metalinguistic awareness. While traditional measures exist (e.g., MLAT), these measures are very much tied to the language of the test (i.e., vocabulary). This potentially creates bias, especially for a bilingual population, whose metalinguistic knowledge is divided between two languages. A less-biased possibility would be a measure that did not stress specific language knowledge and focused more on meta-knowledge. One possibility would be the development of a metalinguistic measure, similar to the CANAL-FT

(Grigorenko, Sternberg, & Ehrman, 2000) or a test of learning an unknown language (Ter Kuile et al., 2011). The advantage of this measure is that it would be less dependent on the proficiency in the language of the test similar to traditional measures (e.g., MLAT), and more focused on how existing knowledge is utilized when presented with new material. This would increase validity for the language minority sample, enabling a more reliable measure of metalinguistic skill for both a bilingual and monolingual population.

While this thesis offers several implications for research, it also specifies important inferences for praxis. This thesis reinforces evidence that majority language proficiency is a strong indicator of foreign language outcomes (Study 1), providing support for early majority language intervention (e.g., immersion pre-schooling). Bilingual students in immigrant communities benefit from additional language learning when they have strong majority language skills. Early majority language instruction provides a strong basis for the language fundamentals needed to be a successful language learner (e.g., Farver, Lonigan, & Eppe, 2009). Strong majority language skills not only assist with additional language learning but also with learning across all disciplines (Hoff, 2013).

While strong majority language proficiency is important, these studies' results also show the influence of the minority language for bilingual children. Whether in school or as an extracurricular program, increased exposure to the minority language at home (Study 2), and particularly formal training (Study 3), support those mechanisms (i.e., metalinguistic awareness) needed for successful additional language learning. In other populations, minority language support has been linked to higher overall academic achievement and lower dropout rates (Lindholm-Leary & Borsato, 2006; MacKenzie, 2009). Taken together, this implies the positive impact of increased mother tongue support, where children are exposed to their home language and proficiency is expanded upon, such that formal language structures (especially literacy skills) are taught.

While the current work shows effects of both the majority and minority language in additional language learning, it does not inform the debate as to which language (L1 or L2) is more important or influential in additional language learning. While the majority language proficiency was assessed with a reading test, minority language abilities were only captured with proxy variables, making comparison inadvisable.

Additionally, schools and educators should reevaluate the needs of their students and adapt the curricula accordingly. As this thesis illustrates, bilingual students learn foreign languages differently from their monolingual peers. Curricula and classroom practices need to reflect this variation in learning. As Jessner (2008) indicates, the multilingual classroom creates complexity with numerous possibilities for learning. While this may seem unrealistic in the traditional monolingual-normed classroom, one simple step in navigating this complexity would be to introduce more differentiated instruction (Parker, 2011; Renzulli, 2013; Subban, 2006). Differentiated learning, where bilingual students could draw connections between a language minority student's previously learned languages (i.e., both the home and majority language), would create an explicit link between language characteristics and support the promotion of metalinguistic skills (cf. the multilingual processing model by Meißner, 2004). However, this would require a paradigm shift to more student-centered learning (Lawrence-Brown, 2004), and may be perceived as ambitious and taxing for educators not explicitly trained in this method.

Perhaps most importantly, while numerous studies have shown minority language students as weaker in many domains (e.g., Han, 2012; Kempert et al., 2011), the results of this thesis provide evidence that bilingual students from immigrant communities may have some advantages in school. While the effect is modest, this thesis does show that language minority students do have potential as bilingual students. By refocusing on the possibilities bilingual children bring with them, education systems can begin to tackle the challenges with a more diverse student body.

As educational systems around the world are faced with increasingly diverse demographics in the classroom, identifying weaknesses and strengths to meet the needs of all students is increasingly important for successful learning (e.g., Spees, Potochnick, & Perreira, 2016). As immigrant students are often labeled as facing difficult challenges, it is important to remember that these challenges can be coupled with benefits, which in foreign language learning, can further their academic success.

## 8 References

- Abedi, J. (2002). Standardized achievement tests and English language learners: Psychometrics issues. *Educational assessment*, 8(3), 231-257. [http://dx.doi.org/10.1207/S15326977EA0803\\_02](http://dx.doi.org/10.1207/S15326977EA0803_02)
- Abu-Rabia, S., & Sanitsky, E. (2010). Advantages of bilinguals over monolinguals in learning a third language. *Bilingual Research Journal*, 33(2), 173-199. <http://dx.doi.org/10.1080/15235882.2010.502797>
- Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A Systematic Review and Meta-Analysis of the Cognitive Correlates of Bilingualism. *Review of Educational Research*, 80(2), 207-245. <https://doi.org/10.3102/0034654310368803>
- Adi-Japha, E., Berberich-Artzi, J., & Libnawi, A. (2010). Cognitive flexibility in drawings of bilingual children. *Child Development*, 81(5), 1356-1366. 10.1111/j.1467-8624.2010.01477.x
- Alderson, J. C., Clapham, C., & Steel, D. (1997). Metalinguistic knowledge, language aptitude and language proficiency. *Language Teaching Research*, 1(2), 93-121. <http://dx.doi.org/10.1177/136216889700100202>
- Al-Dossari, M. (2004). *An Investigation of Bilingual Children's Metalinguistic Awareness in Two Typologically Unrelated Languages* (unpublished doctoral dissertation). Boston University, Boston, MA. Retrieved from <http://www.linguistlist.org/pubs/diss/browse-diss-action.cfm?DissID=8116>
- Akukwe, B., & Schroeders, U. (2016). Socio-economic, cultural, social, and cognitive aspects of family background and the biology competency of ninth-graders in Germany. *Learning and Individual Differences*, 45, 185-192. <https://doi.org/10.1016/j.lindif.2015.12.009>
- Amengual-Pizarro, M., & Prieto-Arranz, J. I. (2015). Exploring affective factors in L3 learning: CLIL vs. non-CLIL. In M. Juan-Garau & J. Salazar-Noguera (Eds.) *Content-based language learning in multilingual educational environments* (pp. 197-220). Berlin: Springer International Publishing.
- Ardila, A., Rosselli, M., Matute, E., & Guajardo, S. (2005). The influence of the parents' educational level on the development of executive functions. *Developmental Neuropsychology*, 28(1), 539-560. [http://dx.doi.org/10.1207/s15326942dn2801\\_5](http://dx.doi.org/10.1207/s15326942dn2801_5)
- Asbrand, B., Lang-Wojtasik, G., & Köller, O. (2005). Lesekompetenz in sehr leistungsschwachen Ländern—eine interkulturelle Sekundaranalyse der Leseleistungen in IGLU [Reading competence in weak countries – an intercultural secondary analysis of reading achievement in IGLU]. In W. Bos, E. Lankes, M. Prenzel, K. Schwippert, R. Valtin, G. Walther (Eds.) *IGLU: Vertiefende Analysen zu Leseverständnis, Rahmenbedingungen und Zusatzstudien* (pp. 37-79). Münster: Waxmann.
- August, D., & Hakuta, K. (2005). Bilingualism and second-language learning. In M. Suárez-Orozco, C. Suárez-Orozco, & D. Qin-Hilliard (Eds.) *The new immigration: An interdisciplinary reader* (pp. 233-248). New York: Routledge.
- Au-Yeung, K., Hipfner-Boucher, K., Chen, X., Pasquarella, A., D'Angelo, N., & Hélène Deacon, S. (2015). Development of English and French Language and Literacy Skills in EL1 and EL French Immersion Students in the Early Grades. *Reading Research Quarterly*, 50(2), 233-254. <http://doi.org/10.1002/rrq.95>

- Baker, C. (2011). *Foundations of bilingual education and bilingualism*. Clevedon: Multilingual Matters Ltd.
- Baker, E. H. (2014). Socioeconomic status, definition. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society* (pp. 2210-2214). DOI: 10.1002/9781118410868.wbehibs39
- Balkan, L. (1970). *Les effets du bilinguisme français-anglais sur les aptitudes intellectuelles* (Vol. 3). AIMAV (Association internationale pour la recherche et la diffusion des méthodes audio-visuelles et structuro-globales, bd de l'Empereur, 4).
- Barac, R., & Bialystok, E. (2012). Bilingual Effects on Cognitive and Linguistic Development: Role of Language, Cultural Background, and Education. *Child Development*, 83(2), 413–422. <https://doi.org/10.1111/j.1467-8624.2011.01707.x>
- Barac, R., Bialystok, E., Castro, D. C., & Sanchez, M. (2014). The cognitive development of young dual language learners: A critical review. *Early Childhood Research Quarterly*, 29(4), 699–714. <https://doi.org/10.1016/j.ecresq.2014.02.003>
- Baumert, J., Lüdtke, O., Trautwein, U., & Brunner, M. (2009). Large-scale student assessment studies measure the results of processes of knowledge acquisition: Evidence in support of the distinction between intelligence and student achievement. *Educational Research Review*, 4, 165-176. doi:10.1016/j.edurev.2009.04.002
- Beilin, H., & Spontak, G. (1969). Active-passive transformations and operational reversibility. Paper presented at the *Biennial Meetings of the Society for Research in Child Development, Santa Monica, CA*.
- Ben-Zeev, S. (1972). *The influence of bilingualism on cognitive development and cognitive strategy*. (Doctoral abstract). Retrieved from <https://eric.ed.gov/?id=ED104535>
- Ben-Zeev, S. (1977). The influence of bilingualism on cognitive strategy and cognitive development. *Child Development*, 1009–1018.
- Bérubé, D. (2013). *Acquisition of English and French language proficiency and reading comprehension of multilingual students in French immersion programs: a 3-year longitudinal study* (Doctoral dissertation) University of British Columbia, British Columbia. Retrieved from <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0073901>
- Bérubé, D., & Marinova-Todd, S. H. (2012). The development of language and reading skills in the second and third languages of multilingual children in French Immersion. *International Journal of Multilingualism*, 9(3), 272-293. <http://dx.doi.org/10.1080/14790718.2011.631708>
- Bérubé, D., & Marinova-Todd, S. H. (2014). The effect of sociolinguistic factors and English language proficiency on the development of French as a third language. *International Journal of Bilingual Education and Bilingualism*, 17(4), 465-483. <http://dx.doi.org/10.1080/13670050.2013.820686>
- Bialystok, E. (1986). Factors in the growth of linguistic awareness. *Child Development*, 57:498–510.
- Bialystok, E. (1988). Aspects of linguistic awareness in reading comprehension. *Applied Psycholinguistics*, 9(02), 123–139. <https://doi.org/10.1017/S0142716400006779>
- Bialystok, E. (1992). Selective attention in cognitive processing: The bilingual edge. *Advances in Psychology*, 83, 501–513. [https://doi.org/10.1016/S0166-4115\(08\)61513-7](https://doi.org/10.1016/S0166-4115(08)61513-7)



- Bialystok, E. (1997). Effects of bilingualism and biliteracy on children's emerging concepts of print. *Developmental Psychology*, 33, 429–440.  
<http://psycnet.apa.org/doi/10.1037/0012-1649.33.3.429>
- Bialystok, E. (2001). *Bilingualism in Development: Language, Literacy, and Cognition*. Cambridge: Cambridge University Press.
- Bialystok, E. (2002). Acquisition of literacy in bilingual children: A framework for research. *Language Learning*, 52(1), 159–199. <https://doi.org/10.1111/1467-9922.00180>
- Bialystok, E. (2006a). Effect of bilingualism and computer video game experience on the Simon task. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 60(1), 68–79. <https://doi.org/10.1037/cjep2006008>
- Bialystok, E. (2006b). The impact of bilingualism on language and literacy development. In T. K. Bhatia & W. Ritchie (Eds.), *The Handbook of bilingualism* (pp. 577–601). Malden, MA: Blackwell Publishing.
- Bialystok, E. (2007). Cognitive effects of bilingualism: How linguistic experience leads to cognitive change. *International Journal of Bilingual Education and Bilingualism*, 10(3), 210–223. <http://dx.doi.org/10.2167/beb441.0>
- Bialystok, E. (2009). Consequences of Bilingualism for Cognitive Development. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of Bilingualism: Psycholinguistic Approaches*. Oxford: Oxford University Press.
- Bialystok, E. (2010). Bilingualism. *Cognitive Science*, 1(4), 559–572.  
<https://doi.org/10.1002/wcs.43>
- Bialystok, E., & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, 122(1), 67–73.  
<https://doi.org/10.1016/j.cognition.2011.08.003>
- Bialystok, E., Barac, R., Blaye, A., & Poulin-Dubois, D. (2010). Word mapping and executive functioning in young monolingual and bilingual children. *Journal of Cognition and Development*, 11(4), 485–508. <http://dx.doi.org/10.1080/15248372.2010.516420>
- Bialystok, E., Craik, F. I., Grady, C., Chau, W., Ishii, R., Gunji, A., & Pantev, C. (2005). Effect of bilingualism on cognitive control in the Simon task: evidence from MEG. *NeuroImage*, 24(1), 40–49. <https://doi.org/10.1016/j.neuroimage.2004.09.044>
- Bialystok, E., Craik, F. I., Klein, R., & Viswanathan, M. (2004). Bilingualism, aging, and cognitive control: evidence from the Simon task. *Psychology and Aging*, 19(2), 290.  
<http://psycnet.apa.org/doi/10.1037/0882-7974.19.2.290>
- Bialystok, E., Craik, F., & Luk, G. (2008). Cognitive control and lexical access in younger and older bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 34(4), 859. <http://psycnet.apa.org/doi/10.1037/0278-7393.34.4.859>
- Bialystok, E., Craik, F. I., & Luk, G. (2012). Bilingualism: consequences for mind and brain. *Trends in cognitive sciences*, 16(4), 240–250.  
<https://doi.org/10.1016/j.tics.2012.03.001>
- Bialystok, E., & Majumder, S. (1998). The relationship between bilingualism and the development of cognitive processes in problem solving. *Applied Psycholinguistics*, 19(01), 69–85. <https://doi.org/10.1017/S0142716400010584>
- Bialystok, E., Majumder, S., & Martin, M. M. (2003). Developing phonological awareness: Is there a bilingual advantage? *Applied Psycholinguistics*, 24(01), 27–44.  
<https://doi.org/10.1017/S014271640300002X>

- Bialystok, E., Peets, K. F., & Moreno, S. (2012). Producing bilinguals through immersion education: Development of metalinguistic awareness. *Applied Psycholinguistics*, 1–15. doi:10.1017/S0142716412000288
- Bialystok, E., & Ryan, E. B. (1985). A metacognitive framework for the development of first and second language skills. *Metacognition, Cognition, and Human Performance*, 1, 207–252.
- Bialystok, E., Shenfield, T., Codd, J. (2000). Languages, scripts, and the environment: factors in developing concepts of print. *Developmental Psychology*, 36: 66–76. <http://psycnet.apa.org/doi/10.1037/0012-1649.36.1.66>
- Biedinger, N., Becker, B., & Rohling, I. (2008). Early ethnic educational inequality: The influence of duration of preschool attendance and social composition. *European Sociological Review*, 24(2), 243–256. <https://doi.org/10.1093/esr/jcn001>
- Bild, E. R., & Swain, M. (1989). Minority language students in a French immersion programme: Their French proficiency. *Journal of Multilingual & Multicultural Development*, 10(3), 255–274. <http://dx.doi.org/10.1080/01434632.1989.9994377>
- Bloom, H. S., Hill, C. J., Black, A. R., & Lipsey, M. W. (2008). Performance trajectories and performance gaps as achievement effect-size benchmarks for educational interventions. *Journal of Research on Educational Effectiveness*, 1(4), 289–328. <http://dx.doi.org/10.1080/19345740802400072>
- Bloomfield, L. (1984). *Language*. Chicago, IL: University of Chicago Press.
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. K. Brown (Ed.), *Knowledge, education, and cultural change: Papers in the sociology of education* (pp. 71–84). London: Tavistock Publications.
- Bourdieu, P. (1977). *Reproduction in Education, Society, Culture*. Beverly Hills, CA: Sage.
- Bourdieu, P. (1985). The Forms of Capital. In J. Richardson (Ed) *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood.
- Bowden, H. W., Sanz, C., & Stafford, C. A. (2005). Individual differences: Age, sex, working memory, and prior knowledge. *Mind and Context in Adult Second Language Acquisition: Methods, Theory, and Practice*, 105–140.
- Bowey, J. A. (1988). *Metalinguistic functioning in children*. Geelong, Victoria: Deakin University Press.
- Brohy, C. (2001). Generic and/or specific advantages of bilingualism in a dynamic plurilingual situation: The case of French as official L3 in the school of Samedan (Switzerland). *International Journal of Bilingual Education and Bilingualism*, 4(1), 38–49. <http://dx.doi.org/10.1080/13670050108667717>
- Brooks, P. J., & Kempe, V. (2013). Individual differences in adult foreign language learning: The mediating effect of metalinguistic awareness. *Memory & Cognition*, 1–16. <https://doi.org/10.3758/s13421-012-0262-9>
- Bruck, M., & Genesee, F. (1995). Phonological awareness in young second language learners. *Journal of Child Language*, 22(02), 307–324. <https://doi.org/10.1017/S0305000900009806>
- Butler, Y.G., & Hakuta, K. (2006). Bilingualism and second language acquisition. In T. Bhatia & W. Ritchie (Eds.) *The Handbook of Bilingualism* (pp. 7–31). Malden, MA: Blackwell Publishing.

- Campbell, R., & Sais, E. (1995). Accelerated metalinguistic (phonological) awareness in bilingual children. *British Journal of Developmental Psychology*, 13(1), 61–68. <https://doi.org/10.1111/j.2044-835X.1995.tb00664.x>
- Carlisle, J. F., Beeman, M., Davis, L. H., & Spharim, G. (1999). Relationship of metalinguistic capabilities and reading achievement for children who are becoming bilingual. *Applied Psycholinguistics*, 20(04), 459–478.
- Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11(2), 282–298. <https://doi.org/10.1111/j.1467-7687.2008.00675.x>
- Carr, T. H., & Curran, T. (1994). Cognitive factors in learning about structured sequences. *Studies in second language acquisition*, 16(02), 205–230. <https://doi.org/10.1017/S0272263100012882>
- Carroll, J. B., & Sapon, S. M. (1959). *Modern Language Aptitude Test*. New York: The Psychological Corporation.
- Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition: A review. *International Journal of Bilingualism*, 7(1), 71–87. <https://doi.org/10.1177/13670069030070010501>
- Cenoz, J. (2013). The influence of bilingualism on third language acquisition: Focus on multilingualism. *Language Teaching*, 46(01), 71–86. <https://doi.org/10.1017/S0261444811000218>
- Cenoz, J., & Todeva, E. (2009). The well and the bucket: the emic and etic perspectives combined. In E. Todeva & J. Cenoz (Eds.), *The Multiple Realities of Multilingualism: Personal Narratives and Researchers' Perspectives*. Berlin: Walter de Gruyter.
- Cenoz, J., & Valencia, J. F. (1994). Additive trilingualism: Evidence from the Basque Country. *Applied Psycholinguistics*, 15(02), 195–207. <https://doi.org/10.1017/S0142716400005324>
- Chiu, M. M., & McBride-Chang, C. (2010). Family and reading in 41 countries: Differences across cultures and students. *Scientific Studies of Reading*, 14(6), 514–543. <http://dx.doi.org/10.1080/10888431003623520>
- Chiu, M. M., Pong, S. L., Mori, I., & Chow, B. W. Y. (2012). Immigrant students' emotional and cognitive engagement at school: A multilevel analysis of students in 41 countries. *Journal of youth and adolescence*, 41(11), 1409–1425. DOI: 10.1007/s10964-012-9763-x
- Cohen, A. D. (2014). *Strategies in Learning and Using a Second Language*. New York: Routledge.
- Collier, V. P. (1987). Age and rate of acquisition of second language for academic purposes. *TESOL quarterly*, 21(4), 617–641.
- Colzato, L. S., Bajo, M. T., van den Wildenberg, W., Paolieri, D., Nieuwenhuis, S., La Heij, W., & Hommel, B. (2008). How does bilingualism improve executive control? A comparison of active and reactive inhibition mechanisms. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 34(2), 302.
- Cook, V. J. (1991). The poverty-of-the-stimulus argument and multicompetence. *Second Language Research*, 7, 103–117.
- Cook, V. J. (2003). Introduction: The changing L1 in the L2 user's mind. In V. J. Cook (Ed.), *Effects of the second language on the first* (pp. 1–18). Clevedon: Multilingual Matters.

- Costa, A., Hernández, M., & Sebastián-Gallés, N. (2008). Bilingualism aids conflict resolution: Evidence from the ANT task. *Cognition*, 106(1), 59–86. <https://doi.org/10.1016/j.cognition.2006.12.013>
- Cummins, J. (1976). *The Influence of Bilingualism on Cognitive Growth: A Synthesis of Research Findings and Explanatory Hypotheses*. Working Papers on Bilingualism, No. 9. Retrieved from <http://files.eric.ed.gov/fulltext/ED125311.pdf>
- Cummins, J. (1978). Bilingualism and the Development of Metalinguistic Awareness. *Journal of Cross-Cultural Psychology*, 9(2), 131–149. <https://doi.org/10.1177/002202217892001>
- Cummins, J. (1980). The cross-lingual dimensions of language proficiency: Implications for bilingual education and the optimal age issue. *Tesol Quarterly*, 175–187. doi:10.2307/3586312
- Cummins, J. (1981a). The role of primary language development in promoting educational success for language minority students. *Schooling and Language Minority Students: A Theoretical Framework*, 3.
- Cummins, J. (1981b). *Bilingualism and Minority Language Children*. Ontario: Ontario Institute for Studies in Education.
- Cummins, J. (2000). The threshold and interdependence hypotheses revisited. In J. Cummins, *Language, Power, and Pedagogy: Bilingual Children in the Crossfire*. Clevedon: Multilingual Matters.
- Dakowska, M. (1993). Language, metalanguage, and language use: A cognitive psycholinguistic view. *International Journal of Applied Linguistics*, 3(1), 79–99. <http://doi.org/10.1111/j.1473-4192.1993.tb00044.x>
- D'Angiulli, A., Siegel, L.S., & Maggi, S. (2004). Literacy instruction, SES, and word-reading achievement in English-language learners and children with English as a first language: A longitudinal study. *Learning Disabilities Research and Practice*, 19, 4, 202–213. <http://doi.org/10.1111/j.1540-5826.2004.00106.x>
- Davidson, D., Raschke, V. R., & Pervez, J. (2010). Syntactic awareness in young monolingual and bilingual (Urdu–English) children. *Cognitive Development*, 25(2), 166–182. <http://doi.org/10.1016/j.cogdev.2009.07.003>
- Deanda, S., Arias-Trejo, N., Poulin-Dubois, D., Zesiger, P., & Friend, M. (2016). Minimal second language exposure, SES, and early word comprehension: New evidence from a direct assessment. *Bilingualism: Language and Cognition*, 19(01), 162–180. doi:10.1017/S1366728914000820
- De Angelis, G. (2007). *Third or additional language acquisition* (Vol. 24). Clevedon: Multilingual Matters Limited.
- De Bot, K., Jaensch, C., & Mayo, M. D. P. G. (2015). What is special about L3 processing?. *Bilingualism*, 18(2), 130. doi:10.1017/S1366728913000448
- De Groot, A. M. (1993). Word-type effects in bilingual processing tasks. *The Bilingual Lexicon*. Amsterdam: John Benjamins, 27–51.
- De Houwer, A. (2007). Parental language input patterns and children's bilingual use. *Applied Psycholinguistics*, 28(03), 411–424. <https://doi.org/10.1017/S0142716407070221>
- De Mejía, A.M. (2012). Elite/Folk Bilingual Education. In *The Encyclopedia of Applied Linguistics*. Blackwell Publishing Ltd.

- De Paola, M., & Brunello, G. (2016). *Education as a tool for the economic integration of migrants* (EENEE Analytical Report No. 27). Retrieved from [www.eenee.de/dms/EENEE/Analytical\\_Reports/EENEE\\_AR27.pdf](http://www.eenee.de/dms/EENEE/Analytical_Reports/EENEE_AR27.pdf)
- DESI-Konsortium (Eds.) (2008). *Unterricht und Kompetenzerwerb in Deutsch und Englisch. Ergebnisse der DESI-Studie*. Weinheim: Beltz.
- Diaz, R. M. (1983). Thought and two languages: The impact of bilingualism on cognitive development. *Review of research in education*, 10(1), 23-54. <http://dx.doi.org/10.3102%2F0091732X010001023>
- Diaz, R. M. (1985). Bilingual cognitive development: Addressing three gaps in current research. *Child Development*, 1376–1388. DOI: 10.2307/1130458
- Diehl, C., Hunkler, C., & Kristen, C. (2016). Ethnische Ungleichheiten im Bildungsverlauf. Eine Einführung [Ethnical inequality in educational trajectories: an introduction]. In C. Diehl, C. Hunkler, & C. Kristen (Eds.) *Ethnische Ungleichheiten im Bildungsverlauf* (pp. 3–31). Wiesbaden: Springer.
- Dillon, A. M. (2009). Metalinguistic awareness and evidence of cross-linguistic influence among bilingual learners in Irish primary schools. *Language Awareness*, 18(2), 182-197. <http://dx.doi.org/10.1080/09658410902928479>
- DiMaggio, P. (1982). Cultural capital and school success: The impact of status culture participation on the grades of U.S. high school students. *American Sociological Review*, 47, 189–201. <http://dx.doi.org/10.2307/2094962>.
- DiMaggio, P., & Mohr, J. (1985). Cultural capital, educational attainment, and marital selection. *American Journal of Sociology*, 90, 1231–1261. <http://dx.doi.org/10.2307/2779635>.
- DIPF (2016). *Bildung in Deutschland 2016*. Retrieved from <http://www.bildungsbericht.de/de/bildungsberichte-seit-2006/bildungsbericht-2016>
- Dörnyei, Z. (2009). *The psychology of second language acquisition*. Oxford: Oxford University Press.
- Dörnyei, Z. (2010a). *The psychology of the language learner: Individual differences in second language acquisition*. New York: Routledge.
- Dörnyei, Z. (2010b). The relationship between language aptitude and language learning motivation: Individual differences from a dynamic systems perspective. In E. Macaro (Ed.) *Continuum Companion to Second Language Acquisition* (pp.247–267). London: Continuum.
- Dörnyei, Z., & Skehan, P. (2003). Individual differences in second language learning. In C. J. Doughty & M. H. Long (Eds.) *The handbook of second language acquisition* (pp. 589-630). Oxford: Blackwell Publishing.
- Doughty, C., & Williams, J. (1998). Pedagogical choices in Focus on Form. In C. J. Doughty & J. Willaims (Eds.) *Focus on form in classroom second language acquisition* (pp. 197-262). Cambridge: Cambridge University Press.
- Dressler, C. & Kamil, M. L. (2006). First- and Second-Language Literacy. In D. August, T. Shanahan *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 197-238). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers
- Dufva, M., & Voeten, M. J. M. (1999). Native language literacy and phonological memory as prerequisites for learning English as a foreign language. *Applied Psycholinguistics*,

- 20(03), 329–348.
- Dumais, S. A. (2002). Cultural capital, gender, and school success: The role of habitus. *Sociology of Education*, 75, 44–68. <http://dx.doi.org/10.2307/3090253>.
- Dustmann, C., Frattini, T., & Lanzara, G. (2012). Educational achievement of second-generation immigrants: an international comparison. *Economic Policy*, 27(69), 143–185. <https://doi.org/10.1111/j.1468-0327.2011.00275.x>
- Edele, A., & Stanat, P. (2016). The role of first-language listening comprehension in second-language reading comprehension. *Journal of Educational Psychology*, 108(2), 163–180. <https://doi.org/10.1037/edu0000060>
- Edele, A., Stanat, P., Radmann, S., & Segeritz, M. (2013). Kulturelle Identität und Lesekompetenz von Jugendlichen aus zugewanderten Familien. In N. Jude & E. Klieme (Eds.), *PISA 2009 - Impulse für die Schul- und Unterrichtsforschung* (pp. 84–110). Weinheim: Beltz.
- Edele, A., Seuring, J., Kristen, C., & Stanat, P. (2015). Why bother with testing? The validity of immigrants' self-assessed language proficiency. *Social science research*, 52, 99–123. <https://doi.org/10.1016/j.ssresearch.2014.12.017>
- Edwards, J. (2006). Foundations of Bilingualism. In T. Bhatia & W. Ritchie (Eds.), *The Handbook of Bilingualism* (pp. 7–31). Malden, MA: Blackwell Publishing.
- Edwards, D., & Christophersen, H. (1988). Bilingualism, literacy and meta-linguistic awareness in preschool children. *British Journal of Developmental Psychology*, 6(3), 235–244. doi:10.1111/j.2044-835X.1988.tb01097.x
- Ehrman, M. E., Leaver, B. L., & Oxford, R. L. (2003). A brief overview of individual differences in second language learning. *System*, 31(3), 313–330. [https://doi.org/10.1016/S0346-251X\(03\)00045-9](https://doi.org/10.1016/S0346-251X(03)00045-9)
- Ellis, R. (1994). *The study of second language acquisition*. Oxford: Oxford University Press.
- Ellis, R. (2004). The definition and measurement of L2 explicit knowledge. *Language Learning*, 54(2), 227–275. doi:10.1111/j.1467-9922.2004.00255.x
- Engel de Abreu, P. M. (2011). Working memory in multilingual children: Is there a bilingual effect? *Memory*, 19(5), 529–537. <http://dx.doi.org/10.1080/09658211.2011.590504>
- Engel de Abreu, P. M. J., Cruz-Santos, A., Tourinho, C. J., Martin, R., & Bialystok, E. (2012). Bilingualism Enriches the Poor Enhanced Cognitive Control in Low-Income Minority Children. *Psychological Science*, 23(11), 1364–1371. <https://doi.org/10.1177/0956797612443836>
- Eriksen, B. A., & Eriksen, C. W. (1974). Effects of noise letters upon the identification of a target letter in a nonsearch task. *Attention, Perception, & Psychophysics*, 16(1), 143–149. doi:10.3758/BF03203267
- Esser, H. (2006). *Migration, language and integration*. WZB. Retrieved from <https://pdfs.semanticscholar.org/25b8/de137577ce4090aaf463c2d748036759a815.pdf>
- Eurostat. (March, 2017). *Migration and migrant population statistics*. Retrieved from [http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration\\_and\\_migrant\\_population\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics)
- Eviatar, Z., & Ibrahim, R. (2000). Bilingual is as bilingual does: Metalinguistic abilities of Arabic-speaking children. *Applied Psycholinguistics*, 21(04), 451–471.
- Fabbro, F., Naatanen, R., & Kujala, T. (1999). The neurolinguistics of bilingualism. *Nature*,

- 398(6728), 577-577.
- Farver, J. A. M., Lonigan, C. J., & Eppe, S. (2009). Effective early literacy skill development for young Spanish-speaking English language learners: An experimental study of two methods. *Child development*, 80(3), 703-719. doi:10.1111/j.1467-8624.2009.01292.x
- Fehling, S. (2008). *Language awareness und bilingualer Unterricht: Eine komparative Studie* (Vol. 1). Frankfurt am Main: Peter Lang.
- Feldman, C., & Shen, M. (1971). Some language-related cognitive advantages of bilingual five-year-olds. *The Journal of Genetic Psychology*, 118(2), 235-244. <http://dx.doi.org/10.1080/00221325.1971.10532612>
- Fishman, J. A. (1977). The social science perspective. *Bilingual education: Current perspectives*, 1, 14-62.
- Galambos, S. J., & Goldin-Meadow, S. (1990). The effects of learning two languages on levels of metalinguistic awareness. *Cognition*, 34(1), 1-56. [https://doi.org/10.1016/0010-0277\(90\)90030-N](https://doi.org/10.1016/0010-0277(90)90030-N)
- Galambos, S. J., & Hakuta, K. (1988). Subject-specific and task-specific characteristics of metalinguistic awareness in bilingual children. *Applied Psycholinguistics*, 9(02), 141-162. <https://doi.org/10.1017/S0142716400006780>
- Ganzeboom, H. B., & Treiman, D. J. (1996). Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social science research*, 25(3), 201-239. <https://doi.org/10.1006/ssre.1996.0010>
- Gebhardt, M., Rauch, D., Mang, J., Sälzer, C., & Stanat, P. (2013). Mathematische Kompetenz von Schülerinnen und Schülern mit Zuwanderungshintergrund. In M. Prenzel, C. Sälzer, E. Klieme, & O. Köller (Eds.) *PISA 2012: Fortschritte und Herausforderungen in Deutschland* (pp. 275-308). Berlin: Waxmann
- Genesee, F., Geva, E., Dressler, C., & Kamil, M. (2006). Synthesis: Cross-linguistic relationships. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 153-183). Mahwah, NJ: Lawrence Erlbaum Associates.
- Genesee, F., Hamers, J., Lambert, W.E., Mononen, L., Seitz, M., & Starck, R. (1978). Language processing in bilinguals. *Brain and language*. 5(1), 1-12. [https://doi.org/10.1016/0093-934X\(78\)90002-0](https://doi.org/10.1016/0093-934X(78)90002-0)
- Genesee, F., & Lindholm-Leary, K. (2012). The education of English language learners. In K. R. Harris, S. Graham, T. Urdan, A. G. Bus, S. Major, & H. L. Swanson (Eds.), *APA educational psychology handbook, Vol 3: Application to learning and teaching* (pp. 499-526). Washington, DC: American Psychological Association.
- Geva, E., & Siegel, L. S. (2000). Orthographic and cognitive factors in the concurrent development of basic reading skills in two languages. *Reading and Writing*, 12(1), 1-30. doi:10.1023/A:1008017710115
- Göbel, K., Rauch, D., & Vieluf, S. (2011). Leistungsbedingungen und Leistungsergebnisse von Schülerinnen und Schülern türkischer, russischer und polnischer Herkunftssprachen. *Zeitschrift Für Interkulturellen Fremdsprachenunterricht*, 16(2), 50-65.
- Gombert, J. E. (1992). *Metalinguistic development*. Chicago, IL: University of Chicago Press.
- Grigorenko, E. L., Sternberg, R. J., & Ehrman, M. E. (2000). A Theory-Based Approach to

- the Measurement of Foreign Language Learning Ability: The Canal-F Theory and Test. *The Modern Language Journal*, 84(3), 390–405. <https://doi.org/10.1111/0026-7902.00076>
- Grosjean, F. (1985). The bilingual as a competent but specific speaker-hearer. *Journal of Multilingual and Multicultural Development*, 6(6), 467–477. <https://doi.org/10.1080/01434632.1985.9994221>
- Haag, N., Boehme, K., Rjosk, C., & Stanat, P. (2016). Zuwanderungsbezogene Disparitäten. In P. Stanat, K. Boehme, S. Schipolowski, & N. Haag (Eds.), *IQB-Bildungstrend 2015 Sprachliche Kompetenzen am Ende der 9. Jahrgangsstufe im zweiten Ländervergleich* (pp. 431–480). Muenster: Waxmann.
- Haag, N., Heppt, B., Stanat, P., Kuhl, P., & Pant, H. A. (2013). Second language learners' performance in mathematics: Disentangling the effects of academic language features. *Learning and Instruction*, 28, 24–34. <https://doi.org/10.1016/j.learninstruc.2013.04.001>
- Haenni Hoti, A. U., Heinzmann, S., Müller, M., Oliveira, M., Wicki, W., & Werlen, E. (2011). Introducing a second foreign language in Swiss primary schools: The effect of L2 listening and reading skills on L3 acquisition. *International Journal of Multilingualism*, 8(2), 98–116.
- Hakes, D. T. (1980). *The development of metalinguistic abilities in children*. Berlin: Springer.
- Hakuta, K., & Diaz, R. M. (1985). The relationship between degree of bilingualism and cognitive ability: a critical discussion and some new longitudinal data. In K. E. Nelson (Ed.), *Children's Languages* (pp. 319–342). Hillsdale, NJ: L. Erlbaum.
- Hamers, J. F., & Blanc, M. H. A. (2000). *Bilinguality and bilingualism, 2nd Edition*. Cambridge: Cambridge University Press.
- Han, W. J. (2012). Bilingualism and academic achievement. *Child Development*, 83(1), 300–321. doi:10.1111/j.1467-8624.2011.01686.x
- Hawkins, E. W. (1981). *Modern Language in the Curriculum*. Cambridge: Cambridge University Press.
- Hawkins, E. W. (1999). Foreign language study and language awareness. *Language Awareness*, 8(3–4), 124–142. <http://dx.doi.org/10.1080/09658419908667124>
- Heller, K.A. & Perleth, C. (2000). Kognitiver Fähigkeitstest für 4.-12. Klassen, Revision (KFT 4-12) [General Cognitive Abilities test for 4-12 graders, revised]. Göttingen: Hogrefe.
- Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism: Perspectives of change in psycholinguistics* (Vol. 121). Clevedon: Multilingual Matters.
- Hesse, H. G., Göbel, K., & Hartig, J. (2008). Sprachliche Kompetenzen von mehrsprachigen Jugendlichen und Jugendlichen nicht-deutscher Erstsprache. In DESI-Konsortium (Eds.) *Unterricht und Kompetenzerwerb in Deutsch und Englisch. Ergebnisse der DESI-Studie* (pp. 208–230). Weinheim: Beltz.
- Hill, C. J., Bloom, H. S., Black, A. R., and Lipsey, M. W., (2008). Empirical Benchmarks for Interpreting Effect Sizes in Research. *Child Development Perspectives*. 2 (3), 172–177. doi:10.1111/j.1750-8606.2008.00061.x
- Hofer, B., & Jessner, U. (2016). Multilingualism at the primary level in South Tyrol: how does multilingual education affect young learners' metalinguistic awareness and proficiency in L1, L2 and L3?. *The Language Learning Journal*, 1–12.



- <http://dx.doi.org/10.1080/09571736.2016.1195865>
- Hoff, E. (2013). Interpreting the early language trajectories of children from low-SES and language minority homes: implications for closing achievement gaps. *Developmental psychology*, 49(1), 4. <http://psycnet.apa.org/doi/10.1037/a0027238>
- Homer, B. D. (2009). Literacy and Metalinguistic Awareness. In D. R. Olson & N. Torrance (Eds.), *The Cambridge Handbook of Literacy* (pp. 487–500). Cambridge: Cambridge University Press.
- Hörner, W., & Werler, T. (2007). Schulische Bildung im sozioökonomischen Kontext – Migration als Schlüsselfrage. In Arbeitsgruppe Internationale Vergleichsstudie (Eds.) *Schulleistungen und Steuerung des Schulsystems im Bundesstaat* (pp.121-140). Münster: Waxmann.
- Hufeisen, B. (2010). Theoretische Fundierung multiplen Sprachen-lernens- Faktorenmodell 2.0. *Jahrbuch Deutsch als Fremdsprache*, 200–207.
- Hughes, C., & Ensor, R. (2005). Executive function and theory of mind in 2 year olds: A family affair? *Developmental Neuropsychology*, 28(2), 645–668. [http://dx.doi.org/10.1207/s15326942dn2802\\_5](http://dx.doi.org/10.1207/s15326942dn2802_5)
- Ianco-Worrall, A. D. (1972). Bilingualism and Cognitive Development. *Child Development*, 43(4), 1390–1400. <https://doi.org/10.2307/1127524>
- Jarvis, S., & Pavlenko, A. (2008). *Crosslinguistic influence in language and cognition*. Routledge.
- Jaspaert, K., & Lemmens, G. (1990). Linguistic evaluation of Dutch as a third language. In M. Byram & J. Leman (Eds.) *Bicultural and trilingual education: The Foyer model in Brussels* (pp. 30-56). Clevedon: Multilingual Matters Ltd.
- Jessner, U. (1999). Metalinguistic Awareness in Multilinguals: Cognitive Aspects of Third Language Learning. *Language Awareness*, 8(3-4), 201–209. <https://doi.org/10.1080/09658419908667129>
- Jessner, U. (2006). *Linguistic awareness in multilinguals: English as a third language*. Edinburgh: Edinburgh University Press.
- Jessner, U. (2008a). A DST Model of Multilingualism and the Role of Metalinguistic Awareness. *The Modern Language Journal*, 92(2), 270–283. <https://doi.org/10.1111/j.1540-4781.2008.00718.x>
- Jessner, U. (2008b). Teaching Third Language: Findings, Trends and Challenges. *Language Teaching*, 41(1), 15-56. <https://doi.org/10.1017/S0261444807004739>
- Jung, J.Y. (2013). The Role of Metalinguistic Awareness in Multilingual Acquisition. *Teachers College, Columbia University Working Papers in TESOL & Applied Linguistics*, 13(2), 57–59.
- Kalashnikova, M., & Mattock, K. (2014). Maturation of executive functioning skills in early sequential bilingualism. *International Journal of Bilingual Education and Bilingualism*, 17(1), 111–123. <http://dx.doi.org/10.1080/13670050.2012.746284>
- Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F. M. (2013). Parental involvement and general cognitive ability as predictors of domain-specific academic achievement in early adolescence. *Learning and Instruction*, 23, 43-51. <https://doi.org/10.1016/j.learninstruc.2012.09.004>
- Karmiloff-Smith, A. (1986). Some fundamental aspects of language development after age 5.

- Language Acquisition*, 2, 455–474.
- Kemp, C. (2001). *Metalinguistic awareness in multilinguals: Implicit and explicit grammatical awareness and its relationship with language experience and language attainment* (Doctoral dissertation). University of Edinburgh: Edinburgh. Retrieved from <https://www.era.lib.ed.ac.uk/bitstream/handle/1842/6748/528437.pdf?sequence=1>
- Kemp, C. (2007). Strategic processing in grammar learning: Do multilinguals use more strategies?. *International Journal of Multilingualism*, 4(4), 241–261. <http://dx.doi.org/10.2167/ijm099.0>
- Kempert, S., Edele, A., Rauch, D., Wolf, K. M., Paetsch, J., Darsow, A., Maluch, J.T. & Stanat, P. (2016). Die Rolle der Sprache für zuwanderungsbezogene Ungleichheiten im Bildungserfolg. In C. Diehl, C. Hunkler, & C. Kristen (Eds.) *Ethnische Ungleichheiten im Bildungsverlauf* (pp. 157–241). Wiesbaden: Springer.
- Kempert, S., & Hardy, I. (2015). Children’s scientific reasoning in the context of bilingualism. *International Journal of Bilingualism*, 19(6), 646–664. <http://dx.doi.org/10.1177%2F1367006914527803>
- Kempert, S., Saalbach, H., & Hardy, I. (2011). Cognitive benefits and costs of bilingualism in elementary school students: The case of mathematical word problems. *Journal of Educational Psychology*, 103(3), 547. <http://psycnet.apa.org/doi/10.1037/a0023619>
- Kim, J. (2011). Relationships among and between ELL status, demographic characteristics, enrollment history, and school persistence. CRESST Report 810. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing (CRESST). Retrieved from <http://files.eric.ed.gov/fulltext/ED527529.pdf>
- Kingston, P. W. (2001). The unfulfilled promise of cultural capital theory. *Sociology of education*, 74, 88–99. DOI: 10.2307/2673255
- Kiss, C., & Nikolov, M. (2005). Developing, piloting, and validating an instrument to measure young learners’ aptitude. *Language Learning*, 55(1), 99–150. doi:10.1111/j.0023-8333.2005.00291.x
- Klieme, E. (2006). *Zusammenfassung zentraler Ergebnisse der DESI-Studie*. Frankfurt a.M.: Deutsches Institut für Internationale Pädagogische Forschung.
- Koda, K. (2007). Reading and language learning: Crosslinguistic constraints on second language reading development. *Language Learning*, 5(1), 1–44. doi: 10.1111/0023-8333.101997010-i1
- Kousaie, S., & Phillips, N. A. (2012). Aging and bilingualism: Absence of a “bilingual advantage” in Stroop interference in a nonimmigrant sample. *The Quarterly Journal of Experimental Psychology*, 65(2), 356–369. <https://doi.org/10.1080/17470218.2011.604788>
- Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Addison-Wesley Longman Ltd.
- Lambert, W. E. (1973). *Culture and Language as Factors in Learning and Education*. Paper presented at the 5<sup>th</sup> Annual learning Symposium on “Cultural Background in Learning”. Western Washington State College, Bellingham, Washington. Retrieved from <http://files.eric.ed.gov/fulltext/ED096820.pdf>
- Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps and glissandos in recent theoretical developments. *Sociological theory*, 6(2), 153–168. DOI: 10.2307/202113

- Lasagabaster, D. (2000). Three languages and three linguistic models in the Basque educational system. In J. Cenoz & U. Jessner (Eds.) *English in Europe: The Acquisition of a third language* (pp. 179-197). Clevedon: Multilingual Matters Ltd.
- Lawrence-Brown, D. (2004). Differentiated instruction: Inclusive strategies for standards-based learning that benefit the whole class. *American secondary education*, 32 (3), 34-62. Retrieved from <http://www.jstor.org/stable/41064522>
- Lehmann, R. & Lenkeit, J. (2008). *ELEMENT. Erhebung zum Lese- und Mathematikverständnis. Entwicklungen in den Jahrgangsstufen 4 bis 6 in Berlin* [ELEMENT: Assessment of reading and mathematics literacy. Developments in grades 4 to 6 in Berlin]. Berlin, Germany: Humboldt University of Berlin.
- Lindholm-Leary, K. & Borsato, G. (2006). *Academic Achievement*. In F. Genesee, K. Lindholm-Leary, W. Saunders, & D. Christian (Eds.) *Educating English Language Learners: A Synthesis of Research* (pp. 176-222). Cambridge: Cambridge University Press.
- Long, M. (1990). Maturation constraint on language development. *Studies in Second Language Acquisition*, 12, 251-285. <https://doi.org/10.1017/S0272263100009165>
- Luk, G., & Bialystok, E. (2013). Bilingualism is not a categorical variable: Interaction between language proficiency and usage. *Journal of Cognitive Psychology*, 25(5), 605-621. <http://dx.doi.org/10.1080/20445911.2013.795574>
- MacKenzie, P. J. (2009). Mother Tongue First Multilingual Education among the Tribal Communities in India. *International Journal of Bilingual Education and Bilingualism*, 12(4), 369-385. <https://doi.org/doi:10.1080/13670050902935797>
- MacLeod, C. M., & MacDonald, P. A. (2000). Interdimensional interference in the Stroop effect: Uncovering the cognitive and neural anatomy of attention. *Trends in Cognitive Sciences*, 4(10), 383-391. [https://doi.org/10.1016/S1364-6613\(00\)01530-8](https://doi.org/10.1016/S1364-6613(00)01530-8)
- Macnamara, J. (1967). The bilingual's linguistic performance—a psychological overview. *Journal of Social Issues*, 23(2), 58-77. doi:10.1111/j.1540-4560.1967.tb00576.x
- Mady, C. (2007). The suitability of core French for recently arrived adolescent immigrants to Canada. *Canadian Journal of Applied Linguistics/Revue canadienne de linguistique appliquée*, 10(2), 177-196.
- Mady, C. J. (2010). Motivation to study core French: Comparing recent immigrants and Canadian-born secondary school students. *Canadian Journal of Education*, 33(3), 564. DOI: 10.2307/canajeducrevucan.33.3.564
- Mägiste, E. (1984). Learning a third language. *Journal of Multilingual & Multicultural Development*, 5(5), 415-421. <http://dx.doi.org/10.1080/01434632.1984.9994170>
- Mancilla-Martinez, J., & Lesaux, N. K. (2011). Early home language use and later vocabulary development. *Journal of Educational Psychology*, 103(3), 535-546. <https://doi.org/10.1037/a0023655>
- Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech, Language, and Hearing Research*, 50(4), 940-967. doi:10.1044/1092-4388(2007/067)
- Marks, G. N. (2006). Are between- and within-school differences in student performance largely due to socio-economic background? *Educational Research*, 48, 21-40. <http://dx.doi.org/10.1080/00131880500498396>

- Martin-Rhee, M. M., & Bialystok, E. (2008). The development of two types of inhibitory control in monolingual and bilingual children. *Bilingualism: Language and Cognition*, 11(01), 81–93. <https://doi.org/10.1017/S1366728907003227>
- McLaughlin, B. (1984). *Second-language acquisition in childhood. Vol. 1, Preschool children*. (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- McLaughlin, B., & Nayak, N. (1989). Processing a New Language: Does Knowing Other Languages Make a Difference? In H. W. Dechert & M. Raupach (Eds.) *Interlingual Processes* (pp. 5–16). Tübingen: Gunter Narr Verlag.
- Meißner, F. J. (2004). Modelling plurilingual processing and language growth between intercomprehensive languages. In L. Zybatow (Ed.) *Translation in der globalen Welt und neue Wege in der Sprach- und Übersetzer Ausbildung*. (Innsbrucker Ringvorlesung zur Translationswissenschaft II). Frankfurt a.M: Peter Lang, 2004, 31-57.
- Mezzacappa, E. (2004). Alerting, orienting, and executive attention: Developmental properties and sociodemographic correlates in an epidemiological sample of young, urban children. *Child Development*, 75(5), 1373–1386. DOI: 10.1111/j.1467-8624.2004.00746.x
- Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognitive Psychology*, 41(1), 49–100. <https://doi.org/10.1006/cogp.1999.0734>
- Mohanty, A. K. (1994). *Bilingualism in a multilingual society: Psycho-social and pedagogical implications*. Mysore, India: Central Institute of Indian Languages.
- Moore, D. (2006). Plurilingualism and strategic competence in context. *International Journal of Multilingualism*, 3(2), 125–138. <http://dx.doi.org/10.1080/14790710608668392>
- Morales, J., Calvo, A., & Bialystok, E. (2013). Working memory development in monolingual and bilingual children. *Journal of Experimental Child Psychology*, 114(2), 187–202. <https://doi.org/10.1016/j.jecp.2012.09.002>
- Morton, J. B., & Harper, S. N. (2007). What did Simon say? Revisiting the bilingual advantage. *Developmental Science*, 10(6), 719–726. <https://doi.org/10.1111/j.1467-7687.2007.00623.x>
- Mueller, C. W., & Parcel, T. L. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Child Development*, 52(1), 13-30. <http://www.jstor.org/stable/1129211>
- Müller, A. G. & Stanat, P. (2006). Schulischer Erfolg von Schülerinnen und Schülern mit Migrationshintergrund: Analysen zur Situation von Zuwanderern aus der ehemaligen Sowjetunion und aus der Türkei [School success of immigrant students: Analyses of the situation of immigrants from the former Soviet Union and Turkey]. In *Herkunftsbedingte Disparitäten im Bildungswesen: Differenzielle Bildungsprozesse und Probleme der Verteilungsgerechtigkeit* (pp. 221-255). VS Verlag für Sozialwissenschaften.
- Muñoz, C. (2000). Bilingualism and trilingualism in school students in Catalonia. In J. Cenoz & U. Jessner (Eds.) *English in Europe: The Acquisition of a third language* (pp.157-178). Clevedon: Multilingual Matters Ltd.
- Muthén, B. O. & Muthén, L. K. (1998). Mplus (Version 5.21)[Computer software]. Los Angeles, CA.

- Naiman, N., Fröhlich, M., Stern, H., & Todesco, A. (1978). The good language learner. *Research in Education Series*, 7.
- Nayak, N., Hansen, N., Krueger, N., & McLaughlin, B. (1990). Language-Learning Strategies in Monolingual and Multilingual Adults. *Language Learning*, 40(2), 221–244. <https://doi.org/10.1111/j.1467-1770.1990.tb01334.x>
- Neumann, M., Becker, M., & Maaz, K. (2013). Soziale Ungleichheiten in der Kompetenzentwicklung in der Grundschule und der Sekundarstufe I [Social inequality in the achievement development in elementary and secondary school]. *Zeitschrift für Erziehungswissenschaften*. DOI 10.1007/s11618-013-0468-z
- Noble, K. G., Norman, M. F., & Farah, M. J. (2005). Neurocognitive correlates of socioeconomic status in kindergarten children. *Developmental Science*, 8(1), 74–87. DOI: 10.1111/j.1467-7687.2005.00394.x
- OECD. (2010). *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II)*. Retrieved from <http://www.oecd.org/pisa/pisaproducts/pisa2009/pisa2009resultsovercomingsocialbackgroundequityinlearningopportunitiesandoutcomesvolumeii.htm>
- Oller, D. K., & Eilers, R. E. (2002). Balancing interpretations regarding effects of bilingualism: Empirical outcomes and theoretical possibilities. *Child Language and Child Development*, 2, 281–292.
- Oller, D. K., Pearson, B. Z., & Cobo-Lewis, A. B. (2007). Profile effects in early bilingual language and literacy. *Applied Psycholinguistics*, 28(02), 191–230. <https://doi.org/10.1017/S0142716407070117>.
- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge university press.
- Ortega, L., & Iberri-Shea, G. (2005). Longitudinal research in second language acquisition: Recent trends and future directions. *Annual Review of Applied Linguistics*, 25, 26–45. <https://doi.org/10.1017/S0267190505000024>
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. TESOL Quarterly, 27: 121–122. doi:10.2307/3586958
- Oxford, R. (1999). Relationships between second language learning strategies and language proficiency in the context of learner autonomy and self-regulation. *Revista Canaria de Estudios Ingleses*, 38, 108–26.
- Oxford, R. L. (2002). Language learning strategies in a nutshell: Update and ESL suggestions. In J. Richards & W. Renandya (Eds.) *Methodology in language teaching: An anthology of current practice* (pp.124-132). Cambridge: Cambridge University Press.
- Oxford, R., Nyikos, M., & Ehrman, M. E. (1988). Vive la Difference? Reflections on Sex Differences in Use of Language Learning Strategies. *Foreign Language Annals*, 21(4), 321–329. DOI: 10.1111/j.1944-9720.1988.tb01076.x
- Paap, K. R., & Greenberg, Z. I. (2013). There is no coherent evidence for a bilingual advantage in executive processing. *Cognitive Psychology*, 66(2), 232–258. <https://doi.org/10.1016/j.cogpsych.2012.12.002>
- Parker, C. C. (2011). *An investigation of differentiated instruction: Closing the achievement gap for elementary English language learners*. (Doctoral Dissertation: Capella University). Retrieved from <http://search.proquest.com/openview/fa2d0d72a8b98fb394e92b3628ed9643/1?pq->

- origsite=gscholar&cbl=18750&diss=y
- Peal, E., & Lambert, W. E. (1962). The relation of bilingualism to intelligence. *Psychological Monographs: General and Applied*, 76(27), 1–23.  
<http://psycnet.apa.org/doi/10.1037/h0093840>
- Pearson, B. Z. (2007). Social factors in childhood bilingualism in the United States. *Applied Psycholinguistics*, 28(03), 399–410. <https://doi.org/10.1017/S014271640707021X>
- Peets, K. F., & Bialystok, E. (2015). Academic discourse: Dissociating standardized and conversational measures of language proficiency in bilingual kindergarteners. *Applied psycholinguistics*, 36(02), 437–461. <https://doi.org/10.1017/S0142716413000301>
- Piaget, J. (1929). *The child's conception of the world*. London: Routledge & Kegan Paul.
- Pimsleur, P. (1966). Testing foreign language learning. *Trends in Language Teaching*, 175–214.
- Place, S., & Hoff, E. (2011). Properties of dual language exposure that influence 2-year-olds' bilingual proficiency. *Child development*, 82(6), 1834–1849. DOI: 10.1111/j.1467-8624.2011.01660.x
- Pöhlmann, C., Haag, N., & Stanat, P. (2013). Zuwanderungsbezogene Disparitäten. In H. A. Pant, P. Stanat, U. Schroeders, A. Roppelt, T. Siegle, & C. Pöhlmann (Eds.), *IQB-Ländervergleich 2012. Mathematische und naturwissenschaftliche Kompetenzen am Ende der Sekundarstufe I* (pp. 297–329). Münster: Waxmann.
- Pratt, C., & Grieve, R. (1984). Metalinguistic Awareness and Cognitive Development. In D. W. E. Tunmer, D. C. Pratt, & D. M. L. Herriman (Eds.), *Metalinguistic Awareness in Children* (pp. 128–143). Berlin: Springer Verlag.
- Prior, A., & Gollan, T. H. (2011). Good language-switchers are good task-switchers: Evidence from Spanish–English and Mandarin–English bilinguals. *Journal of the International Neuropsychological Society*, 17(04), 682–691.  
<https://doi.org/10.1017/S1355617711000580>
- Proctor, C. P., August, D., Snow, C., & Barr, C. D. (2010). The interdependence continuum: A perspective on the nature of Spanish–English bilingual reading comprehension. *Bilingual Research Journal*, 33(1), 5–20.  
<http://dx.doi.org/10.1080/15235881003733209>
- Psaltou-Joycey, A., & Kantaridou, Z. (2009). Plurilingualism, language learning strategy use and learning style preferences. *International Journal of Multilingualism*, 6(4), 460–474. <https://doi.org/10.1080/14790710903254620>
- Ramsay, R. M. G. (1980). Language-learning approach styles of adult multilinguals and successful language learners. *Annals of the New York Academy of Sciences*, 345(1), 73–96. DOI: 10.1111/j.1749-6632.1980.tb51118.x
- Ransdell, S., Barbier, M.L., & Niit, T. (2006). Metacognitions about Language Skill and Working Memory among Monolingual and Bilingual College Students: When Does Multilingualism Matter? *International Journal of Bilingual Education and Bilingualism*, 9(6), 728–741. <https://doi.org/10.2167/beb390.0>
- Rauch, D., Jurecka, A., & Hesse, H. G. (2010). Für den Drittspracherwerb zählt auch die Lesekompetenz in der Herkunftssprache: Untersuchung der Türkisch-, Deutsch- und Englisch-Lesekompetenz bei Deutsch-Türkisch bilingualen Schülern. *Zeitschrift Für Pädagogik*, 55, 78–100.
- Rauch, D. P., Naumann, J., & Jude, N. (2011). Metalinguistic awareness mediates effects of

- full biliteracy on third-language reading proficiency in Turkish–German bilinguals. *International Journal of Bilingualism*, 16(4), 402–418.  
<http://dx.doi.org/10.1177%2F1367006911425819>
- Ream, R. K., & Palardy, G. J. (2008). Reexamining social class differences in the availability and the educational utility of parental social capital. *American Educational Research Journal*, 45(2), 238–273. <http://dx.doi.org/10.3102%2F0002831207308643>
- Reder, F., Marec-Breton, N., Gombert, J. E. and Demont, E. (2013), Second-language learners' advantage in metalinguistic awareness: A question of languages' characteristics. *British Journal of Educational Psychology*, 83, 686–702.  
 doi:10.1111/bjep.12003 <https://doi.org/10.1111/bjep.12003>
- Renzulli, J. S. (2013). The multiple menu model: a guide for developing differentiated curriculum. In C.M. Callahan and H.L. Hertberg-Davis (Eds.). *Fundamentals of gifted education: Considering multiple perspectives*. (pp. 263–276). New York, NY: Routledge.
- Reese, L., Garnier, H., Gallimore, R., & Goldenberg, C. (2000). Longitudinal Analysis of the Antecedents of Emergent Spanish Literacy and Middle-School English Reading Achievement of Spanish-Speaking Students. *American Educational Research Journal*, 37(3), 633–662. <https://doi.org/10.3102/00028312037003633>
- Ricciardelli, L. A. (1989). Metalinguistic Awareness as a Unitary Construct, and its Relation to General Intellectual Development. *Rassegna Italiana Di Linguistica Applicata*, 21, 19–40.
- Ricciardelli, L. A. (1992). Bilingualism and cognitive development in relation to threshold theory. *Journal of Psycholinguistic Research*, 21(4), 301–316.  
<https://doi.org/10.1007/BF01067515>
- Roberts, A. (2011). *The role of metalinguistic awareness in the effective teaching of foreign languages*. Oxford: Peter Lang.
- Roehr, K., & Gánem-Gutiérrez, G. A. (2009). The status of metalinguistic knowledge in instructed adult L2 learning. *Language Awareness*, 18(2), 165–181.  
<http://dx.doi.org/10.1080/09658410902855854>
- Rolff, H. G., Leucht, M., & Rösner, E. (2008). Sozialer und familialer Hintergrund. DESI-Konsortium (Eds.). *Unterricht und Kompetenzerwerb in Deutsch und Englisch. Ergebnisse der DESI-Studie* (pp. 283–300). Weinheim: Beltz.
- Romaine, S. (2008). The Bilingual and Multilingual Community. In T. Bhatia & W. Ritchie (Eds.) *The handbook of bilingualism* (pp. 385–406). Malden, MA: Blackwell Publishing.
- Roscigno, V. J., & Ainsworth-Darnell, J. W. (1999). Race, cultural capital, and educational resources: Persistent inequalities and achievement returns. *Sociology of education*, 72, 158–178. doi:10.2307/2673227
- Rosenblum, T., & Pinker, S. A. (1983). Word Magic Revisited: Monolingual and Bilingual Children's Understanding of the Word-Object Relationship. *Child Development*, 54(3), 773–780. <https://doi.org/10.2307/1130064>
- Rubin, J. (1975). What the "Good Language Learner" Can Teach Us. *TESOL Quarterly*, 9(1), 41–51. doi:10.2307/3586011
- Rueda, M. R., Fan, J., McCandliss, B. D., Halparin, J. D., Gruber, D. B., Lercari, L. P., & Posner, M. I. (2004). Development of attentional networks in childhood.

- Neuropsychologia*, 42(8), 1029–1040.  
<https://doi.org/10.1016/j.neuropsychologia.2003.12.012>
- Rupp, A. A., Vock, M., Harsch, C., & Köller, O. (2008). *Developing Standards-based Assessment Tasks for English as a First Foreign Language: Context, Processes, and Outcomes in Germany*. Waxmann Verlag.
- Saalbach, H., Gunzenhauser, C., Kempert, S., & Karbach, J. (2016). Der Einfluss von Mehrsprachigkeit auf mathematische Fähigkeiten bei Grundschulkindern mit niedrigem sozioökonomischen Status. *Frühe Bildung*, 5(2), 73–81.  
<https://doi.org/10.1026/2191-9186/a000255>
- Sagasta Errasti, M. P. (2003). Acquiring writing skills in a third language: The positive effects of bilingualism. *International Journal of Bilingualism*, 7(1), 27–42.  
<http://dx.doi.org/10.1177%2F13670069030070010301>
- Sanders, M. & Meijers, G. (1995). English as L3 in the elementary school. *ITL: Review of Applied Linguistics*, 107(8), 59–78.
- Sanz, C. (2000). Bilingual education enhances third language acquisition: Evidence from Catalonia. *Applied Psycholinguistics*, 21(01), 23–44.
- Sanz, C. (2008). Predicting enhanced L3 learning in bilingual contexts: The role of biliteracy. In C. Pérez-Vidal, M. Juan-Garau & A. Bel (Eds.) *A portrait of the young in the new multilingual Spain* (pp.220–240). Clevedon: Multilingual Matter Ltd.
- Sanz, C. (2012). Multilingualism and Metalinguistic Awareness. In *The Encyclopedia of Applied Linguistics*. Oxford: Blackwell Publishing Ltd.
- Sawyer, M., & Ranta, L. (2001). Aptitude, individual differences, and instructional design. In P. Robinson (Ed.) *Cognition and second language instruction* (pp.319–353). Cambridge: Cambridge University Press.
- Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147–177. doi: 10.1037/1082-989X.7.2.147.
- Scheele, A. F., Leseman, P. P., & Mayo, A. Y. (2010). The home language environment of monolingual and bilingual children and their language proficiency. *Applied Psycholinguistics*, 31(01), 117–140. <https://doi.org/10.1017/S0142716409990191>
- Scheerens & Bosker, 1997. *The foundations of school effectiveness*. Oxford: Pergamon Press.
- Schmidt, R. (1994). Deconstructing consciousness in search of useful definitions for applied linguistics. *Consciousness in Second Language Learning*, 11, 237–326.
- Schmidt, R. (2007). Attention. In P. Robinson (Ed.) *Cognition and Second Language Instruction* (pp.3–32). Cambridge: Cambridge University Press.
- Schoonen, R., van Gelderen, A., de Glopper, K., Hulstijn, J., Snellings, P., Simis, A., & Stevenson, M. (2002). Linguistic knowledge, metacognitive knowledge and retrieval speed in L1, L2 and EFL writing. In S. Ransdell & M. Barbier (Eds.) *New Directions for research in L2 writing* (pp. 101–122). Dordrecht: Kluwer Academic Publishers.
- Schwippert, K., Wendt, H., & Tarelli, I. (2012). Lesekompetenzen von Kindern mit Migrationshintergrund im internationalen Vergleich [Reading comprehension of children with immigration background in the international comparison]. In W. Bos, I. Tarelli, A. Bremerich-Vos, & K. Schwippert (Eds.) *Iglu 2011: Lesekompetenzen von Grundschulkindern in Deutschland im internationalen Vergleich* (pp. 191–208). Berlin: Waxmann.



- Segalowitz, N. (1977) Psychological perspectives on bilingual education. In B. Spolsky and R. Cooper (Eds.) *Frontiers of Bilingual Education* (pp. 119–158). Rowley, MA: Newbury House.
- Seliger, H. W. (1975). Inductive method and deductive method in language teaching: A re-examination. *IRAL—International Review of Applied Linguistics in Language Teaching*, 13, 1–18. <https://doi.org/10.1515/iral.1975.13.1-4.1>
- Senate Administration for Education, Science & Research, 2008. Bildungsbericht [Educational Report]. *Berlin.de: Das offizielle Hauptstadtportal*. Retrieved: July 17, 2013 from <http://www.berlin.de/sen/bildung/bildungsstatistik/>
- Serafini, E. J., & Sanz, C. (2016). Evidence for the decreasing impact of cognitive ability on second language development as proficiency increases. *Studies in Second Language Acquisition*, 38(4), 607–646. <https://doi.org/10.1017/S0272263115000327>
- Singleton, D. (2001). Age and second language acquisition. *Annual Review of Applied Linguistics*, 21, 77–89. <https://doi.org/10.1017/S0267190501000058>
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of educational research*, 75(3), 417–453. <http://dx.doi.org/10.3102%2F00346543075003417>
- Skehan, P. (2002). Theorizing and updating aptitude. In P. Robinson (Ed.) *Individual differences and instructed language learning* (pp. 69–94). Amsterdam: John Benjamins Publishing.
- Skehan, P. (2016). Foreign language aptitude, acquisitional sequences, and psycholinguistic processes. In G. Granena, D. Jackson, & Y. Yilmaz (Eds.) *Cognitive Individual Differences in L2 Processing and Acquisition* (pp.17–40). Amsterdam: John Benjamins.
- Skutnabb-Kangas, T. (1981). *Bilingualism or not: The education of minorities*. Clevedon: Multilingual Matters Ltd.
- Skutnabb-Kangas, T. (1984). Why aren't all children in the Nordic countries bilingual? *Journal of Multilingual & Multicultural Development*, 5(3–4), 301–315. <http://dx.doi.org/10.1080/01434632.1984.9994161>
- Sparks, R., Patton, J., Ganschow, L., & Humbach, N. (2009). Long-Term Crosslinguistic Transfer of Skills From L1 to L2. *Language Learning*, 59(1), 203–243. doi:10.1111/j.1467-9922.2009.00504.x
- Spees, L. P., Potochnik, S., & Perreira, K. M. (2016). The academic achievement of Limited English Proficient (LEP) youth in new and established immigrant states: Lessons from the National Assessment of Educational Progress (NAEP). *Education Policy Analysis Archives*, 24, 99.
- Stanat, P., Becker, M., Baumert, J., Lüdtke, O., & Eckhardt, A. G. (2012). Improving second language skills of immigrant students: A field trial study evaluating the effects of a summer learning program. *Learning and Instruction*, 22(3), 159–170. <https://doi.org/10.1016/j.learninstruc.2011.10.002>
- Stanat, P., & Christensen, G. (2006). *Where immigrant students succeed: A comparative review of performance and engagement in PISA 2003*. Organisation for Economic Co-operation and Development.
- Stanat, P., Rauch, D., & Segeritz, M. (2010). Schülerinnen und Schüler mit Migrationshintergrund. In E. Klieme, C. Artelt, J. Hartig, N. Jude, O. Köller, M.

- Prenzel, W. Schneider, & P. Stanat (Eds.), *PISA 2009. Bilanz nach einem Jahrzehnt* (pp. 200–230). Münster: Waxmann.
- StataCorp, L. P. (2007). *STATA*. Texas, USA.
- Statistisches Bundesamt. (2012). *Statistisches Jahrbuch 2012*. Wiesbaden: Statistisches Bundesamt.
- Steiner, G. (1998). *After Babel: Aspects of language and translation*. Oxford: Oxford University Press.
- Stern, H. H. (1983). *Fundamental concepts of language teaching: Historical and interdisciplinary perspectives on applied linguistic research*. Oxford: Oxford University Press.
- Subban, P. (2006). Differentiated instruction: A research basis. *International education journal*, 7(7), 935-947. Retrieved from <https://eric.ed.gov/?id=EJ854351>
- Swain, M., Lapkin, S., Rowen, N., & Hart, D. (1990). The role of mother tongue literacy in third language learning. *Language, culture and curriculum*, 3(1), 65-81. <http://dx.doi.org/10.1080/07908319009525073>
- Ter Kuile, H., Veldhuis, M., Van Veen, S. C., & Wicherts, J. M. (2011). Bilingual education, metalinguistic awareness, and the understanding of an unknown language. *Bilingualism: Language and Cognition*, 14(02), 233–242. <https://doi.org/10.1017/S1366728910000258>
- Thomas, J. (1988). The role played by metalinguistic awareness in second and third language learning. *Journal of Multilingual & Multicultural Development*, 9(3), 235–246. <http://dx.doi.org/10.1080/01434632.1988.9994334>
- Thomas-Sunesson, D., Hakuta, K., & Bialystok, E. (2016). Degree of bilingualism modifies executive control in Hispanic children in the USA. *International Journal of Bilingual Education and Bilingualism*, 1–10. <http://dx.doi.org/10.1080/13670050.2016.1148114>
- Thordardottir, E. (2011). The relationship between bilingual exposure and vocabulary development. *International Journal of Bilingualism*, 15(4), 426-445. <http://dx.doi.org/10.1177%2F1367006911403202>
- Tunmer, W. E., & Herriman, M. L. (1984). The development of metalinguistic awareness: A conceptual overview. In W.E. Tunmer, C. Pratt, & M.L. Herriman (Eds.) *Metalinguistic Awareness in Children* (pp. 1-22). Berlin: Springer.
- Tunmer, W.E., & Myhill, M. (1984). Metalinguistic awareness and bilingualism. In W.E. Tunmer, C. Pratt, & M.L. Herriman (Eds.) *Metalinguistic Awareness in Children* (pp. 169-187). Berlin: Springer.
- United Nations. (2013). *International Migration Report*. Retrieved from [http://www.un.org/en/development/desa/population/publications/pdf/migration/migrationreport2013/Full\\_Document\\_final.pdf](http://www.un.org/en/development/desa/population/publications/pdf/migration/migrationreport2013/Full_Document_final.pdf)
- Van Gelderen, A., Schoonen, R., De Glopper, K., Hulstijn, J., Snellings, P., Simis, A., & Stevenson, M. (2003). Roles of linguistic knowledge, metacognitive knowledge and processing speed in L3, L2 and L1 reading comprehension: A structural equation modeling approach. *International Journal of bilingualism*, 7(1), 7-25. <http://dx.doi.org/10.1177%2F13670069030070010201>
- Vygotsky, L. S. (2012). *Language and thought*. Cambridge: Massachusetts Institute of Technology Press. (Original work published in 1934).

- Verhoeven, L. (2007). Early bilingualism, language transfer, and phonological awareness. *Applied Psycholinguistics*, 28(03), 425-439. <https://doi.org/10.1017/S0142716407070233>
- Verreyt, N., Woumans, E., Vandelanotte, D., Szmalec, A., & Duyck, W. (2016). The influence of language-switching experience on the bilingual executive control advantage. *Bilingualism: Language and Cognition*, 19(01), 181-190. <https://doi.org/10.1017/S1366728914000352>
- Wagner, D., Spratt, J., & Ezzaki, E. (1989). Does learning to read in a second language always put the child at a disadvantage? Some counterevidence from Morocco. *Applied Psycholinguistics*, 10(1), 31-48. <https://doi.org/10.1017/S0142716400008407>
- Wald, B. (1984). A sociolinguistic perspective on Cummins' current framework for relating language proficiency academic achievement. Paper presented at the Language Proficiency Assessment Symposium, Warrenton, VA. Retrieved from <http://files.eric.ed.gov/fulltext/ED240882.pdf#page=90>
- Walter, O. (2008). Herkunftssassoziierte Disparitäten im Lesen, der Mathematik und den Naturwissenschaften: ein Vergleich zwischen PISA 2000, PISA 2003 und PISA 2006 [Background-associated disparity in reading, mathematics, and science: a comparison between PISA 2000, 2003 & 2006]. *Zeitschrift für Erziehungswissenschaft*, 10, 149-168.
- Weinreich, U. (1953). *Languages in contact: Findings and problems*. New York: Walter de Gruyter.
- Weinstein, C. E., Husman, J., & Dierking, D. R. (2000). Self-regulation interventions with a focus on learning strategies. In M. Boekaerts, P. Pintrich, M. Zeidner, G. (Eds.) *Handbook of self-regulation* (pp.727-747). San Diego, CA: Academic Press.
- Wharton, G. (2000). Language learning strategy use of bilingual foreign language learners in Singapore. *Language Learning*, 50(2), 203–243. doi:10.1111/0023-8333.00117
- Wildhagen, T. (2009). Why does cultural capital matter for high school academic performance? An empirical assessment of teacher-selection and self-selection mechanisms as explanations of the cultural capital effect. *Sociology Quarterly*, 50, 173–200. <http://dx.doi.org/10.1111/j.1533-8525.2008.01137.x>.
- Wu, M. L., Adams, R. J., & Wilson, M. (1998). *ACER ConQuest: Generalised Item Reponse Modelling Software*. Acer Press.
- Yang, S., Yang, H., & Lust, B. (2011). Early childhood bilingualism leads to advances in executive attention: Dissociating culture and language. *Bilingualism: Language and Cognition*, 14(03), 412–422. <https://doi.org/10.1017/S1366728910000611>
- Yelland, G. W., Pollard, J., & Mercuri, A. (1993). The metalinguistic benefits of limited contact with a second language. *Applied Psycholinguistics*, 14(04), 423–444. <https://doi.org/10.1017/S0142716400010687>
- Yoshida, H. (2008). The cognitive consequences of early bilingualism. *Zero to Three*, 29(2), 26–30.
- Zhang, D., & Koda, K. (2013). Morphological awareness and reading comprehension in a foreign language: A study of young Chinese EFL learners. *System*, 41(4), 901-913. <https://doi.org/10.1016/j.system.2013.09.009>
- Zied, K., Phillipe, A., Karine, P., Valerie, H.T., Ghislaine, A., Arnaud, R., & Gall Didier, L. (2004). Bilingualism and adult differences in inhibitory mechanisms: Evidence from a

bilingual stroop task. *Brain and Cognition*, 54(3), 254–256.  
<https://doi.org/10.1016/j.bandc.2004.02.036>

## 9 List of Tables

Table 4.1 Sample means (and standard deviations) of the dependent and control variables for bilingual and monolingual students.....	60
Table 4.2 Sample means (and standard deviations) of the dependent and control variables by language group.....	60
Table 4.3 Multiple regression models explaining English achievement of bilinguals.....	62
Table 4.4 Multiple regression models explaining English achievement of bilingual language groups.....	63
Table 5.1 Students' Language Background.....	84
Table 5.2 Descriptive statistics for selected student characteristics in the main (sixth grade) and follow-up subsample (eighth grade).....	87
Table 5.3 English Language Achievement in the sixth and eighth grade by language group (Means and Standard Deviations).....	88
Table 5.4 Means (and Standard Deviations) of selected familial background characteristics by language group.....	89
Table 5.5 Multiple regression models of English language achievement at sixth and eighth grades controlling for general cognitive abilities, age, gender, socio-economic status, cultural capital and parental education (N=1032).....	90
Table 5.6 Multiple regression models of English language achievement in grade eight controlling for prior achievement in grade 6, general cognitive abilities, age, gender, socio-economic status, cultural capital and parental education (N=1032).....	91
Table 6.1 Sample means (and standard deviations) of the dependent and control variables for bilingual and monolingual students.....	111
Table 6.2 Sample means (and standard deviations) of the dependent and control variables by bilingual groups.....	112
Table 6.3 Multiple regression models explaining English competence achievement in bilinguals and monolinguals.....	115

## 10 List of Figures

Figure 2.1. A model of the relationship between bilingualism, metalinguistic processes and cognitive development, Based on Mohanty, 1994.....	10
Figure 2.2. Research Model: adapted from the second language learning model by Stern, 1983, p. 338.....	24
Figure 4.1. Group differences (with 95% confidence intervals) in English foreign language achievement across different bilingual groups compared with monolingual classmates controlling for individual and familial background characteristics.....	66
Figure 7.1. Research Model: adapted from the second language learning model by Stern, 1983, p. 338.....	125
Figure 7.2. Research Model: adapted from the second language learning model by Stern, 1983, p. 338.....	127