

Candidate 10016

## **Early bilingualism in children – Identifying the effects of early dual language exposure**

A study on children's abilities to acquire several native languages in the early years of language acquisition

Bachelor's project in MLA Språk  
December 2018



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Bachelor's project in MLA språk  
Supervisor: Mila Dimitrova Vulchanova  
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Norwegian University of Science and Technology  
Faculty of Humanities



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## Introduction

*Child bilingualism* is the phenomenon of acquiring two native languages simultaneously and is often the case in bilingual families and communities. It is a topic that receives attention in a wide array of fields, as parents, teachers, politicians and researchers seem to have strong motivations either for or against bilingualism, based on idealistic and emotional involvement. For a long time, the prejudice that monolingualism is the norm and that deviating from that norm could result in confusion both linguistically and emotionally has concerned parents, teachers and law makers. This could lead to situations in which raising children bilingually is not a necessity but rather an option, as with the case of family bilingualism, the family may choose to opt for monolingualism (Meisel, 2004). However, the number of children being raised in bilingual homes is large and growing, which makes it important for linguists to know the processes of bilingual language acquisition (Hoff et al., 2012,). We live in a globalized world where contact between people of different linguistic communities is increasing. As a result of this, bilingualism will be the norm in many children's early language development (Yip and Matthews, 2007).

## Outline

In this thesis, I will look into different features of child bilingualism and how different language competencies can be affected by the dual language input. I will begin by introducing my research question, then looking at the background and established facts about child bilingualism. I will briefly mention some implications and concerns that should be considered as well. In the following discussion section, I will discuss and compare speech perception, word learning, grammatical development and metalinguistic aspects in monolingual and bilingual children. Lastly, I will conclude the thesis by summarizing the most important points made.

## Research question

*What are the effects of dual language exposure in early child bilingualism?*

As stated in the title, this thesis seeks to answer the questions surrounding child bilingualism by comparing it to monolingual language acquisition. I will discuss general theories, patterns

found in studies and research questions that have been answered by looking into different features in language acquisition. The topic is vast and must be limited in a short study like this, however I seek to highlight some of the most important features in child bilingualism.

### Background – what are some stated facts and popular theories?

Humans are born with an incredible ability to acquire the language of their surroundings. Even though the languages around the globe contain great variations, all normal learning children learn to speak their native language. Baker (2001) argues that we can assume that humans are born specially equipped for language learning, as children are able to learn this complex system (or systems in the case of multilinguals) without training, with relative ease within few years. While linguists and cognitive scientists conclude that children must have some head start, nobody knows for sure what kind of knowledge of language the child contains. It probably involves knowledge about features human languages share, sounds and structures they might contain and some strategies for recognizing and discriminating between these sounds and structures. This innate knowledge is called *universal grammar* and is the idea of a language instincts that humans are born with. Also, knowledge of specific languages seems impossible when we think of many languages exist, have existed and will exist in the future. Rather, the innate knowledge must be limited to specific features that are common to all languages, implying that all languages are more similar than they appear. These features should be general enough to be applicable to all the languages children can be exposed to. We know that during the acquisition process, native speakers become highly efficient at detecting single-feature phonetic differences that signal a meaningful change in lexical items, thus recognizing phonological distinctiveness within the native language. At the same time, they become equally efficient at tuning out phonetic sounds and differences that do not signal a change of meaning, or that do not exist in the native language, making it harder for us to learn a second language after early childhood (Tyler et al., 2014). While it is almost impossible for an adult to learn a second language perfectly, it is the norm for children growing up in bilingual homes. Children exposed to two languages can learn them and can early separate between the two languages and are able to learn two phonological systems, two vocabularies and two grammars. However, it has been questioned whether children exposed to more than one language acquire them at the same rate as monolingual children learn one (Hoff et al., 2012). Since we already know that it is unproblematic for children to acquire features of several languages at once, we need to look into a feature still heavily discussed – whether

children in the acquisition process are equally able in both languages their learning as the monolinguals in the same acquisition process.

#### Implications in generalizing results and findings

Every bilingual speaker is different and comes from a different linguistic background with a different amount of bilingual exposure. As we assume that amount of exposure will affect the resulting language competence, it can be hard to generalize between children. Balanced bilingualism (50/50 input from both languages) is most likely not the case in most homes, rather a 70/30 or 60/40 exposure are likely examples that are more common. We can compare findings within the same languages, but we have to be careful beyond that as languages consist of different features acquired at different times in the acquisition process. It is also important to mention that more research still needs to be done on bilingual children as we yet have many questions to answer, some harder than others. As possible languages the child can have are endless – be it Spanish/English, French/German or Norwegian/Hindi, there are many patterns to uncover in this fascinating phenomenon.

## Main body

In this section, I will discuss how some of the language competencies are acquired in monolingual and bilingual children. We will look into some of the questions of how the same neural systems can be used to process two languages while simultaneously marking them as different, greatly covered by Werker and Byers-Heinlein in a collective study from 2008 among with others. As the topic is vast, the arguments will be limited, but touching on important aspects that hopefully answer some of our biggest questions in child bilingualism.

### Speech perception

Language acquisition begins in perception long before the child produces their first word (Werker & Byers-Heinlein, 2008). As briefly mentioned above, we already know that infants are highly efficient at recognizing phones that exist in their native language and become equally efficient in tuning out non-native phones. In 1995, Werker did a study on speech perception on infants to find the critical period for language acquisition. Her findings suggest that babies are born with sensitivities making them *universal listeners* – thus having abilities to discriminate phonemic contrasts in both their native and non-native language that they have



never been exposed to before. When testing the same contrasts on adults, they failed to show similar sensitivities to non-native sounds. Werker found that this universal listener-ability happens early, between the ages 6-8 months. Already by the age of 10-12 months, the sensitivity declines, and children become less detective, showing similar results to the adults in the same experience. Infants stop being universal listeners due to lack of exposure of non-native sounds after their first year. The findings assume that children are biologically equipped to learn all possible languages of the world, not only the native language of the country one is born in. We can therefore conclude that children raised in bilingual homes are likely to develop lasting sensitivities to more sounds than monolingual speakers as input leads to sensitivity and lack of input leads to decline in sensitivity. This can also be evident in tests on non-balanced bilinguals, as they often perform better in the dominant language and show poorer discrimination in the less dominant language, which they have had less exposure to (Werker & Byers-Heinlein, 2008).

Werker & Byers-Heinlein (2008) explain that one of the ways infants can learn to separate between their two languages is via surface phonetic characteristics, one of these being rhythm. Languages can be categorized in rhythmic patterns such as stress-timed (English and German), syllable-timed (French and Spanish) and mora-timed (Japanese). Sensitivity to rhythm evolves rapidly, and by age 4-5 months, monolingual infants can discriminate their native language from another language in the same rhythmical class but cannot discriminate two unfamiliar languages from the same rhythmical class. Hence, the monolingual infant has abilities to discriminate due to the fact that one language is known and the other is different. For a bilingual infant, the discrimination of two languages within the same rhythmical class requires a different kind of processing rather than familiar versus different, as both languages are native. As bilingual infants from early on are able to distinguish between fairly similar languages like Catalan and Spanish, the familiar versus different distinction is not relevant for bilinguals, so another strategy must be used. When this phenomenon was tested on Spanish versus English, the monolingual infants discriminated the languages by orienting more rapidly to the native language. However, it turned out that the bilingual Spanish/Catalan infants demonstrated discrimination by orienting more rapidly to the non-native language, thus showing a completely opposite way of orienting between the known and unknown. Rhythmical cues can undoubtedly help bilingual infants in discriminating between the languages they are acquiring, and the authors also claim that it is possible that surface rhythm could bootstrap acquisition of syntax, helping the children acquire the two separate grammars.

In the same study, Werker and Byers-Heinlein found that even visual speech can be an additional cue for language separation. In their experiment, they found that bilinguals continue to be able to discriminate between two languages from different rhythmical classes just by watching silent faces speak, long after this ability disappears for the monolinguals (2008).

Lastly, as bilingual infants need to distinguish and separate the input into two different languages, monolinguals can treat all input as a single language. *Phonotactics*, the rules governing combinations of phonemes, is learned differently in monolinguals and bilinguals. Monolinguals can use absolute frequency information and distributional statistics to learn the patterns of their native language as they only have to focus on the elements and features of one language. When this phenomenon was tested on Spanish/Catalan bilinguals, the Catalan-dominant infants tended to show phonotactic preferences similar to those of Catalan monolinguals, while those who were Spanish-dominant showed preference between that of Spanish and Catalan monolinguals, suggesting that the differences in exposure to the language has consequences for language learning (Werker & Byers-Heinlein, 2008). Werker and Byers-Heinlein also discuss an experiment comparing bilingual English/French infants to monolingual English and French infants that found that the bilinguals were able to repeat words in French similarly to the monolingual French children in a French context, and English similarly to the English monolinguals in an English context. These distinct pronunciation patterns are understood to reveal that the bilingual children possess separate phonological systems for each language.

### Word learning

Another aspect of language acquisition is the learning of words, the most apparent aspect being that while monolinguals can learn one word to equal one lexical meaning, bilinguals need at least two words to equal one lexical meaning. Werker and Byers-Heinlein (2008) explain this as a complex operation in which the infant pulls out words of the stream of speech, learn their phonetic forms, links that form to meaning, assigns a grammatical class and linking information about the word in the mental lexicon. When the child is bilingual, they have to apply these processes to two different languages to establish two separable mental lexicons. Also, the language exposure in bilinguals is split into two languages, meaning they will most likely experience less input in each language than a monolingual will

in their only language. Children growing up bilingual need to learn two sets of phonological categories and vocabularies. Werker and Byers-Heinlein (2008) mention one of the more recent studies done on bilingual infants with different native languages that found that a different developmental pattern was found than for monolingual children. As predicted since the bilingual children faces more complex challenges in acquiring vocabulary, they succeeded later than monolinguals in learning similar sounding words – around age 20 months compared to ages between 14-17 months. This is one of many studies that find that vocabulary learning happens later in bilingual children.

### Grammatical development

In their study comparing vocabulary size and range for monolingual and bilingual speakers of English and Spanish, Hoff et al. (2012) argue that grammatical development is slower in early bilingual development compared to monolingual grammatical development. Meisel (2004) also mention that the ability to differentiate between the bilingual's grammatical systems is a concern for those that oppose bilingualism. The reason is likely due to the fact that bilinguals tend to mix between languages, even in a single utterance. This has led to a belief that bilinguals are unable to keep the languages apart. And although research already back in 1970 agreed that children eventually learn to separate their languages without the need of either effort or pedagogical support, this is still an issue for parents and educators who fear that the period of not being able to separate the languages will lead to confusion and ungrammatical language use (Meisel, 2004). Meisel mentions some structural properties bilinguals are likely to have more issues in acquiring than monolinguals. Structural ambiguity, meaning constructions that allows more than one grammatical interpretation, is an area that is vulnerable for cross-linguistic interaction. When one language exhibit ambiguity, bilingual learners are predicted to transfer the unambiguous feature from the to the language with ambiguous feature, most likely to make knowledge of the language easier. Meisel also adds that wrong usage features tend to fade out as syntactic knowledge develops, making it difficult to state that bilingualism has lasting effects on grammar acquisition.

The *poverty of the dual stimulus* is also an interesting area to look into in terms of grammar acquisition. Yip and Matthews (2007) discuss the theory evolving around the *poverty of the stimulus* in first language acquisition which is also highly relevant for dual language input. It relates to the negative evidence of language that children do not learn by input. Despite not

being presented with ungrammatical structures, children somehow succeed in acquiring the target grammar rapidly and correctly. Also, as bilinguals are exposed to less input in each of the languages compared to what a monolingual child is to their native language, the process of acquiring a target grammar solely based on input is a more challenging process, especially so when the bilingual receives a lot less input in one of the languages. Yip and Matthews do find that bilinguals use longer time to learn certain features of syntactic structures, like the obligatoriness of overt objects in English transitive verbs which is slower and less steady compared to English monolinguals. Yip & Matthews also argue that even a 50/50 distribution of dual input in the native languages does not necessarily mean that the child will acquire a perfect bilingualism as some languages are harder to acquire and require a longer learning process than others. However, all aforementioned linguists agree that the rapid and correct learning pattern children expose does suggest that children are equipped with a universal grammar or some other innate knowledge of language.

#### Acquisition pace and amount of exposure

To underline what we have seen in terms of vocabulary and grammar acquisition, I will include some interesting findings from Hoff et al.'s research from 2011 where they compared monolingual English-speaking children with bilingual Spanish and English-speaking children. The research builds on earlier studies and hypotheses on bilingual acquisition pace, and was tested on young children, at ages 1;10, 2;1 and 2;6. Their goal was to test two hypotheses: (1) that children exposed to only one language will acquire that language more rapidly than children exposed to two languages will acquire each of those languages; and (2) that in children exposed to two languages, the rate of development of each language will vary as a function of the children's relative amount of exposure (Hoff, 2011).

What we see from her results is that there are differences in the children's ability to produce language in monolinguals and bilinguals English/Spanish. As assumed, English monolingual children had a larger vocabulary and ability to produce complex English sentences at an earlier age than English and Spanish bilinguals. What we also see is that input to the language is very important. Bilingual children with more English dominance in their homes had larger vocabulary in English and were able to produce complex sentences earlier than those with a balanced English and Spanish input and those with a Spanish dominated input. Those with a Spanish dominated input scored lowest on vocabulary and complex sentence construction in

English, but then again highest in Spanish, where those with balanced input and English dominated input again scored lower. Age is also a very important consequence as we see that the differences in result seem to largely fade out in time. Both of their initial hypotheses were supported in the data (Hoff et al., 2011). These findings propose that children exposed to two languages do not acquire language at the same rate as monolinguals. Vocabulary development, grammatical development, timing of the achievement of milestones of producing word combinations are affected by the dual language input. However, the normal range of variation rate for monolinguals within language development is large, and the distributions of single-language skill levels in monolingual and bilingual groups overlap, meaning that the results are not worrisome. Importantly, they also found that while acquisition of two languages simultaneously takes longer than only one, it does not take twice as long. Bilingual children learn words at the same rate as monolinguals, but their word learning is divided between two languages, thus taking longer. Lastly, we see the importance of language dominance in bilingualism as exposure definitely matters. The language the children are more exposed to will be the one where they develop skills faster, unless the balance of input between the two are perfectly balanced.

The research finds that monolingually developing children earlier produce advance language than the bilingually developing children on measures of both vocabulary and grammar in single language comparisons (Hoff et al., 2011). However, Werker and Byers-Heinlein (2008) argue that in the case of monolingual infants, each concept is normally linked to a single word, while bilingual infants usually understand and make translation equivalents between the languages, *cross-language synonyms*, from an early age. The result of this is that the bilingual child's total vocabulary size will not be representative to their conceptual vocabulary, meaning the number of nameable objects the child is conscious of. This makes comparison of vocabulary size measures complicated, as done by Hoff et al. above.

### Metalinguistic skills – language mixing

Since the spoken and written production of the bilingual child is not representative of the child's knowledge of their languages, we need to consider the metalinguistic features the child possesses as well. We have seen above that bilingual children are very early able to distinguish between the two languages they are acquiring. The acquisition of two native languages give the children some advantages that monolinguals lack, like increased sound, rhythmical and

visual sensitives. We can look at one of the metalinguistic skills bilinguals possess by considering language mixing, which we assume say something about the speaker's linguistic knowledge. Meisel (2004) explain this feature that we call *code switching* as a form of language use determined by a complex network of sociolinguistic variables that are constrained by grammatical properties of the utterances, depicting the speaker's social skills. He argues that code switching is used more by those who are most at ease and competent in both languages.

As distinguishing between code switching and language mixing is hard in young children, Meisel suggest that children start code switching at an early age in accordance to their addressee, while later adapting to other sociolinguistic requirements. Language mixing around 2;0 or soon after can for the most part be explained as code switching (Meisel, 2004). It has previously been suspected that code switching decreases with increasing competence – this is not the case. Early language mixing is probably not code switching but can be result of grammatical fusing since it usually involves single words and happens so early in the acquisition process that it is not likely that the child yet has a proper grammar and therefore may not be able to separate their language output. Meisel suggests that early language mixing is not code switching but is rather an indication that the child is not yet able to separate between their languages. The early bilingual language mixing also has different patterns than adult language mixing, which is more consistent, which Meisel argues to indicate that the child is not yet fully aware of their two separate languages. However, he still agrees that awareness of bilingualism develops early, and already at the age 2;0 the child is able to adapt the language use to the addressee as they become more aware of their bilingualism. The fact that young bilinguals mix languages is more than anything a sign that the child shows sensitive and adaptability to the linguistic behavior of their environment.

## Conclusion

We have seen that the patterns in language acquisition in bilingual children is mostly comparable to those in monolingual children. Still, there are differences that indicates important distinctions and can tell us something about how our brains adapt to the different language input situations (Werker & Byers-Heinlein, 2008). The findings from bilingual versus monolingual language acquisition research also proves that we are perfectly capable of learning more than one native language. We see that children are from infancy able to learn

two phonological systems, two vocabularies and two grammars and are able to distinguish between them much earlier than was presumed earlier, which resulted in false stereotypes and condescending attitudes towards bilingual children.

In Hoff et al.'s study comparing vocabulary size and sentence forming in bilingual and monolingual children, they concluded that monolingually developing children are significantly more advanced than the bilingually developing children on measures of both vocabulary and grammar in single language comparisons. Importantly though, they were comparable on a measure on total vocabulary. Also, as suggested by Werker and Byers-Heinlein, children have conceptual knowledge about their language which is hard to test compared with utterances the children produce. They therefore add that bilingual children often have more knowledge about their two languages than they are able to portray.

Another astonishing feature that have been discussed is the fact that children end up being fluent speakers of their native languages all though input is imperfect and incomplete. As the poverty of the stimulus/dual stimulus argument suggests, children develop a correct language rapidly without being presented with certain features or negative evidence of ungrammaticality, which again suggest an innate knowledge of possible word order and structures (Werker & Byers-Heinlein, 2008). We have also seen that bilinguals often struggle more with the acquisition of certain grammatical features, but they eventually end up with the correct structure, only a bit slower than monolinguals. In addition, code switching as a metalinguistic skill proves that bilingual children from early on have deep knowledge of their two native languages and are able to adapt their language use to addressees and social context, giving them certain advantages over their monolingual peers.

Lastly, we can see that there are different views in research also, as we see that Werker and Byers-Heinlein on the one side argue that children are able to separate between the two languages that they are acquiring from infancy, while Meisel on the other hand argue that children are not aware of their bilingualism until they are around 2 years old, and that language mixing before that is an evidence to this as it is different from adult code switching. However, all the studies we have discussed here agree that bilingualism is overall very positive for the children that are lucky enough to be born in families or communities using more than one language.

There are a lot of personal opinions, but importantly, also a lot of research covering the topic I have discussed in this thesis. The belief that monolingualism should be the norm is luckily becoming outdated, as it should be, and bilingualism should be encouraged in homes, communities and schools where it is the case as it undoubtedly brings along advantages for the bilingual children. As linguist François Grosjean famously stated in 1989; “the bilingual is not two monolinguals in one person” (Yip & Matthews, 2007, p. 4). A bilingual is not the sum of two complete or incomplete monolinguals, but rather an integrated whole with a unique linguistic profile. The ability to learn more than one native language is definitely within the human capacity (Yip & Matthews, 2007). There is no doubt that children have an astonishing ability to acquire the language of their surroundings, and when surrounded by more than one, they will learn them.



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