Saying words out loud helps (sometimes)

Experiment with four to six year old children learning words in a new language

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Preface

The idea for this Master Thesis was originated in a course I followed during the master Dutch Linguistics. The course, Early Language Perception and Production, was given by Professor Paula Fikkert and made me become acquainted in early language learning. Language is a fascinating phenomenon and it was great to hear more about how children learn language.

Afterwards, Paula Fikkert agreed to supervise me while writing this thesis. I would like to thank her for this. I would also like to thank Tania Zamuner, who was my second reader. To the both of you: thank you very much for your inspirational classes, your own papers I enjoyed reading and your comments on earlier versions of this thesis.

In addition, I would like to thank my boyfriend Bart, who was always there to read my earlier versions and respond to them. Even though he has no clue about linguistics or second language learning, he helped me write a better thesis.

Merel Stoop, July 2016

Abstract

This research aims to find out whether saying words out loud is the most favorable way for four to six your old children to learn words in a new language. In an experiment, 18 Dutch children with no knowledge of French were taught six common French words. The children heard some words only auditorily, while other words were presented auditorily, and additionally had to be repeated by the children. In the retention test after the learning phase, children were asked to say some words out loud (production) and had to identify other words (pictures) by pointing to the correct picture (perception). Results show that saying words out loud has an influence on the ability of four to six year old children to learn new words. When the retention task involves pointing to the correct picture, differences in conditions (listening vs. listening plus repeating) are not significant, but they indicate that listening plus repeating are beneficial for the children's retention. When the retention task involves producing the words, four to six year old children struggle. Only some of them are able to do this. The results seem significant, but are hard to interpret. The differences between perception and production in the retention tasks are significant. Both the children in the perception task (pointing at a picture, either after the heard only and hear and repeat condition) scored better than the children in the production task (saying the words out loud, either after the heard only and hear and repeat condition).

Introduction

What is the best way to learn new words in a second or new language? And what is the best age to learn a language? Most researchers claim that adults can learn faster than infants, but that children have an advantage in learning a language when it comes to reaching native like levels of language acquisition (Hyltenstam & Abrahamsson, 2003). A lot of research has focused on the best way to learn a language. Most research is focusing on very young infants (baby's) and adults, or on children with reading or hearing difficulties. This research focuses on four to six year old children without reading or hearing difficulties and is aiming to find out if saying words out loud is the most favorable way of learning new words in a second language. This will be examined in a perception task (pointing at a picture of a newly taught word) and in a production task (saying the newly taught words out loud). The introduction contains a brief overview of already existing research.

The Canadian Accelerative Integrated Method (AIM) is a method that was created in Canada, in order to help English speaking children learn French at primary and secondary school. The method claims that it is better to start immediately with speaking and listening in a new language before even understanding the language itself. Gestures are used to enhance this process. The thoughts behind the method are that proficiency (understanding and speaking) will develop immediately when you start learning a language with speaking and listening (Maxwell, 2001; Blomjous-van der Velde, 2011). Maxwell (2001) tested schools that used AIM and compared the results of the students to students of schools that did not use AIM. Schools that did use AIM show positive results. Students in the group that received instruction through AIM (an instruction in French before the children even could understand some French) were significantly more competent in both comprehension and productive use of the language than students in the other group (here the approach was thematic).

Lobo (2013) investigated Dutch group 1 and group 3 children who were taught English with help of Content and Language Integrated Learning (CLIL). In practice this meant that these children had their gymnastics and/or crafts lessons in English. The new language was integrated in their usual class. The results show that mainly the group 3 children benefit from the lessons in English. The children indicate that they can better speak and understand English after the lessons (there were 20 lessons of 30 minutes given by a native speaker of English). The success was tested by interviewing the children and the teachers. The group 1 children had problems with the duration of the lessons and where therefore less positive than the group 3 children.

Bosman (2004) tested if saying words out loud improved children's spelling. Seven-year-old children (group 3) had to practice twelve Dutch words in different ways. They had to read them out loud, copy them in writing, read the word out loud and then choose the correct written grapheme, say the word out loud and then dictate it by heart and looking at cards with words and then spell the word. Copying the words seemed to be the most effective method to help children use the correct spelling. Also reading the word out loud and reading the words out loud and then choose the correct grapheme did improve the spelling abilities of the children.

Research by Vermunt, Lodewijks and Simons (1986) shows that reading and thinking out loud helps with learning from a text. 16 students had to read two texts with different purposes. For one text they had to answer questions, for the other text they had to solve a problem. The students utterances were recorded and scored with an iterative process and analyzing scheme. Students who thought more out loud showed better results (they had more correct answers). Similar results are found for reading out loud and reducing reading disabilities (Blok, Oostdam & Boendermaker, 2011). Their research with 120 children shows that children who read texts oud loud and are guided and encouraged by an experienced reader benefit and get better at reading. 40 percent of the children show improved reading skills after 48 reading sessions of 20 minutes with an attendant.

Other research at primary schools shows that it is important to start with second language learning at a young age. Some Dutch schools offer early 'English as a foreign language' (EFL) programmes, where children learn English from age four. Unsworth, Persson, Prins and De Bot (2014) show that children in these programmes score significantly higher than children who were not in such programmes.

Leijenhorst (2014) tested eleven to thirteen year old children and she shows that saying words out loud repeatedly has no effect. That was not what she expected and it is contradictory compared to the research described above. The participants in Leijenhorst's study had a developmental language disorder. It is therefore hard to tell what the effects of saying words out loud could be for children with a regular language development. The current research aims to contribute to this issue.

Background

Children learn their mother tongue naturally, among other things by hearing their parent's voices in the womb before birth (Partanen, Kujala, Näätänen, Liitola, Sambeth & Huotilainen, 2013), by social interaction with other human beings (Kuhl, 2004) and by practicing babbling from when they start to produce speech-like sounds (Goldstein & Schwade, 2008). Very young children learn from imitating their parents, as shown by Bannard, Klinger and Tomasello (2013). Adults benefit from saying words out loud when performing a perceptive or linguistic task involving word learning (Zamuner, Morin-Lessard, Strahm & Page, 2016; Kaushanskaya & Yoo, 2011). Research by Hyltenstam and Abrahamsson (2003) shows that children are able to learn a new language - besides their mother tongue – at a native speaker level, as described below. However, although some adults become native like, many hardly ever reach native-like levels in other languages than their mother tongue.

Hyltenstam and Abrahamsson (2003) explain the fact that children seem to learn a language easier than adults as follows. When adults learn a second language, they will hardly ever reach the level of native speakers. Children however are able to reach that level. Hyltenstam and Abrahamsson claim that there are two important factors in language learning: biological factors and social-psychological factors. Biological processes determine the growth of brains and body, especially in the first years of life. Social-psychological processes can affect the biological ones. The social circumstances for instance define the quality and amount of language around you. Psychological processes are factors like motivation and education. It seems that the older people get, the more important social-psychological factors become. Second language learners up to six and seven years old will automatically reach native like levels in the right learning circumstances. After this particular age, the negative effects of maturation come along. Children will become more and more 'grown up' in social circumstances. An eight year old can reach the same level as a six year old, but only when the social-psychological factors allow it. The older you get, the more you benefit from the right social-psychological circumstances.

Hulstijn (2005) elaborates on Hyltenstam and Abrahamsson (2003). He accepts their claim that biological and social-psychological factors play an important role for children who are learning a second language. He mentions a crucial distinction made in psychology between implicit and explicit learning. Implicit learning is learning that comes naturally, similar to how children learn their first language. Gaining implicit knowledge happens unconsciously. Explicit knowledge is gained by studying and people are aware of the fact that they have this knowledge. Hulstijn suggests overall that children (until about ten years old)

learn in an implicit way and adults learn mostly in an explicit way. He notes that adults benefit from learning in an implicit way, but that most adult second language learners do not have the right social-psychological circumstances (like motivation and language input) to be able to learn a second language in the implicit way.

When learning a language the explicit way, second language teachers will often ask their students to repeat new words, in order to facilitate the learning process (Duff, 2000). A similar process is seen in first language acquisition, when children imitate gestures and words from their caregivers (Bannard et al., 2013; Clark & Bernicot, 2008; Kuhl & Meltzoff, 1996; Meltzoff & Moore, 1977). The role of imitation in the learning process, is investigated by Bannard et al. (2013). The children were participating in some sort of game, where they saw a familiar object (for instance a duck) which was presented in combination with a novel adjective which was either redundant (the adjective had some relation to the object but was not necessary for disambiguation) or used contrastively or descriptively. The children were more likely to reproduce the linguistic material when a novel adjective had a contrastive or descriptive function, compared to novel adjectives with a redundant function. Imitation of parents by their children has a function that marks the additional information in the common ground of the conversation. Their research shows that mimicry is only one of the factors contributing to children imitating utterances. Clark and Bernicot (2013) find similar results. Imitation between children and adults has a function that marks the additional information in the common ground of the conversation. Imitating has a function between children and their parents or caregivers.

Service, Yli-Kaitala, Maury and Kim (2014) investigated if there were differences in learning between eight-year-old children and adults in a foreign word repetition task. The Finnish participants had to repeat Korean words. Some of the words occurred five times, others just once. After the repetition session, there was a recognition task. The accuracy for both children and adults was improved for the recurring words. The adults merely performed better in this memory task when there was an explicit component (comparable to Hulstijn (2005) children learn mostly in the implicit way and adults in the explicit way). This indicates that imitation and repetition are also helpful in later life, when children are learning a (second) language at school.

There are a lot of studies that investigated the learning of novel words with adults. Gathercole and Conway (1988) presented adults with lists of novel, highly imaginable words. The adults were divided in groups and had to learn the words in several conditions: read out loud, read and heard, heard only, mouthed (making the shape of the word with your mouth

without the sound), written, or read silently. The words that were read out loud by the learners, were later on more often recognized than the words in the other conditions. Ellis and Sinclair (1996) found that English participants whom repeated Welsh words and phrases, were even better in performing different linguistic tasks including judging grammaticality and knowledge of mutated nouns. Dahlen and Caldwell-Harris (2013) found similar results for adults learning Turkish words. These studies suggest that saying newly learned words out loud helps improving word recognition in adults.

Ozubko and MacLeod (2010) did research on the substantial benefit to memory of having studied information out loud compared to doing it silently. They suggest that a word studied out loud acquires a distinctive encoding record than a word studied in silence. A word studied out loud is identified in the memory as 'old' and is therefore easier to recollect. In an experiment with a discrimination paradigm, where 18 participants (all students) had to identify in which of the two studied lists a target word was presented. The list was a mix of words studied out loud and words studied in silence. The experiment confirmed that studying words out loud helps recollecting those words.

Kaushanskaya and Yoo (2011) examined the effects of phonological familiarity and rehearsal method (either vocal or subvocal) on novel word learning. They carried out two experiments. In experiment 1, English-speaking adults learned novel words that are familiar to the English phonological structure. Half of the words were learned out loud, while the other half was learned subvocally (silently rehearsed). The results show advantages for vocally rehearsed novel words. In experiment 2, the English-speaking adults learned novel words that are not familiar to the English phonological structure. In contrast with experiment 1, the results show advantages for subvocally rehearsed novel words. This suggests that the effect of the rehearsal strategy depends on the phonological structure of novel words.

Zamuner et al. (2016) show that with adults, spoken word recognition of newly learned words depends on how the non-words are learnt. In an experiment, one group of participants produced half of the words after hearing them, while they only listened. The other group of participants only listened to the newly learned words twice (assuming that those who produce words hear them twice as well: once as the input, and once as the output produced by themselves) and did not produce them. All participants were university students. The stimuli were 16 non-words, divided between two different sets. The participants who produced the newly learned words, were faster in looking at targets than when those who had only listened to the newly learned word. This indicates that production affects the representation of newly learned words.

Mondria and Wiersma (2004) looked at the way students learn words at school. They point out the difference between productive and receptive learning. Productive learning is when you read or hear the word in your native language and you have to 'produce' (say or write) the word in the foreign language. Receptive learning is the other way around (you read or hear the word in the foreign language and you have to think of the translation in your native language). Language teachers often think that learning words in a productive way is more effective. To test this, Mondria and Wiersma designed an experiment to test receptive learning, productive learning and a combination of the two. 198 students of a 3 VWO class had to learn French words. A retention test was taken immediately after learning the words and two weeks later, to investigate how well the students recognized the words. The students had to write down the translation of the words. The combination method (both productive and receptive learning) did not improve the retention: the results were comparable to receptive learning alone in both the immediate and later retention test. For productive learning, the results of the test immediately taken after the words were learned were comparable to the results of the students who used the combination method. The results for the test taken two weeks later were different: students who did not use the combination method, had better results compared to students who did use the combination method. This is not what the researchers expected: they expected that the combination method to increase retention.

Icht and Mama (2015) tested 30 five-year-olds in a production effect (PE) paradigm using pictures of objects as stimuli. In the first experiment pictures of familiar objects were presented to be remembered. In the second experiment, pictures of unfamiliar objects were used. In both experiments there was a memory advantage for vocally produced words (look and say) over other types of learning (look; look and listen). Actually producing words helps five-year-olds to recall words.

Thus, on the one hand research shows that production helps adults (and children) to perform better at linguistic tasks (Dahlen & Caldwell-Harris, 2013; Kaushanskaya & Yoo, 2011; Ellis & Sinclair, 1996; Gathercole & Conway, 1988; Icht & Mama, 2015) and in combination with listening to language, this increases the speed of looking at targets (Zamuner et al., 2016). Repeating words is also thought to help children with the learning processes (Maxwell, 2001; Blomjous-van der Velde, 2011; Bosman 2004; Vermunt, Lodewijks & Simons, 1986; Blok, Oostdam & Boendermaker, 2011). However, as mentioned above, children with a language development disorder do not benefit from repeatedly saying words out loud (Leijenhorst, 2014). And other research (Mondria & Wiersma, 2004) indicates that learning the productive way does not improve results for receptive tests: it is hard and

seems unnecessary. That seems to be contradictory, because repetition is thought to help when learning vocabulary for both adults and children (Service et al., 2014). What would have happened when the French learning students had to learn the words out loud?

As mentioned earlier, most research on the topic of learning a second language is done with adults. And the research done with children is very limited and mostly involves children with reading or hearing disabilities. This research is focused on the question whether it would help children to say words out loud (production) when they are learning a new language. This leads to the following questions central to this thesis:

1. Does saying words out loud help 4-to-6-year-old children to learn new words in a novel language?
2. Does saying words out loud increase the recognition of those words in these children?
3. Does saying words out loud increase the production accuracy of new words for children?
4. Is there a difference in results between recognition and production accuracy?
5. Is there a difference between immediate and later retention?

These questions combined lead to the following research question:

<u>Does saying newly learned words out loud help children learn words in a foreign language and does saying newly learned words out loud increase the immediate and later retention of perception and production of four to six year old children?</u>

Saying words out loud is expected to increase the retention for the perception of newly learned words said out loud in a foreign language, based on the results for adults shown in different linguistic tasks (Dahlen & Caldwell-Harris, 2013; Kaushanskaya & Yoo, 2011; Ellis & Sinclair, 1996; Gathercole & Conway, 1988) and looking at targets in a linguistic task (Zamuner et al., 2016). For the production task, it is expected that saying words out loud will increase their retention. If children show better retention in the perception task as well, as recalling words is prerequisite for naming words. If the hypotheses are confirmed, it could give teachers a meaningful tool to help children learning a new language. This will be tested in an experiment.

Method and materials

To answer the research questions, an experiment is designed. The experiment contains two different training tasks and two retentions tests for a group of four to six year old children. They have been tested for their reception and production of newly learned words in a foreign language (French). All children were taught the same six words by the experimenter: three of the words were heard only, the other three were heard and then repeated by the children. Immediately after teaching the words, a retention test is taken. A week later, a second retention test was taken. The retention test existed of six corresponding images. During the retention the children had to look at the pictures. With three words, the experimenter pointed at the picture and asked the child to say out loud what the animal is in French. With the other three words, the experimenter asked the child to point at the picture of the animal that was mentioned by the experimenter. The experimenter was a non-native French speaker, in order to approach a natural teaching situation at a school. Below, the pretest, experiment and scoring method are described in more detail.

Pretest

All pictures of animals have been tested in an online pretest, to make sure the animal in the picture is recognized by children of four to six years old. The pretest was created with thesistools.nl and the participants (via their parents) were approached via social media. Some children used diminutives or used the word 'biggetje' (piglet) instead of 'varken' (pig). However, all ten participating children in the pretest (six of them age four, four of them age five) recognized every animal in the picture as intended. Therefore, all words could be used in the experiment. The instruction for the parents can be found in Appendix 1. The complete results can be found in Appendix 2.

Experiment

Participants

The participants were 18 Dutch children in the first and second grade of the elementary school De Duizendpoot in Geleen. They have not yet learned a second language at school. English is taught at Dutch schools, but usually not until the lasts two grades. That is what makes this group of children suitable for the experiment. Next to the experiment, some demographical information was noted (age and gender). Dutch children of four to six years old speak Dutch and perhaps a little bit of English learned from television, but they typically did not learn any French words.

Eight of the children were from group 1, ten of them were from group 2. There were ten girls and eight boys. Two children were six years old, twelve children were five years old and four children were four years old. The average age was 4,83 year. The children are native speakers of Dutch. The 18 children were individually tested. Every child participated if the parents gave their permission. For the letter addressed to the school and the parents, see Appendix 4 and 5. All children were taught the same six French words. To make the task not too hard for their abilities, simple words are taught as described in the following section.

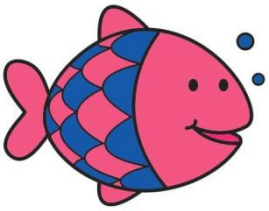
Materials

Below is a list of the materials used in the experiment.

Image 1. Pictures of the six animals with the Dutch, French and English translation.

1. Varken – Cochon – Pig

2. Vis – Poisson – Fish



4. Eend – Canard – Duck

4. Schildpad – Tortue – Turtle

5. Muis – Souris – Mouse

6. Konijn – Lapin – Rabbit

The stimuli were six French words. All words are monosyllabic or bisyllabic. The reason to choose short, easy words, is to make the task as doable as possible for the children. All words are nouns and their meanings are understandable for young children. Every word starts with a different sound. All words are visualized by pictures. The chosen words (and pictures) are all of animals, to make the task as interesting as possible. The words are all in the BAK-list (a list based on words that are frequently used around toddlers in Amsterdam) for grade one, so children know these words at the age of four to six, the age of the children in the experiment (Muller et al., 2009). The pictures are drawings instead of pictures, to make sure the chosen animals do not come across as scary for the children.

The six words in the task are the same for each child, but they were presented in a four different versions. Thence, every word is tested in both the heard only and the heard and repeated task and that the order of the words is counterbalanced.

Table 1. Randomized order of the stimuli. An extensive elaboration of the versions can be found in Appendix 2.

Version	Perception task	Production task
1	Souris, cochon, canard	Tortue, lapin, poisson
2	Lapin, poisson, tortue	Cochon, canard, souris
3	Canard, lapin, tortue	Souris, cochon, poisson
4	Poisson, souris, cochon	Lapin, tortue, canard

Procedure

The experiment consists of a training task and two retention tasks, as shown in Appendix 3. In the training task, it depends on the version of the test whether a child learns a word first in the heard only or in the heard and repeated way. All children are taught words in both ways. The teaching of the words is alternated: first a word is taught in the perceptive way, then in the productive way, and so on. In version 1 and 3, the children start with the perception. In the other two versions (2 and 4), the children start with the production.

Training task

Heard only

In the heard only task, three of the words were said by the experimenter ten times. The experimenter showed a picture, said the word in Dutch and French and asked the child to pay attention. “Look, a turtle. In French it is called ‘tortue’. Listen carefully: tortue. And listen again: tortue, tortue, tortue. (Kijk, een schildpad. In het Frans is dat ‘tortue’. Luister goed: tortue. En luister nog eens goed: tortue, tortue, tortue.) Then the other two words in the task and the three words in the *heard and repeated* task were taught (this is alternated, as described above). The training is repeated until all the words have been trained two times. All results were recorded on audio.

Heard and repeated

The other three words are taught in the hear and repeated task. The experimenter showed a picture, said the word in Dutch and French and then asked the child to say the word out loud. “Look, a pig. In French it is called ‘cochon’. Say it after me: cochon [cochon]. And again: cochon [cochon].” (Kijk, een varken. In het Frans is dat ‘cochon’. Zeg mij maar na: cochon [cochon]. En nog een keer: cochon [cochon]). Then the other two words in the task and the three words in the *heard only* task were taught (this is alternated). The training is repeated until all the words have been trained two times. Eventually, the child hears the three different words six times and said it four times out loud in the perception task (a total of ten times).

Retention tasks

The experiment contained two different manners of checking the children’s retention, as described below. In addition, there were two retention tasks: one immediately after the training and one after a week.

Point at a picture

To check the retention for the perception, the child (after learning all six words in both conditions) had to listen to the words the experimenter said en point at the correct picture. “Wijs nu de tortue aan.” This was done immediately after learning the words, and a week later. During this retention task, all six pictures are shown, to make the chances of accidentally pointing right (chance level) as low as possible. When the six pictures were shown to the children, all six words were already taught. This method was used with every

child for three of the words. The experimenter noted for each word whether children pointed to the correct picture or not and how many attempts were needed, as described in the section 'Scoring' below.

Say out loud

To check the retention for the production, the child (after learning all six words for both tasks) had to look at the experimenter pointing at a picture and pronounce the French word. "Weet je nog welke dit is?" This was done right after learning the words, and a week later. During this retention task, all six pictures were shown, to make the chances of accidentally pointing right (chance level) as low as possible. When the six pictures were shown to the children, all six words were already taught. This method was used with every child for three of the words.

The following is a concrete example of the test situation. For a child participating in version 1 of the experiment, the procedure for teaching and testing retention is as follows: the experimenter teaches the child the six words. Perception (a) and production (b) are alternated, so the order is like this: souris (a), tortue (b), cochon (a), lapin (b), canard (a), poisson (b). The process is done two times, which means the child hears all words ten times in the perception condition and in the production condition the child hears the words six times by the experimenter and four times by listening to their own production of the words (thus in total ten times, as well). The words in the perception condition are taught by listening: the child sees the picture and has to listen to the experimenter. The words in the production condition are taught by both listening and speaking: the child sees the picture and has to listen and repeat what the experimenter says.

Subsequently, retention of those six words is tested. In the retention test, the order of the words is randomized and perception (a) and production (b) are alternated. The order is as follows: cochon (a), lapin (b), canard (a), poisson (b), souris (a), tortue (b). The experimenter says to the child: now point at the *souris*/*cochon*/*canard* (this is de perception task). For the production task, the experimenter points at the *tortue*/*lapin*/*poisson* and asks: what do you call this in French (this is the production task)?

Scoring and coding

In the perception condition the experimenter knew immediately how many attempts a child needed to point at the correct picture. For every attempt there is a matching score, as explained below.

In the production condition, the experimenter transcribed the audio recordings and subsequently scored the results.

A week later, the retention task was repeated, the training task was not. The retention task (immediate and a week after) was the same on both occasions. It was important that all children tried to pronounce the French word in order to make sure that the children are capable of fulfill the task. Of course, not all children were able to do this correctly right away. And some children were scared to pronounce the word. The experimenter tried to encourage the children. Children in the *heard and repeated* condition who did not succeed in pronouncing the word during the training, were excluded from analysis. Children who did produce speech but mispronounced the word in the retention task, are judged by the experimenter (as shown below). Judgment was done using the Phonological Mean Length of Utterance (PMLU). This is among other things a method to measure the number of correct consonants of children's words (Ingram 2001). There are six rules for applying the PMLU and they are thought to be very reliable and valid. For a usable analysis, at least 25 words are needed. However, in this research, children only learn six words. Still, the PMLU is usable to judge the pronunciation of the children. A summary of the rules for the calculation of the PMLU is presented in this table.

Table 2. A summary of rules for the calculation of the phonological mean length of utterance. (Taken without permission from Ingram and Ingram, 2001).

Sample size	Select at least 25 random words.
Lexical class rule	Count words (e.g., common nouns, verbs, adjectives, prepositions, and adverbs) that are used in normal conversation between adults. This excludes child words (e.g., *mommy, daddy, tata,* etc.).
Compound rule	Do not count compounds as a single word unless they are spelled as a single word (e.g., *cowboy* but not *teddy bear*; i.e., *teddy bear* would be excluded from the count).
Variability rule	Only count a single production for each word.
Production rule	Count one point for each consonant and vowel that occurs in the child's production. Syllabic consonants receive one point (e.g., syllabic "l," "r," and "n").
Consonants correct rule	Assign one additional point for each correct consonant.

In this research, the production and consonants correct rule were used. Every consonant and vowel that occurs in the child's production lead to a point. An additional point is given for each correct consonant. An example: when a child produces the word 'souris' /suri/ as [supi], it receives 4 points for the segments produced and 1 additional point for the correct production of the /s/. A total of 5 points. Therefore, this child gets a higher score than a child that produces [zupi] (a total of 4 points).

Table 3: Maximal PMLU scores per French word.

French word	Phonetic transcription	Maximal PMLU score
Cochon	/koʃɔ̃/	6
Poisson	/pwɑsɔ̃/	7
Tortue	/tɔrty/	8
Lapin	/lɑpɜ̃/	6
Souris	/suri/	6
Canard	/kɑnar/	8

For both tasks (perception and production) the order of the items in the retention test is randomized, as shown in Table 4.

Table 4. Randomized order of the stimuli in the retention. An extensive elaboration of the versions can be found in Appendices 2 and 5.

Version	Perception task	Production task
1	Canard, souris, cochon	Lapin, tortue, poisson
2	Poisson, tortue, lapin	Cochon, souris, canard
3	Lapin, tortue, canard	Poisson, souris, cochon
4	Cochon, poisson, souris	Lapin, tortue, canard

Children had to go to a separate room in the school together with the experimenter. The tasks they had to do are new to them, because children that age do not learn new words by heart.

In the perception condition the experimenter coded immediately if a child did the task wrongly or correctly. The children were scored on how many attempts they needed to point at the correct picture. Scoring this way shows the actually ability of the children, because they can make mistakes in the beginning of the experiment. If the child made the wrong response, the experimenter asked the child to try again. The number of trials they needed is the dependent measure, because all children eventually pointed at the correct picture. Children who needed a first, second or third attempt received points. Children who needed four or more attempts did not. In the production condition, the experimenter had to listen to the audio recordings to score the children afterwards, and the scoring was based on the PMLU.

The children could score points on both the perception and the production task. For the reception task (pointing at a picture), they were scored on the number of attempts they needed to point at the correct picture. There were six pictures, so six choices. When doing it correctly the first time, a child received three points. Doing it correctly the second time, a child received two points, for the third time it received one point. Children who needed more attempts, did not get any points because of chance level. This system was used for both the immediate and the one week later retention test. Thus, children could score maximally 18 points.

For the production task (pronouncing the word that belongs to the picture pointed at by the experimenter), the PMLU scoring system of Ingram (2001) was used. For every word the maximum PMLU was calculated. When a child managed to pronounce something, it was scored according to the PMLU system. When a child did not pronounce anything, there are no

points given because there was no production. The same system was used for the one week later retention test.

Results

In this section, the results of the experiment are presented. In all tables below, the total mean scores are converted into percentages of correct answers of the participants.

Table 1. Means, standard deviation and number of children in the condition per word of the first retention test, presented in percentages of correct answers.

Word	M (SD)	N
Cochon	35.84 (11.78)	18
Poisson	50.00 (18.59)	18
Souris	40.84 (12.27)	18
Tortue	31.25 (13.87)	18
Lapin	29.17 (19.09)	18
Canard	29.17 (15.02)	18

Table 2. Means, standard deviation and number of children in the condition per word of the second retention test, presented in percentages of correct answers.

Word	M (SD)	N
Cochon	34.56 (15.35)	17
Poisson	46.97 (23.26)	17
Souris	38.75 (15.44)	17
Tortue	27.50 (19.20)	17
Lapin	31.67 (20.92)	17
Canard	23.49 (18.90)	17

In table 1 and 2 the scores per word are presented in percentages of correct answers. With some words, like *poisson* and *souris*, the children scored higher than with the other four words. But a Paired Samples T-Test for *poisson* and *souris* compared to the other words shows that there are no significant differences: *poisson* compared to *cochon* (t (17) = .75, p = .463), compared to *souris* (t (17) = .38, p = .712), compared to *tortue* (t (17) = 1.26, p = .226), compared to *lapin* (t (17) = 1.53, p = .145), compared to *canard* (t (17) = .96, p = .349). *Souris* compared to *cochon* (t (17) = 1.14, p = .269), compared to *poisson* (t (17) = .38, p = .712), compared to *tortue* (t (17) = .50, p = .622), compared to *lapin* (t (17) = .75, p = .484), compared to *canard* (t (17) = .84, p = .412).

A Paired Samples T-Test shows that there is no significant difference between the percentages of correct answers for the words tested immediately (table 1 and 3) and one week after (table 2 and 4). That applies for all six French words: *cochon* (t (16) = .25, p = .805); *poisson* (t (16) = .30 , p = .769); *souris* (t (16) = .32, p = .750); *tortue* (t (16) = .57, p = .579); *lapin*: (t (16) = .62, p = .543) and *canard* (t (16) = .81, p = .433). There were no significant higher or lower scores when comparing the first (immediate) and second (after one week) retention test.

Table 3. Means, standard deviation and number of children in the condition of the first retention test, presented in percentages of correct answers.

Condition	Word	M (SD)	N
Heard only, then point (receptive)	Cochon	60.00 (27.89)	5
	Poisson	66.67 (27.22)	4
	Souris	80.00 (29.82)	5
	Tortue	66.67 (23.57)	5
	Lapin	66.67 (33.34)	5
	Canard	66.67 (40.82)	5
Total		67.78 (30.44)	29
Heard and repeated, then point (receptive)	Cochon	83.34 (19.24)	4
	Poisson	100.00 (0.00)	5
	Souris	83.34 (19.24)	4

	Tortue	58.33 (31.92)	4
	Lapin	50.00 (43.03)	4
	Canard	50.00 (19.25)	4
Total		70.84 (22.11)	25
Heard only, then said (productive)	Cochon	0.00 (0.00)	5
	Poisson	0.00 (0.00)	5
	Souris	0.00 (0.00)	5
	Tortue	0.00 (0.00)	5
	Lapin	0.00 (0.00)	5
	Canard	0.00 (0.00)	4
Total		0.00 (0.00)	29
Heard and said, then said (productive)	Cochon	0.00 (0.00)	4
	Poisson	33.33 (47.14)	4
	Souris	0.00 (0.00)	4
	Tortue	0.00 (0.00)	4
	Lapin	0.00 (0.00)	4
	Canard	0.00 (0.00)	5
Total		5.56 (7.86)	25

Table 4. Means, standard deviation and number of children in the condition of the second retention test (after a week), presented in percentages of correct answers.

Condition	Word	M (SD)	N
Heard only, then point (receptive)	Cochon	46.67 (44.72)	5
	Poisson	58.33 (31.92)	4
	Souris	80.00 (29.82)	5

	Tortue	26.67 (43.46)	5
	Lapin	60.00 (36.52)	5
	Canard	53.33 (44.72)	5
Total		54.17 (38.53)	29
Heard and repeated, then point (receptive)	Cochon	91.67 (16.67)	4
	Poisson	86.67 (18.26)	5
	Souris	75.00 (31.92)	4
	Tortue	83.33 (33.34)	4
	Lapin	66.67 (47.14)	4
	Canard	40.63 (30.88)	4
Total		74.00 (29.70)	25
Heard only, then said (productive)	Cochon	0.00 (0.00)	4
	Poisson	0.00 (0.00)	4
	Souris	0.00 (0.00)	4
	Tortue	0.00 (0.00)	4
	Lapin	0.00 (0.00)	4
	Canard	0.00 (0.00)	5
Total		0.00 (0.00)	25
Heard and repeated, then said (productive)	Cochon	0.00 (0.00)	4
	Poisson	42.86 (42.86)	4
	Souris	0.00 (0.00)	4
	Tortue	0.00 (0.00)	4
	Lapin	0.00 (0.00)	4
	Canard	0.00 (0.00)	5

Total	7.14 (7.14)	25

Because there were no significant higher or lower scores when comparing the first (immediate) and second (after one week) retention test, the analysis of both retention tests is combined. A Paired Samples T-Test between the *heard only then point* condition and the *heard and repeated then point* condition shows that there is no significant difference between the percentages of correct answers (t (46) = 1.75, p = .088). The children in the *heard and repeated then point* condition (immediate retention and retention after a week combined) scored higher (M = 72.42, SD = 25.91) then the children in the *heard only then point* condition (M = 60.98, SD = 34.49), but the results are not significant.

A Paired Samples T-Test between the *heard only then said* condition and the *heard and repeated then said* condition shows that there is a significant difference between the percentages of correct answers (t (46) = 2.00, p = .051). The children in the *heard and repeated then said* condition (immediate retention and retention after a week combined) scored higher (M = 6.35, SD = 7.50) then the children in the *heard only then said* condition (M = 0.00, SD = 0.00). Notice that the *heard only then said* condition has a zero result (this means children did not produce anything). On this will be elaborated in the discussion.

A Paired Samples T-Test between the *heard only then point* condition and the *heard only then said* condition shows that there is a significant difference between the percentages of correct answers (t (57) = 10.18, p = .00). The children in the *heard only than point* condition (immediate retention and retention after a week combined) scored higher (M = 60.96, SD = 34.49) then the children in the *heard only then said* condition (M = 0.00, SD = 0.00). But the zero result can be noticed here again.

A Paired Samples T-Test between the *heard and repeated then point* condition and the *heard and repeated then said* condition shows that there is a significant difference between the percentages of correct answers (t (43) = 16.64, p = .00). The children in the *heard and repeated then point* condition (immediate retention and retention after a week combined) scored higher (M = 72.42, SD = 25.91) then the children in the *heard and repeated then said* condition (M = 6.35, SD = 7.50).

A Paired Samples T-Test between the *heard only then point* condition and the *heard only then said* condition shows that there is a significant difference between the percentages of correct answers (t (57) = 10.18, p = .00). The children in the *heard only than point* condition (immediate retention and retention after a week combined) scored higher (M =

60.96, SD = 34.49) then the children in the *heard only then said* condition (M = 0.00, SD = 0.00). But the zero result can be noticed here again.

Table 5. Overview of the results of the T-Tests, both retention tests combined.

Condition	Result (compared to)			
	Heard only, then point	Heard and repeated, then point	Heard only, then said	Heard and repeated, then said
Heard only, then point	x	.088	.00***	-
Heard and repeated, then point	.088	x	-	.00 * **
Heard only, then said	.00**	-	x	.051* **
Heard and repeated, then said	-	.00 * **	.00**	x

* *is significant*

** *zero result*

Discussion and conclusions

In this research, four to six year old children were taught six French words. Some words were taught in a heard only condition, others were heard and then repeated by the children themselves. In the retention test, children had to point at words said by the experimenter (perception task) and they had to produce words pointed at by the experimenter (production task). The main aim of this research was to find out if saying words out loud helps children to learn words in a foreign language. An overview of the results is shown in Table 5 in the previous section.

When the retention task involves pointing at the correct words (the perception task), the results are not significant ($p = .088$). The children in the *heard and repeated then point* condition (immediate retention and retention after a week combined) scored higher ($M = 72.42$, $SD = 25.91$) than the children in the *heard only then point* condition ($M = 60.98$, $SD = 34.49$), but not significantly. However, the results do show a trend: children who did say the words out loud in the training had better results. Considering that there were only eighteen children and six items, that is a promising result.

The children in the *heard and repeated then said* condition (immediate retention and retention after a week combined) scored higher ($M = 6.35$, $SD = 7.50$) than the children in the *heard only then said* condition ($M = 0.00$, $SD = 0.00$). That is a significant result ($p = .051$), very important here is that most children were not capable of producing anything at all during the retention tests. In the immediate retention test, of the eighteen children only two were capable of producing something. In the week later retention test, of the seventeen children only three children were able to produce something. The experimenter encouraged the children, however the task was too difficult. In the training fase, all children were able to repeat after the experimenter. But producing a word independently was difficult. For future research, there could be thought about better ways of encouraging the children. Perhaps easier words could be used, or words in a language more related to the mother language. It is also possible that older children or adults are capable of doing this particular producing task.

The differences between the retention methods are significant. Both the children in the *heard only then point* and the *heard and repeated then point* condition scored better than the children in respectively the *heard only then said* and the *heard and repeated then said* condition ($p = .00$ and $p = .00$). This means that the point retention task is easier than the say out retention loud task. There were no differences between the immediate retention test and the test after one week in all conditions.

Research question 1 (Does saying words out loud help 4-to-6-year-old children to learn new words in a novel language?) is partially answered as expected. Saying words out loud does help children learn new words, but the differences are only significant for the said out loud retention task. In the point at a picture task, there is a trend: the children who did say the words out loud had better scores than the children that did not. The point task is easier than the say out loud task. In the learning process every child was capable of imitating the experimenter, but only a few children were capable of saying the word in the retention task, were every child was able to point at a picture in the retention task. Saying words out loud did increase both the perception of new words for children (the point task) and the production of new words (the say out loud task). However, only the latter was significant and that answers research questions 2 (Does saying words out loud increase the recognition of those words in these children?), 3 (Does saying words out loud increase the production accuracy of new words for children?) and 4 (Is there a difference in results between recognition and production accuracy?).

There were no differences between the immediate retention test and the test after one week (research question 5). That is surprising, because there was expected that the children would have forgotten a lot after a week. That was not the case. This indicates that the tasks and words were not too hard, expect for the production task (only three children in total were capable of producing anything). It could also indicate that learning words this way helps children remember them, but more research on this is necessary.

The design of this experiment makes it distinctive. The training method was mixed: all children were in the heard only condition and in the heard and repeat condition. The retention method was mixed as well: all children had to both point at pictures and produce words themselves. Doing the experiment this way, the found differences (although not all significant) are differences caused by the version and not by differences between groups of children.

Previous research on the perception of newly learned words shows that the retention after saying words out loud does increase (Dahlen & Caldwell-Harris, 2013; Kaushanskaya & Yoo, 2011; Ellis & Sinclair, 1996; Gathercole & Conway, 1988) and increases the speed of looking at targets (Zamuner et al., 2016). In this experiment the results of the perception task are not significant ($p = .08$), however a trend can be seen. One problem in the experiment could be the level of the perception task. The children had to point at the correct picture. They could choose between six different pictures. Perhaps this task was too easy, or there was a too

big chance level. In previous research the perception was measured using eye tracking. Therefore it is possible to measure the actual perception, where this experiment measured what the children thought that was correct. Here we have to take in mind as well the zero results found for the production task. In the *heard only then produce* condition none of the children was able to produce anything.

None of the children was capable of pronouncing a newly learned word without practicing them out loud (M = 0.00, SD = 0.00). If the children practiced out loud, they in some cases were (M = 6.35, SD = 7.50). The difference was significant (p = .051), note that only three children in the practiced out loud version were capable of producing a word. However, this is an indication that saying words out loud while practicing helps, in addition to the work by Ozubko and MacLeod (2010) and Icht and Mama (2015).

This experiment gives no information about learning words in silence. That would be interesting to examine, because learning words in silence is more practical than learning them out loud.

It would be interesting as well to look at the role of repetition. Research (Mondria & Wiersma, 2004) indicates that learning the productive way does not improve results for receptive tests, because it is hard and seems unnecessary. Repetition is thought to help when learning vocabulary for both adults and children (Service et al., 2014). This research gives no confirmation for this claim, because in each condition, the words were said and or heard the same amount. Perhaps the combination of saying words out loud and repetition causes even better learning results.

This research aimed to contribute to the understanding of children's language development. It indicates that saying words out loud helps children learn new words in a foreign language. The results of this research give teachers a meaningful tool to help children learning a new language. Before all teachers start to teach students to study words out loud, more research is needed. The fact that it seems to help four to six year old children is noteworthy and clears the path for more research.

References

Bannard, C., Klinger, J. & Tomasello, M. (2013). 'How selective are 3-year-olds in imitating novel linguistic material?' *Developmental Psychology*, 49, 2344-2356.

Blok, H., Oostdam, R. & Boendermaker, C. (2011). 'Begeleid hardop lezen. Effectieve interventie voor achterblijvende lezers.' *Jeugd in School en Wereld*, Volume 95, Pages 32-35.

Bosman, A. (2004). 'Leren spellen. Slimme oefeningen en bet bevorderen van bet spellingbewustzijn.' In H. Kuster & H. Wieberdink (Red.), *'On gestoord voort' Omgaan met dyslexie in het onderwijs* (pp. 55-66). Ede, the Netherlands: Giralis: Partners in onderwijs.

Blomjous-van der Velde, Y. (2011). 'Carte Orange en de Accelerated Integrated Method.' *Levende Talen Magazine*.

Clark, E. & Bernicot, J. (2008). 'Repetition as ratification: How parents and children place information in common ground.' *Journal of Child Language* 35, 349-371.

Dahlen, K., & Caldwell-Harris, C. (2013). 'Rehearsal and aptitude in foreign vocabulary learning.' *The Modern Languages Journal*, 97(4), 902-916.

Duff, P. A. (2000). 'Repetition in foreign language classroom interaction.' In J. K. Hall & L. S. Verplaetse (eds.), *Second and foreign language learning through classroom interaction*. (pp. 109-139). Mahwah, NJ: Erlbaum.

Ellis, N. C., & Sinclair, S. G. (1996). 'Working memory in the acquisition of vocabulary and syntax: Putting language in good order.' *The Quarterly Journal of Experimental Psychology*, 49a(1), 234-250.

Gathercole, S. E., & Conway, M. A. (1988). 'Exploring long-term modality effects: Vocalization leads to better retention.' *Memory and Cognition*, 16, 110-119.

Goldstein, M. & Schwade, J. (2008). 'Social Feedback to Infants' Babbling Facilitates Rapid Phonological Learning.' *Psychological Science*, v19 n5 (May 2008): 515-523.

Hyltenstam, K. & Abrahamsson, N. (2003). 'Maturational Constraints in SLA.' In Catherine J. Doughty and Michael H. Long (red.) *The Handbook of Second Language Acquisition* (538-588).

Hulstijn, J.H. (2005). 'Impliciete en expliciete taalverwerving.' In: J.E. Grezel (red.) *Gloria Bondi. Liber amoricum voor Bondi Sciarone* (89-94). Amsterdam: Boom.

Icht, M., & Mama, Y. (2015). 'The production effect in memory: a prominent mnemonic in children.' *Journal of Child Language, 42*, 1102-1124.

Ingram, D. (2001). ‘The measurement of whole-word productions.’ *Journal of Child Language*, volume 9, number 4, 713-733.

Ingram, D. & Ingram, K. (2001). ‘A whole-word approach to phonological analysis and intervention.*’ Language, speech, and hearing services in school*, volume 32, 271–283.

Kaushanskaya, M. & Yoo, J. (2011). ‘Rehearsal effects in adult word learning.’ *Language and Cognitive Processes*, 26, 121-148.

Kuhl, P. (2004). ‘Early language acquisition: cracking the speech code.’ *Neuroscience*, Nov; 5(11): 831-43.

Kuhl, P. K., & Meltzoff, A. (1996). ‘Infant vocalization in response to speech: Vocal imitation and developmental change.’ *Journal of the Acoustical Society of America*, 100, 2425-2438.

Leijenhorst, H. (2014). ‘Het effect van het herhaald uitspreken van woorden op de passieve woordenschatontwikkeling van 11-13-jarige kinderen met een taalontwikkelingsstoornis, een pilotstudie.’ Universiteit Utrecht.

Lobo, V.R. (2013). ‘Hoe eerder, hoe beter? Meningen en ervaringen bij Engels in groep 1 en groep 3 op de basisschool’. *Levende Talen Tijdschrift*, jaargang 14 (2013) 4.

Maxwell, W. (2001). ‘Evaluating the Effectiveness of the Accelerative Integrated Method for Teaching French as a Second Language.’ Department of Curriculum, Teaching and Learning, OISE/UT.

Meltzoff, A. N., & Moore, M. K. (1977). ‘Imitation of facial and manual gestures by human neonates.’ *Science*, 198(4312), 75-78.

Mondria, J-A. & Wiersma, B. (2004). ‘Receptief, productief, en receptief+productief woorden leren: Wat maakt het uit?’ *Levende Talen Tijdschrift* 5, 29-37.

Muller, F., Timman, Y. & Verhallen, S. (2009). *Handreiking bij de Basiswoordenlijst Amsterdamse Kleuters (BAK).* ITTA - Instituut voor Taalonderzoek en Taalonderwijs Anderstaligen, Universiteit van Amsterdam.

Ozubko, J. & MacLeod, C. (2010). ‘The Production Effect in Memory: Evidence That Distinctiveness Underlies the Benefit.’ *Journal of Experimental Psychology: Learning, Memory, and Cognition*. Issue: Volume 36 (6), November 2010, p 1543–1547.

Partanen, E., Kujala, T., Näätänen, R., Liitola, A., Sambeth, A., & Huotilainen, M. (2013). ‘Learning-induced neural plasticity of speech processing before birth.’ *Proceedings of the National Academy of Sciences.*

Service, E., Yli-Kaitala, H., Maury, S., & Kim, J. (2014). ‘Adults’ and 8-Year-Olds’

Learning in a Foreign Word Repetition Task: Similar and Different.' *Language Learning*, v64 n2 (June 2014): 215-246.

Unsworth, S., Persson, L., Prins, T. & De Bot, K. (2014). 'An Investigation of Factors Affecting Early Foreign Language Learning in the Netherlands.' *Applied Linguistics*, 2015: 36/5: 527–548.

Vermunt, J., Lodewijks, J. & Simons, P. (1986). 'Hardop-denken als onderzoeksmethode naar regulatieprocessen bij tekstbestudering.' *Tijdschrift voor Onderwijs Research*, 11, 187.

Zamuner, T., Morin-Lessard, E., Strahm, S. & Page, M. (2016). 'Spoken word recognition of novel words, either produced or only heard during learning.' *Journal of Memory and Language*. Volume 89, August 2016, Pages 55–67.

Appendices

Appendix 1

Dear participants,

Thank you and your child for taking part in this short questionnaire, designed for children age four or five. This research is part of my master thesis.

There will be six different pictures, appearing after each other. With every picture, you have to ask your child what animal they see at the picture. You are allowed to help and read the text, but you cannot help your child with answering the question. When your child answers the question, you can write it down. There are no correct or wrong answers, it is about what your child sees. The questionnaire only takes five minutes of your time.

Thank you again for participating!

Merel Stoop (Radboud University Nijmegen)

Pagina:				2	3	4	5	6	7	8
Titel:										
Vraag:				Welk dier zie je hier?	Welk dier zie je hier?	Welk dier zie je hier?	Welk dier zie je hier?	Welk dier zie je hier?	Welk dier zie je hier?	Hoe oud is uw kind?
Legenda										1 = 4 jaar
										2 = 5 jaar
Versie 1										
Respondent 1				Eendje	Konijn	Muis	Schildpad	Varkentje (voorzien van knorrende geluiden :-))	Visje	1
Respondent 2				Eend	Konijn	Muis	Schildpad	Biggetje	Vis	1
Respondent 5				Eend	Konijn	Muis	Schildpad	Varken	Vis	1
Respondent 7				Eendje	Konijntje	Muisje	Schildpad	Varkentje	Visje	2
Respondent 9				Eend	Konijn	Muis	Schildpad	Varken	Vis	2
Respondent 10				Eend	Konijn	Muis	Schildpad	Varken	Vis	1
Respondent 11				Eend	Konijn	Muis	Schildpad	Varken	Vis	1
Respondent 12				Eend	Konijn	Muis	Schildpad	Varken	Vis	2
Respondent 13				eend	konijn	muis	schildpad	biggetje	vis	1
Versie 2										
Respondent 1				Schildpad	Konijn	Vis	Eend	Varken	Muis	2

Appendix 2

Appendix 3

Version	**Perception task (a)**	**Production task (b)**
1	Souris, cochon, canard	Tortue, lapin, poisson
Teaching: perceptie, productie, perceptie, productie, perceptie, productie		
Order: souris (a), tortue (b), cochon (a), lapin (b), canard (a), poisson (b)		
Retention: cochon (a), lapin (b), canard (a), poisson (b), souris (a), tortue (b)		
2	Lapin, poisson, tortue	Cochon, canard, souris
Teaching: productie, productie, perceptie, productie, perceptie		
Order: cochon (b), lapin (a), canard (b), poisson (a), souris (b), tortue (a)		
Retention: lapin (b), poisson (a), tortue (b), souris (a), canard (b), cochon (a)		
3	Canard, lapin, tortue	Souris, cochon, poisson
Teaching: perceptie, productie, perceptie, productie, perceptie, productie		
Order: canard (a), souris (b), lapin (a), cochon (b), tortue (a), poisson (b)		
Retention: souris (b), tortue (a), cochon (b), lapin (a), canard (b), poisson (a)		
4	Poisson, souris, cochon	Lapin, tortue, canard
Teaching: productie, perceptie, productie, perceptie, productie, perceptie		
Order: lapin (b), poisson (a), tortue (b), souris (a), canard (b), cochon (a)		
Retention: canard (a), souris (b), lapin (a), cochon (b), tortue (a), poisson (b)		

Appendix 4

INFORMATIEDOCUMENT EN TOESTEMMINGSVERKLARING SCHOOL

Uitleg onderzoek
Het doel van het onderzoek is te onderzoeken of het hardop uitspreken van woorden helpt bij het onthouden van woordjes die net geleerd zijn. Kinderen uit groep 2 gaan zes Franse woordjes leren door ze te beluisteren en door ze soms hardop uit te spreken. Direct na het leren van de woordjes wordt met behulp van plaatjes getest of de kinderen ze hebben onthouden. Dit gebeurt opnieuw na een week. De kinderen zijn hiervoor ongeveer tien minuten uit de klas.

Informatievoorziening
De ouders/verzorgers krijgen ongeveer een week voor het onderzoek een brief met meer informatie. Daarin wordt het onderzoek kort beschreven en aangegeven dat ouders kunnen aangeven dat hun kind niet zal deelnemen. Ook zijn in de brief contactgegevens te vinden van de onderzoeker (masterstudent) en begeleider van de student.

Vertrouwelijkheid van de onderzoeksgegevens
De gegevens die in dit onderzoek worden verzameld, zullen door wetenschappers gebruikt worden voor artikelen en presentaties. Natuurlijk worden deze gegevens volledig anoniem gemaakt en bewaard volgens de aan de Radboud Universiteit geldende richtlijnen. Uitgangspunt is dat de geanonimiseerde data tenminste tien jaar ten behoeve van de wetenschappelijke gemeenschap opvraagbaar zijn.

Nadere inlichtingen
Voor vragen of verdere informatie over het onderzoek kunt u contact opnemen met Merel Stoop (telefoon: 06-50593518; e-mail: m.stoop@student.ru.nl).

Toestemming
Ik geef de onderzoeker(s) van de Radboud Universiteit toestemming het onderzoek uit te voeren op mijn school.

Naam school……

Naam en functie……...

Handtekening:……

Datum: ……

Appendix 5

INFORMATIEDOCUMENT VOOR OUDERS/VERZORGERS

Geachte ouders/verzorgers,

De leiding van de school van uw kind stemt in met deelname van uw kind aan een onderzoek van naar vreemde taalverwerving bij jonge kinderen door een masterstudent van de Radboud Universiteit, en verleent haar volledige medewerking. Kinderen vinden het vaak leuk om aan een onderzoek mee te doen. Het onderzoek vindt plaats op school en natuurlijk houden we rekening met het lesrooster van uw kind.

In deze brief geven we u informatie over dit onderzoek. Uw kind zal aan het onderzoek deelnemen op dinsdag 24 en dinsdag 31 mei. Indien u niet wilt dat uw kind aan het onderzoek meedoet, kunt u dat vóór 23 mei aan de schoolleiding doorgeven.

Doel en procedure van het onderzoek
In dit onderzoek gaat uw kind zes Franse woordjes leren door te luisteren naar woordjes en door ze soms na te zeggen. Direct na het leren van de woordjes wordt met behulp van plaatjes getest of uw kind ze heeft onthouden. Dit gebeurt opnieuw na een week. Uw kind is hiervoor ongeveer vijftien minuten uit de klas. Het onderzoek zal op spelenderwijs worden gedaan.

Risico's en ongemakken
Er zijn geen risico's voor de gezondheid of de veiligheid van uw kind.

Vertrouwelijkheid van de onderzoeksgegevens
De gegevens die we in dit onderzoek verzamelen, zullen door wetenschappers gebruikt worden voor artikelen en presentaties. Natuurlijk maken we deze gegevens volledig anoniem en bewaren we ze volgens de aan de Radboud Universiteit geldende richtlijnen. Uitgangspunt is dat de geanonimiseerde data tenminste tien jaar ten behoeve van de wetenschappelijke gemeenschap opvraagbaar zijn.

Vrijwilligheid
We zullen van tevoren aan uw kind uitleggen dat hij/zij vrijwillig aan dit onderzoek meedoet. Ook leggen we uit dat hij/zij op elk moment tijdens het onderzoek zijn/haar deelname kan stopzetten. Alle gegevens die we bij uw kind verzameld hebben, worden dan definitief verwijderd.

Nadere inlichtingen
Als u graag verdere informatie over het onderzoek wilt hebben, nu of in de toekomst, kunt u contact opnemen met Merel Stoop (telefoon: 06-50593518; e-mail: m.stoop@student.ru.nl). Voor eventuele klachten over dit onderzoek kunt u contact opnemen met:

Prof. Paula Fikkert
Radboud Universiteit
Postbus 9103

6500 HD Nijmegen
Tel: 024-3612669
p.fikkert@let.ru.nl

Appendix 6

Versie	**Perceptie (a)**	**Productie (b)**
1	Souris, cochon, canard	Tortue, lapin, poisson
Aanleren: perceptie, productie, perceptie, productie, perceptie, productie		
Volgorde: souris (a), tortue (b), cochon (a), lapin (b), canard (a), poisson (b)		
Retentie: cochon (a), lapin (b), canard (a), poisson (b), souris (a), tortue (b)		

Naam:

Leeftijd:

Geslacht:

Vandaag ga je zes Franse woordjes leren. De woorden die je gaat leren, gaan allemaal over dieren! Bij drie woorden moet je goed luisteren, bij de andere drie woorden moet je goed luisteren en meedoen. Kijk ook goed naar de plaatjes. Vind je het eng, of wil je even stoppen? Dat moet je dat tegen me zeggen. Ben je er klaar voor?

Luisteren: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Luister goed: souris. En luister nog eens goed: souris, souris, souris.

Luisteren en meedoen: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Kan je dat zeggen? Zeg maar: tortue [tortue]. En nog een keer: tortue [tortue].

Luisteren: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Luister goed: cochon. En luister nog eens goed: cochon, cochon, cochon.

Luisteren en meedoen: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Kan je dat zeggen? Zeg maar: lapin [lapin]. En nog een keer: lapin [lapin].

Luisteren: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Luister goed: canard. En luister nog eens goed: canard, canard, canard.

Luisteren en meedoen: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Kan je dat zeggen? Zeg maar: poisson [poisson]. En nog een keer: poisson [poisson].

Nu komen alle woordjes nog een keer.

Luisteren: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Luister goed: souris. En luister nog eens goed: souris, souris, souris.

Luisteren en meedoen: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Kan je dat zeggen? Zeg maar: tortue [tortue]. En nog een keer: tortue [tortue].

Luisteren: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Luister goed: cochon. En luister nog eens goed: cochon, cochon, cochon.

Luisteren en meedoen: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Kan je dat zeggen? Zeg maar: lapin [lapin]. En nog een keer: lapin [lapin].

Luisteren: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Luister goed: canard. En luister nog eens goed: canard, canard, canard.

Luisteren en meedoen: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Kan je dat zeggen? Zeg maar: poisson [poisson]. En nog een keer: poisson [poisson].

Nu gaan we kijken welke woordjes je nog weet. Probeer goed na te denken. Het is helemaal niet erg als je het niet meer weet. Soms vraag ik aan je of je een plaatje wil aanwijzen. Andere keren wijs ik het plaatje aan en vraag ik aan jou of je nog weet wat dat in het Frans is. **Goed/fout:**

Wijs nu de *cochon* aan. ……

Wijs op konijn: hoe noem je dit dier in het Frans? (*lapin*) ……

Wijs nu de *canard* aan. ……

Wijs op vis: hoe noem je dit dier in het Frans? (*poisson*) ……

Wijs nu de *souris* aan. ……

Wijs op schildpad: hoe noem je dit dier in het Frans? (*tortue*) ……

Versie	Perceptie (a)	Productie (b)
2	Lapin, poisson, tortue	Cochon, canard, souris
Aanleren: productie, productie, perceptie, productie, perceptie		
Volgorde: cochon (b), lapin (a), canard (b), poisson (a), souris (b), tortue (a)		
Retentie: lapin (b), poisson (a), tortue (b), souris (a), canard (b), cochon (a)		

Naam:

Leeftijd:

Geslacht:

Vandaag ga je zes Franse woordjes leren. De woorden die je gaat leren, gaan allemaal over dieren! Bij drie woorden moet je goed luisteren, bij de andere drie woorden moet je goed luisteren en meedoen. Kijk ook goed naar de plaatjes. Vind je het eng, of wil je even stoppen? Dat moet je dat tegen me zeggen. Ben je er klaar voor?

Luisteren en meedoen: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Kan je dat zeggen? Zeg maar: cochon [cochon]. En nog een keer: cochon [cochon].

Luisteren: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Luister goed: lapin. En luister nog eens goed: lapin, lapin, lapin.

Luisteren en meedoen: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Kan je dat zeggen? Zeg maar: canard [canard]. En nog een keer: canard [canard].

Luisteren: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Luister goed: poisson. En luister nog eens goed: poisson, poisson, poisson.

Luisteren en meedoen: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Kan je dat zeggen? Zeg maar: souris [souris]. En nog een keer: souris [souris].

Luisteren: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Luister goed: tortue. En luister nog eens goed: tortue, tortue, tortue.

Nu komen alle woordjes nog een keer.

Luisteren en meedoen: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Kan je dat zeggen? Zeg maar: cochon [cochon]. En nog een keer: cochon [cochon].

Luisteren: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Luister goed: lapin. En luister nog eens goed: lapin, lapin, lapin.

Luisteren en meedoen: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Kan je dat zeggen? Zeg maar: canard [canard]. En nog een keer: canard [canard].

Luisteren: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Luister goed: poisson. En luister nog eens goed: poisson, poisson, poisson.

Luisteren en meedoen: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Kan je dat zeggen? Zeg maar: souris [souris]. En nog een keer: souris [souris].

Luisteren: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Luister goed: tortue. En luister nog eens goed: tortue, tortue, tortue.

Nu gaan we kijken welke woordjes je nog weet. Probeer goed na te denken. Het is helemaal niet erg als je het niet meer weet. Soms vraag ik aan je of je een plaatje wil aanwijzen. Andere keren wijs ik het plaatje aan en vraag ik aan jou of je nog weet wat dat in het Frans is. **Goed/fout:**

Wijs op konijn: hoe noem je dit dier in het Frans? (*lapin*) ……

Wijs nu de *poisson* aan. ……

Wijs op schildpad: hoe noem je dit dier in het Frans? (*tortue*) ……

Wijs nu de *souris* aan. ……

Wijs op eend: hoe noem je dit dier in het Frans? (*canard*) ……

Wijs nu de *cochon* aan. ……

Versie	Perceptie (a)	Productie (b)
3	Canard, lapin, tortue	Souris, cochon, poisson
Aanleren: perceptie, productie, perceptie, productie, perceptie, productie		
Volgorde: canard (a), souris (b), lapin (a), cochon (b), tortue (a), poisson (b)		
Retentie: souris (b), tortue (a), cochon (b), lapin (a), canard (b), poisson (a)		

Naam:

Leeftijd:

Geslacht:

Vandaag ga je zes Franse woordjes leren. De woorden die je gaat leren, gaan allemaal over dieren! Bij drie woorden moet je goed luisteren, bij de andere drie woorden moet je goed luisteren en meedoen. Kijk ook goed naar de plaatjes. Vind je het eng, of wil je even stoppen? Dat moet je dat tegen me zeggen. Ben je er klaar voor?

Luisteren: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Luister goed: canard. En luister nog eens goed: canard, canard, canard.

Luisteren en meedoen: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Kan je dat zeggen? Zeg maar: souris [souris]. En nog een keer: souris [souris].

Luisteren: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Luister goed: lapin. En luister nog eens goed: lapin, lapin, lapin.

Luisteren en meedoen: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Kan je dat zeggen? Zeg maar: cochon [cochon]. En nog een keer: cochon [cochon].

Luisteren: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Luister goed: tortue. En luister nog eens goed: tortue, tortue, tortue.

Luisteren en meedoen: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Kan je dat zeggen? Zeg maar: poisson [poisson]. En nog een keer: poisson [poisson].

Nu komen alle woordjes nog een keer.

Luisteren: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Luister goed: canard. En luister nog eens goed: canard, canard, canard.

Luisteren en meedoen: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Kan je dat zeggen? Zeg maar: souris [souris]. En nog een keer: souris [souris].

Luisteren: Kijk, een konijn (laat los plaatje zien). In het Frans is dat ‘lapin’. Luister goed: lapin. En luister nog eens goed: lapin, lapin, lapin.

Luisteren en meedoen: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Kan je dat zeggen? Zeg maar: cochon [cochon]. En nog een keer: cochon [cochon].

Luisteren: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat ‘tortue’. Luister goed: tortue. En luister nog eens goed: tortue, tortue, tortue.

Luisteren en meedoen: Kijk, een vis (laat los plaatje zien). In het Frans is dat ‘poisson’. Kan je dat zeggen? Zeg maar: poisson [poisson]. En nog een keer: poisson [poisson].

Nu gaan we kijken welke woordjes je nog weet. Probeer goed na te denken. Het is helemaal niet erg als je het niet meer weet. Soms vraag ik aan je of je een plaatje wil aanwijzen. Andere keren wijs ik het plaatje aan en vraag ik aan jou of je nog weet wat dat in het Frans is. **Goed/fout:**

Wijs op muis: hoe noem je dit dier in het Frans? (*souris*) ……

Wijs nu de *tortue* aan. ……

Wijs op varken: hoe noem je dit dier in het Frans? (*cochon*) ……

Wijs nu de *lapin* aan. ……

Wijs op eend: hoe noem je dit dier in het Frans? (*canard*) ……

Wijs nu de *poisson* aan. ……

Versie	Perceptie (a)	Productie (b)
4	Poisson, souris, cochon	Lapin, tortue, canard
Aanleren: productie, perceptie, productie, perceptie, productie, perceptie		
Volgorde: lapin (b), poisson (a), tortue (b), souris (a), canard (b), cochon (a)		
Retentie: canard (a), souris (b), lapin (a), cochon (b), tortue (a), poisson (b)		

Naam:

Leeftijd:

Geslacht:

Vandaag ga je zes Franse woordjes leren. De woorden die je gaat leren, gaan allemaal over dieren! Bij drie woorden moet je goed luisteren, bij de andere drie woorden moet je goed luisteren en meedoen. Kijk ook goed naar de plaatjes. Vind je het eng, of wil je even stoppen? Dat moet je dat tegen me zeggen. Ben je er klaar voor?

Luisteren en meedoen: Kijk, een konijn (laat los plaatje zien). In het Frans is dat 'lapin'. Kan je dat zeggen? Zeg maar: lapin [lapin]. En nog een keer: lapin [lapin].

Luisteren: Kijk, een vis (laat los plaatje zien). In het Frans is dat 'poisson'. Luister goed: poisson. En luister nog eens goed: poisson, poisson, poisson.

Luisteren en meedoen: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat 'tortue'. Kan je dat zeggen? Zeg maar: tortue [tortue]. En nog een keer: tortue [tortue].

Luisteren: Kijk, een muis (laat los plaatje zien). In het Frans is dat 'souris'. Luister goed: souris. En luister nog eens goed: souris, souris, souris.

Luisteren en meedoen: Kijk, een eend (laat los plaatje zien). In het Frans is dat 'canard'. Kan je dat zeggen? Zeg maar: canard [canard]. En nog een keer: canard [canard].

Luisteren: Kijk, een varken (laat los plaatje zien). In het Frans is dat 'cochon'. Luister goed: cochon. En luister nog eens goed: cochon, cochon, cochon.

Nu komen alle woordjes nog een keer.

Luisteren en meedoen: Kijk, een konijn (laat los plaatje zien). In het Frans is dat 'lapin'. Kan je dat zeggen? Zeg maar: lapin [lapin]. En nog een keer: lapin [lapin].

Luisteren: Kijk, een vis (laat los plaatje zien). In het Frans is dat 'poisson'. Luister goed: poisson. En luister nog eens goed: poisson, poisson, poisson.

Luisteren en meedoen: Kijk, een schildpad (laat los plaatje zien). In het Frans is dat 'tortue'. Kan je dat zeggen? Zeg maar: tortue [tortue]. En nog een keer: tortue [tortue].

Luisteren: Kijk, een muis (laat los plaatje zien). In het Frans is dat ‘souris’. Luister goed: souris. En luister nog eens goed: souris, souris, souris.

Luisteren en meedoen: Kijk, een eend (laat los plaatje zien). In het Frans is dat ‘canard’. Kan je dat zeggen? Zeg maar: canard [canard]. En nog een keer: canard [canard].

Luisteren: Kijk, een varken (laat los plaatje zien). In het Frans is dat ‘cochon’. Luister goed: cochon. En luister nog eens goed: cochon, cochon, cochon.

Nu gaan we kijken welke woordjes je nog weet. Probeer goed na te denken. Het is helemaal niet erg als je het niet meer weet. Soms vraag ik aan je of je een plaatje wil aanwijzen. Andere keren wijs ik het plaatje aan en vraag ik aan jou of je nog weet wat dat in het Frans is. **Goed/fout:**

Wijs nu de *canard* aan. ……

Wijs op muis: hoe noem je dit dier in het Frans? (*souris*) ……

Wijs nu de *lapin* aan. ……

Wijs op varken: hoe noem je dit dier in het Frans? (*cochon*) ……

Wijs nu de *tortue* aan. ……

Wijs op vis: hoe noem je dit dier in het Frans? (*poisson*) ……