

**Incidental Vocabulary Learning in a Music Listening Task and a  
Study on the Role of Rhyme**

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# Table of Contents

|  |    |
|--|----|
| Abstract   | 1  |
| 1. Introduction  | 1  |
| 2. Literature  | 4  |
| 2.1 The Role of Attention and Noticing in SLA                  | 4  |
| 2.2 Learning Situations  | 9  |
| 2.2.1 Formal Learning  | 9  |
| 2.2.2 Informal and Incidental Learning                         | 10 |
| 2.2.3 Incidental Learning of Vocabulary                        | 11 |
| 2.3 The Role of Rhyme in Noticing and Learning Vocabulary      | 15 |
| 2.4 The Acquisition of Nouns and Verbs                         | 19 |
| 2.5 Motivation in SLA  | 21 |
| 2.5.1 Some Evidence of Motivation Studies                      | 22 |
| 2.6 Present Study  | 23 |
| 3. Method  | 25 |
| 3.1 Participants   | 25 |
| 3.2 Materials  | 25 |
| 3.2.1 Music  | 25 |
| 3.2.2 Target Words   | 26 |
| 3.3 Comprehension posttest                                     | 28 |
| 3.4 Vocabulary tests   | 28 |
| 3.5 Biographic Questionnaire                                   | 29 |
| 3.6 Procedure  | 30 |
| 3.7 Analysis   | 31 |
| 4. Results   | 32 |
| 4.1 The Effect of Rhyme on the Recognition of Form and Meaning | 34 |
| 4.2 An Incidental Learning Effect                              | 34 |
| 4.3 Word Class and Syllable Length                             | 39 |
| 4.4 Motivation   | 39 |
| 5. Discussion  | 40 |
| 5.1 Performance of the Groups                                  | 40 |
| 5.2 The Effect of Rhyme on the Recognition of Form and Meaning | 41 |
| 5.3 The Incidental Learning Effect                             | 43 |
| 5.4 The Form-Meaning Distinction                               | 44 |
| 5.5 Word Class and Syllable Length                             | 45 |
| 5.6 Limitations of the Study                                   | 47 |
| 6. Conclusion  | 48 |
| References   | 51 |
| Appendices   | 63 |

## Abstract

This study aims at identifying the role of rhyme as a mnemonic device in the incidental acquisition of second language vocabulary. Dutch L2 learners of English were asked to listen to a rap song containing pseudowords in rhyme context, supported by a visual presentation of the lyrics on a computer screen. A control group followed the same procedure but listened to a version of the song in which the rhyming pseudowords were replaced with non-rhyming pseudowords. Both groups were subjected to a comprehension test and two vocabulary post-tests that measured form recognition and meaning recollection as two key indicators of a learning effect. Results showed that participants in both conditions scored equally well on the vocabulary post tests. This entails that no effect of rhyme on learning effects was found. The results did show that all participants scored above chance level on the two tests. This is taken as evidence of the possibility to incidentally learn vocabulary in the context of hip-hop music. This serves as an encouragement not just for learners, but also for classroom instructors to incorporate rap music into strategies of second language vocabulary learning.

*Keywords: rhyme, noticing, incidental learning, exposure, music, form recognition, meaning recollection.*

# 1. Introduction

Learning the vocabulary of a language is a crucial part of the acquisition process. This is the case in both the first language (L1) and the second language (L2), although the context in which they are acquired often differs in the level of immersion. One of the consequences of this is that gaining linguistic knowledge is often done implicitly in L1 acquisition whereas learning an L2 is typically subject to explicit classroom instruction (Ellis, 2011). This seems to have an effect on development, as L2 learners have more problems in reaching higher proficiencies than L1 learners (Sorace, 2003), who naturally become highly proficient speakers almost without exception.

It is generally agreed that learners minimally need to know 4500 - 5000 word families to function in the second language (Milton & Hopkins, 2006), at least for English. This amount appears to be challenging for most L2 learners according to Schmitt (2008). Although he argued that this stems from a lack of exposure, it has recently been found that significant expansion of one's L2 vocabulary can not result from exposure alone (Taka, 2008). The context of the stimulus is said to be too poor for L2 learners to infer the meaning of unknown words. This is why there is a constant need for new strategies that help learners acquire second language vocabulary.

One way in which L2 vocabulary learning can be stimulated is by the use of mnemonic devices. These are often used in language education because they have a positive effect on cognitive processes related to learning (Baddeley, 1990). There are nine types of mnemonic devices, such as Music mnemonics, Name Mnemonics, and Rhyme Mnemonics (Congos, 2013). The idea is to aid cognitive learning processes by presenting certain information in a different form. It is hypothesised that learners store and access information better when it is linked to a mnemonic device than when it is presented in its original shape. An example of such an approach are nursery rhymes, known to increase children's phonological awareness in their early childhood (Maclean, Bryant, Bradley, 1987):

Humpty Dumpty sat on a wall,  
Humpty Dumpty had a great fall.  
All the king's horses, and all the king's men,  
Couldn't put Humpty together again.

Here, the first two lines are part of a story and are thus semantically related. Imagine a child is familiar with the word "wall", and has yet to acquire the word "fall". By learning the nursery

rhyme, semantic information becomes available to the child (e.g. one can fall when sitting on a wall) that helps the acquisition of the word “fall”.

Although these rhymes and songs are typically designed for children, there is no reason why adult L2 learners could not benefit from them in their aim to acquire new vocabulary. There have been a number of studies with adult learners showing similar results with rhyme experiments. For instance, Nimmo and Roodenrys (2004) found that words can be recalled more easily when they are presented with rhyming words. It is suggested that rhymes elicit the activation of the short-term memory. This does not mean that the word is instantly learned, as this involves adding conceptual information for a deeper understanding (Henriksen, 1999). Rhymes, however, seem to be able to attract attention from learners irrespective of age. As a result of their salience, they end up in the short-term memory, which has been found to be closely associated with acquiring second language vocabulary (Gathercole, Service, Hitch, Adams, & Martin, 1999).

The devotion of attention is an important factor in learning. In fact, learners who do not allocate any attentional resources to novel information can not learn anything (Schmidt, 1990). There are all kinds of factors which decide if a learner pays attention to certain input. These have to do with individual differences, such as personality and motivation, but also with the characteristics of the input, such as the complexity of the information (Schmidt, 2002). Attention can also shift very rapidly (Jimenez, 2003), without this being visible to other parties. It is generally agreed, however, that all learning requires a minimum amount of attention, and learning is thus not an unconscious process (Schmidt, 2001). This claim comes from theories of memory, which argue that unattended information cannot stay in the short-term memory for more than a few seconds (Velmans, 1991), and “attention is the necessary and sufficient condition for long-term memory storage to occur” (Schmidt, 1995, p. 9). This can be used to explain why learners fail to acquire words even after repeated exposure.

The amount of attention that is needed to take information in varies. It is well-attested that learners who pay much attention to vocabulary acquisition processes are more successful in learning than learners who pay little attention. This is why motivation, along with factors such as aptitude and instruction type (Spolsky, 1995), has been found to be one of the most important predictors of learning success (Tseng & Smith, 2008). It is, however, also possible to pick up words incidentally, i.e. without the intention of the learner. This also needs the learners’ attention, as they need to minimally notice the input for it to become intake (Schmidt, 1991), but this kind of learning can occur as a byproduct of another activity (Marsick, 1990). There is a growing bulk of evidence suggesting that vocabulary can be learned in incidental learning situations. Godfroid et al. (2017)

showed that both L1 and L2 learners incidentally learn unknown vocabulary when reading authentic material. This way of learning has even been argued to be more successful than reading texts with glossaries or dictionaries (Hulstijn, Hollander, Greidanus, 1996). As long as learners are exposed a certain amount of times, and the textual contexts provide enough information that the meaning can be inferred, the words can become part of their long-term memory. Other incidental learning studies show similar results for acquiring vocabulary while reading books (Brown, Waring, & Donkaewbua, 2008), watching videos (Pelican-Sanchez & Schmitt, 2010), and listening to audio material (Kim & Gilman, 2008; van Zeeland & Schmitt, 2013).

One naturalistic environment that is eligible for L2 vocabulary acquisition is music. The hit charts in most European countries are dominated by songs with English vocals. Recent technological developments “present the opportunity for music to become increasingly prevalent in people’s daily lives” (Krause, North, & Hewitt, 2015, p. 156), so it can be assumed that L2 learners from diverse areas will be increasingly exposed to English music. A genre that is particularly rich in lexical dexterity is hip-hop music. Rap texts often demonstrate a lot of text, and the genre has therefore been called “a global ambassador of the English language” (Richardson, 2006). A second characteristic of hip-hop music is that it features a lot of rhymes. Considering the evidence of a positive effect of rhymes on attention and the idea that music is an effective source for language acquisition (Wallace & Rubin, 1988; Li & Brand, 2009), this study will contain an incidental learning experiment in which participants are asked to listen to hiphop music with unknown vocabulary.

The following chapter will provide an overview of the literature that is relevant to this study. The first section discusses the role of attention in second language acquisition. This entails a historical overview about the theoretical notions that have been most influential in research, along with several practical examples of how attention plays a role in different learning situations. Next, the effect of rhyme on attentional processes will be discussed and linked to the most recent research on vocabulary acquisition. This includes a discussion of the role of orthography in noticing novel words, as well as a short outline on the differences between the acquisition of nouns and verbs. The last section will discuss how learner characteristics can determine the success of vocabulary acquisition, with an emphasis on the role of motivation.

## 2. Literature

### 2.1 The Role of Attention and Noticing in SLA

There are multiple ways in which the second language learning community looks at attention as a factor in acquiring a language. The first school of thought sees conscious understanding as a basic necessity of learning an L2, and stresses the importance of focus on form (Schmidt, 1995). Learners are required to study the rules of a language before being able to apply them in the production of language. Mistakes in the output can be ascribed to a lack of focus or attention by the learner, either on the level of studying or production. Overall, it is argued that learning a second language is the product of transforming explicit instruction into output that is indistinguishable from native-like output. This view does not discard the idea that communicative practice facilitates language learning, but it is of secondary importance compared to instruction, explanation, and drill.

The second stream of scholars view language learning as a process that is mainly unconscious. Learners acquire an L2 just like an L1, namely via interaction and the analysis of exposed input. It is seen as an implicit learning process that requires no effort from the learner in terms of studying forms, but rather on attention to meaning. Researchers like Tomlin and Villa (1994) argue that attention, or being aware of stimuli, is not necessary for learning. They analyse attention and awareness by dividing the concepts into three distinguishable processes; alertness, orientation, and detection. Alertness is phrased as “an overall readiness to deal with incoming stimuli” (p. 190). This is necessary if a learner wants to divide attentional resources to the stimuli in the following process, which is named orientation. The detection process is being described as “the cognitive registration of stimuli”(p. 190) and when this occurs, stimuli can be internalised. Crucially, it is argued that these functions of attention can be operational without conscious awareness, and so it is claimed that learning can take place without the learner being aware. Evidence of this theory suggests that registering stimuli, which is different from noticing stimuli, suffices for learning.

The third view is somewhere in between the first two and is the most dominant view in SLA research at this moment. It combines the first in clearly acknowledging the importance of focussing on form with the second by stressing that learners have to immerse in communicative contexts to become proficient speakers of an L2. Crucially, both of these processes require a learner who is consciously aware and pays attention to input and interaction. Information is perceived when it is noticed, and only when it is noticed can it become stored knowledge. This is similar to what Tomlin



and Villa (1994) called detection, but it implies that learners are consciously aware of the input and it is thus conceptually different. Robinson (2003) argues that the role of the short-term memory defines the difference between the two. The activation, or *rehearsal*, of the short-term memory is a result of the allocation of attentional resources. This is how detected information can become noticed information. Since the short-term memory is part of the long-term memory, noticing is argued to be necessary for the storage of information. Learning is thus claimed to be the result of a combinatorial process of detection and activation of the short-term memory. It is irrelevant if the information is presented to the learner via explicit instruction or in the context of interaction, as noticing form, induced by a teacher, leads to the same cognitive processes as independently assigned focus by a learner (Godfroid, Housen & Boers, 2010).

The idea that learning cannot occur without awareness forms the basis of the Noticing hypothesis (Schmidt, 1990), which describes noticing as “the necessary and sufficient condition for the conversion of input to intake” (Schmidt, 1994, p.7). This means that we learn from what we notice, and we are unable to learn from what we do not notice. This provides an explanation for how it is that people continue to make the same mistakes, even though they are continuously exposed to positive evidence of a language. Although the noticing hypothesis may provide a fairly straight-forward description of problems that frequently occur with language learners, it is also conceptually vague (Tomlin & Villa, 1994). This is because Schmidt (1994) does not distinguish between noticing and understanding, and the hypothesis has therefore received a lot of critique (Maftoon & Shakouri, 2012). Apart from any theoretical objections, it is also hard to measure noticing because it requires a certain level of introspection by participants (Uggen, 2012). Although this means that it is a subjective measurement, it can and is often done via post-procedural questionnaires. These do not give a complete picture, but at least they provide some insight into the attentional processes that take place in experimental settings.

The Noticing hypothesis can also explain the role of conscious awareness in processing input. Schmidt (1990) distinguishes three levels of consciousness in language learning: awareness, intention, and knowledge. At the first level, learners notice the features of input and activate the short-term memory. The input is then stored as a memory and the features are compared to existing features present in the brain. This is essential for learning as this comparison can result in a reanalysis of the existing features into a correct representation, which is a way of learning. The activation of the short-term memory is the only way information can be made eligible for long-term

storage, and hence the notion of subliminal learning is ruled out.<sup>1</sup> The second level suggests it is irrelevant that learners notice input intentionally, as incidental learning is recognised as a possible result of noticing too. The last stage of learning, knowledge, involves the transformation of input into implicit knowledge. Repeating this process aids the internalisation of linguistic information, especially in relation to learning the grammar of a language (Ellis, 1997).

The Noticing hypothesis has often been empirically tested in second language learning studies. Leow (2000) studied the effect of awareness on the acquisition of second language morphological forms. He hypothesised, in line with Schmidt (1990), that conscious awareness is a necessary precondition for language learning and that a think-aloud methodology is apt to provide evidence for this claim. He asked 32 students of Spanish to perform a problem solving task, in the form of a crossword puzzle. This was argued to be an ideal tool for think-aloud experiments, as it demands high levels of attention and people are said to be perfectly able to verbalise their thoughts. The content of the puzzle included mismatches in morphological form, which were expected to be noticed by participants if they displayed a certain amount of attention to the task. After completing the crossword puzzle, participants were asked a probe question to check for their attention. They had to flip the paper of the puzzle afterwards and immediately perform the post-exposure task. This asked them to produce a grammatical sentence with the morphemes from the crossword puzzle. These two tasks were designed to measure recognition and production as the primary indicators of learning. The think-aloud data were analysed by two independent assessors. The results showed that participants who were aware of the mismatches in the crossword puzzle performed significantly better on the intake and production task than the group of participants who were unaware of the mismatches. The conclusion follows that attention has a positive effect on language acquisition, and that this is empirical counter-evidence for a dissociation between awareness and learning.

Another relevant factor in the relationship between language learning and noticing is the degree of attention that is allocated. The evidence suggests a positive effect of noticing on learning, but it is unclear if this correlation shows a linear function. Mackey (2006) used multiple measures of noticing and development in attention to see whether this is the case. To study this, she set up a fictional game show with language learners partaking in conversational interactions. Two groups of second language learners of English were assigned to one of two conditions. The experimental group was divided into several small groups who would partake in the show. These groups consistently got feedback on their L2 output during the three 50-minute sessions, from both the

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<sup>1</sup> Learning that occurs by “exposure to a subliminal stimulus, without the subject having to pay attention and without relevance to the particular task in hand” (Watanabe, Náñez & Sasaki, p. 844).

teacher and the researcher, who was present in the setting. The control group followed the same procedure, but participants in this group would get no feedback at all, as research had indicated that feedback, whether positive or negative, prompts the attention to language and steers the attention of participants. The development of attention was measured using online learning journals, the observation of introspective comments during class, and with an offline questionnaire. Each learner was tested before and after the three sessions to see if there was an increase in performance on several L2 tasks. The results showed that participants who received feedback noticed the target forms significantly more often than participants who received no feedback. They also performed significantly better on the tasks than participants who got no feedback. It was hence concluded that feedback positively affects noticing, and when participants noticed the forms they were more likely to learn them than when they did not notice them. Second, as participants were not aware that they were involved in a language learning environment, they could only have learned the forms incidentally. Overall, this study provides support for Godfroid, Housen and Boers' (2010) claim that "higher levels of awareness lead to higher learning gains" (p. 172).

There is more evidence of the relationship between attention and learning that provides insight into the learning success in incidental learning situations. Godfroid, Boers, and Housen (2013) were interested in the relationship between unknown words and the degree of attention and processing. A group of 28 Dutch students of English was asked to read 20 short English paragraphs. These were advertisement articles which contained either an unknown word with familiar words or only familiar words. A pre-test was conducted to check if all but the target words were familiar to the students. The target words were carefully selected pseudo words. There were three critical conditions apart from the control condition, which differed in the level of contextual information participants were provided with the pseudowords. An eye-tracking device was used to measure their focus of attention. The total reading time and gaze duration were taken as the key variables of attention. To measure a possible learning effect, a vocabulary post-test was designed assessing the participants' ability to recognise the pseudowords. Results from the eye-tracking measurement showed that there was a significant difference in time spent looking at pseudo words versus familiar words. This provides further evidence for the Noticing hypothesis in relation to new, unknown L2 words. The expectation followed that attention has a positive effect on learning gains. Results of the vocabulary test showed that recognition of the pseudo words positively correlated with attention. These findings also provide evidence for the idea that incidental learning of vocabulary is possible, at least in terms of form recognition. The noticing function of new vocabulary is thus well-attested. It remains relatively unclear, however, to what extent words are learned when they are noticed.

Most studies have looked at recognition of form as the first indicator of a learning effect, but learning a word also includes the mapping of semantic meaning to the form, known as fast-mapping (Bion, Borovsky, Fernald, 2013). A study by Petschko (2011), who investigated the effect of input enhancement on L2 vocabulary acquisition sheds some more light on this. She had 47 intermediate learners of English read a story containing 12 pseudo words. In the first condition, these were underlined and written in bold to create a textual enhancement effect. The words were presented without these features in the second condition. A comprehension test was presented before the subsequent vocabulary tasks which measured both form and meaning recognition. Finally, participants had to take a multiple-choice test to see if they could also recall the meaning. The combined results of the three measurements determined whether there was indeed a learning effect. The data showed that textual enhancement did not play an important role, i.e. participants in both groups noticed the pseudo words evenly often. Performances on the vocabulary test showed substantial variance in learning gains among participants, but there is a pattern that shows form recognition is easier than meaning recognition and meaning recollection. Since some students performed surprisingly well on all tasks, suggesting they had gained a deeper understanding of the word, it was concluded that long-term semantic memory storage is possible in certain circumstances.

It seems evident that unknown words can be learnt when attended to, but these are not the only forms that carry this power. Lindstromberg and Boers (2008) conducted an experiment with second language learners in which they found that certain orthographic cues have the potential of focussing the learners' attention, and this has consequences for their performance on recollection tasks. It was hypothesised that phonological repetition, also known as alliteration, facilitates learning processes. They had participants read out sentences to each other in groups of three and subsequently asked them to reproduce the sentences on a piece of paper. Results showed that participants were significantly better at reproducing sentences that featured some alliteration in their lexical items, such as phrases like "day dream". This experiment, however, involved instruction to the participants to focus on these kinds of phrases. Post-tests showed that participants do not notice alliteration autonomously, i.e. their attention needs to be focussed by an instructor in order for learning effects to occur. These results, however, do indicate that people are potentially sensitive to form in noticing lexical items.

## **2.2 Learning Situations**

It seems evident that attention plays an important role in the language acquisition process, and that learning can occur in all kinds of situations with all kinds of different tasks. It is thus relevant to look at the kinds of environments learners are in, and how vocabulary learning takes place in these settings. Results from a self-report questionnaire by Tremblay (2006) showed that learners are exposed to second languages through many different channels. L2 exposure often occurs in classroom settings, which is a typical formal learning situation. Learners can also study a language on their own, for instance with the help of a self-study programme. This is a situation of informal learning, or experimental learning, and can be described as “learning by doing” (Boekaerts & Minneart, 1999, p. 534). It is also possible that language is acquired as a byproduct of other activities, for instance learning new words while reading a book. This is what can be seen as incidental learning (Marsick, 1987a). In sum, these observations suggest that learning a second language it is not always an overt process, and it is thus relevant to examine the difference between the learning environments in the following sections.

### **2.2.1 Formal Learning**

Formal learning typically follows from instruction, and is linked to highly structured settings like the classroom (Coombs & Ahmed, 1974). Instructed teaching is described as “imparting new information to students through meaningful teacher–student interactions and teacher guidance of student learning” (Rupley, Blair, & Nichols, p. 126). It is often deployed with teaching complex language rules, because they are less likely to be learned implicitly (Hulstijn & De Graaf, 1994). Another benefit of instructed learning is that it is the most effective and efficient way when teaching a group (Archer & Hughes, 2010). This typically entails form-focused activities that are frequent in second language learning programmes, although the success depends on the choice of the target structure and the extent of instruction (Ellis, 2002). A drawback of formal learning settings is that instructors use different methods and teaching styles, and instruction is thus hardly ever the same. The delivery of instruction is also often flawed and too much instructor-focused (Nelson, Cushion, Potrac, 2006). Students also do not always respond well to instruction, which can explain why students from the same educational level perform differently (Lohman, 2003). Dabbagh and Kitsantas (2012) also found that formal learning situations enhance the ability and desire of

individuals to learn informally. It is suggested then, that the benefits of informal learning settings outweigh those from formal learning settings.

### **2.2.2 Informal and Incidental Learning**

Informal and incidental learning situations can be defined by contrasting them with formal learning situations. They typically lack structure and external facilitation, and the context also plays an important role (Marsick & Watkins, 2001). Informal learning is based on learning from experience and self-directed learning (Marsick, Watkins, Callahan, & Volpe, 1990). It is defined as “learning without any institutional control with a greater freedom for learners” (p. 11), such as learning from mistakes. Because of this, more responsibility and agency are expected from learners (Eraut, 2004). Informal learning is also less visible than formal learning, as it needs less focussed attention from the learners. Examples of informal learning situations are networking, coaching, self-directed learning. Choi and Jacobs (2011) found that when individuals strive for personal development, they experience a greater desire for informal learning situations. Although informal learning shows some overlap with incidental learning, the latter being a subset of the former, there are several key differences between the two.

Incidental learning is never planned or intentional, in contrast to both formal and informal learning (Marsick, 1990). It typically occurs as a byproduct of some other activity, and is thus largely embedded in the context of the core activity. Attention in incidental learning is lower than in informal learning settings (Marsick & Watkins, 2016), but it is crucial that some degree of attention is assigned to the byproduct in order for learning to occur (1990). It can be assumed that the more aware one is, the more clearly learning is experienced. Marsick (1990) gives the example of finding out the boundaries of informal behaviour on the work floor. Jacques (1986) argues that the intellectual capability of an individual plays a key role in incidental learning situations. The ability to deduce information regarding the secondary learning process, like discovering the appropriate degree of politeness in interpersonal communication, is suggested to correlate with an individual's working memory (WM). This idea, however, has not found much support in more recent work on incidental learning as the WM is said to be one of many learner characteristics in addition to aptitude that play a role in this kind of learning (Paribakht & Wesche, 1999).

### **2.2.3 Incidental Learning of Vocabulary**

There has been considerable research into the potential of language learning from incidental learning situations. Many of these studies looked at vocabulary gains, from differentiating activities such as reading, listening, and using contemporary media. Hulstijn (1992) was one of the first to introduce the topic of incidental learning related to vocabulary acquisition. He assumed that individuals benefitted more from inferring the meaning of an unknown word from the context than simply being given the meaning via instruction. This is based on the idea that the inferred meaning task requires more mental effort, and this induces a higher involvement from learners which positively affects retention. This was later summarised in the Involvement Load Hypothesis (Laufer & Hulstijn, 2001). Five experiments were conducted to test this idea. The experiments asked participants to read a text and focus on the meaning, in order to be able to answer several follow-up comprehension questions. These were designed to ensure that participants paid enough attention to the task, so that the incidental learning of the target words was more likely to occur. The results from three of the five experiments confirmed the hypothesis. Participants in the inferred-meaning condition outperformed participants in the control condition, who read with a glossary, in the vocabulary post-tests. The difference between the groups, however, was only marginal. This could be explained by an effect of exposure frequency, as participants in both conditions were only presented with the target words one time. There is also always the possibility that the context does not give enough information to infer the meaning of a word. A second goal of the study, then, was to see if the disadvantages of this method could be reduced by having participants take a multiple-choice test instead of a synonym test. The results showed that a multiple-choice procedure leads to a higher retention effect than the synonym procedure, although the distractors of a multiple-choice test can sometimes be too appealing. The overall conclusion was drawn that learners are more involved when they have to infer the meaning of a word, and this benefits retention. Second, participants who lacked concentration while reading performed worse on the multiple-choice test than participants who did show concentration. These findings support the idea that attention plays a crucial role in learning, also in the incidental acquisition of vocabulary as a byproduct of another activity.

A question that was raised next was whether age had any influence on the ability to learn second language vocabulary in incidental learning tasks. A study by Saffran, Newport, Aslin, Tunich, and Barrueco (1997) compared children and adults in the context of incidental language learning. They had participants listen to streams of artificial language, while they had to draw

pictures on a paper in front of them. They were instructed to constantly keep drawing to ensure that the attention of the learners was not solely focussed on the language, which included a large string of non-words. Without any instruction, both children and adults were able to identify words from non-words well above chance level in a subsequent lexical decision task. A second experiment with longer audio fragments was conducted to see if these findings could be replicated, and to test if learning improvement occurs with more input. Results confirmed both hypotheses, suggesting that incidental language learning is a phenomenon that is stable and natural to human language learning. Second, the results indicated that people from multiple age groups are able to learn language in incidental situations and that there is no difference to be expected between the two groups in terms of performance. A follow-up meta-analysis by Hulstijn (2001) concluded that the incidental learning method has been shown to be more effective than learning with a glossary in a large part of the studies. It is stressed, however, that the distinction between the two fades in practice. The evidence suggests that learners do need some form of instruction to notice input in incidental learning situations. Only when learners explicitly focus on the target words, they outperform the learning-by-glossary group in subsequent vocabulary tests. Simply promoting listening or reading activities seems insufficient then.

There is a way in which the attention of learners can be directed to unknown vocabulary, while maintaining an incidental learning situation. Loewen (2005) conducted a study which investigated how learners' attention could be focussed on target words in incidental learning in the classroom. He claimed that focussing on form (FoF) enhances vocabulary uptake in second language acquisition. This is a method that Long (2000) specifically designed for incidental learning in the classroom. FoF requires an instructor intervening when students experience problems in communicative tasks. The instructor ensures that the learners' attention is "briefly shifted to linguistic code features" (p.1), which entails that the learning process can still be described as incidental. Loewen (2005) provides an example of the Focus on Form method in the classroom in his study, in which the learner finds the word "addicted" with the help of the teachers' intervention:

L: *how can I say uh maybe if I had have drug*

T: *mhm*

L: *have a drug (.) and I can't stop*

T: *addicted*

L: *addicted*



T: *addicted (.) I am addicted*

L: *ah*

T: *yeah (.) I am addicted (.) you can be addicted to exercise (.) addicted to chocolate (.) you can't stop (.) okay*

L: *addicted to drugs*

T: *addicted to drugs (.) yeah you can't stop (.) can't stop (.) okay*

Loewen (2005)

This example comes from a total of 32 hours of classroom conversations that were recorded and analysed to see if students were sensitive to the method. The students were subjected to individualised vocabulary tests on several moments during the weeks of this study. These intended to measure a possible benefit from the FoF-instruction. Results of the tests showed that students were able to correctly recall the words in 60% of the cases on day 1, and in 50% of the cases after two weeks, suggesting a long-term learning effect. These findings are seen as evidence of the effectiveness of the FoF-method in incidental learning contexts.

The Focus-on-Form method was studied in more depth in following research. A study by Alcon (2007) compared different roles of the instructors in incidental learning contexts. She investigated how interactional conversations probe vocabulary acquisition, following Long's (1983a) Interactional Hypothesis, which states that negotiated interaction facilitates second language learning. Seventeen 45-minute classroom conversations of twelve Spanish learners of English were observed for over a year. In these sessions, teachers were instructed to either exert pre-emptive or reactive incidental focus on form. Both styles involve an instructor who points the students to the right linguistic forms, but the difference is that pre-emptive focus follows from initiation by the students. The researchers measured which conversations featured novel word use and if there were differences as a result of the two teaching methods. Transcriptions of the classroom conversations showed that the students not only imitated the lexical items uttered by the teachers in their instruction, they continued using the words over longer periods of time suggesting they had acquired the lexical item. There was thus a positive effect of FonF on form recognition, meaning recollection, and discourse use. The conclusion was drawn that the teachers' pre-emptive focus on form boosted learners' noticing and hence facilitated learning. These results provide evidence for the benefit of instructed focus. They further suggest that although incidental learning is possible, it is evident that learning effects are more likely to occur when there is some form of instruction in terms of focus.

The role of the instructor and the ideal environment of incidental learning has not been the main subject of attention lately. Instead, there has been a focus on the extent words to which words are actually acquired. Godfroid et al. (2017) conducted a study to better understand the cognitive processes involved in the vocabulary acquisition in incidental learning situations. They collected online eye-tracking data apart from behavioral measurements. The goal of this study was not to measure performance as the key variable, but instead look at the division of attention in a reading task. The eye-movements of two groups of native and non-native English participants was tracked while reading an English novel, which contained several words from the Dari language which could not be familiar to any of the participants and were hence labelled novel vocabulary. The time which participants took looking at these Dari words was measured in two sessions of several hours. Exposure time was hence taken as a predictor of vocabulary gains. Apart from a post-reading comprehension test, which served to have the participants focus on the meaning of the text, three vocabulary tests were designed to measure the learning gains of novel words. Results from the eye-tracking measurement showed that the eye-fixation time decreased after repeated exposure to these words, which can be seen as evidence of the Noticing Hypothesis since increasing familiarity results in decreasing salience and hence noticing. Results from the vocabulary tests showed that all participants performed better at form recognition and meaning recognition than at meaning recollection. This fits with Henry's (1999) claim that the recollection of meaning reflects a deeper understanding of a word, something that is less likely to occur in an experiment with vocabulary acquisition. The conclusion was drawn that both groups incidentally learned the target words, although the non-native participants were slightly less accurate in the meaning recollection task. The authors do stress, in line with previous research, that exposure frequency is a robust factor in acquiring vocabulary gains.

Although this last study includes a reading task, most of the previous studies show findings from experiments with listening tasks, which is also the focus of this study. There seems to be sufficient evidence to suggest that incidental learning from spoken input works well with vocabulary acquisition, although it is said to never outweigh intentional learning in terms of effectiveness (Schmitt, 2008). This, however, does not leave the method irrelevant, as there is enough evidence to suggest the opposite. With this in mind, de Vos, Schriefers, Nivard, and Lemhöfer (2018) presented a meta-analysis of the available work on incidental learning with spoken input, which provides a better picture of the method in terms of effectiveness. An extensive search of the available literature rendered 32 studies with different methods, statistical procedures, and language combinations to be analysed. The researchers were able to compute a Hedges' *g* effect

size of 1.05 which means that participants in the experimental conditions experienced a vocabulary growth of 1.05 standard deviations compared to participants in control conditions. This was described as a very large effect, especially because incidental learning is a byproduct of a primary task. The explanation for this follows from the observation that many of the experiments were not speech-only. Information from other modalities were often available to the participants, suggesting that spoken input alone cannot be responsible for the large effect size. There seems to be an important role for visual information in incidental vocabulary acquisition then, which is not surprising considering results from Van Heuven, Conklin, Tunney (2014) that suggest that incidental learning gains enhances when information is presented in more than one communicative mode.

A second interest of De Vos et al. (2018) concerned the predictor variables in incidental learning success. First, it was concluded that participants who reached adulthood systematically outperformed children and adolescents in vocabulary tasks. This is unsurprising since cognitive abilities, proficiency, and experience with language generally increase when people become older. Another finding was that it does not seem to matter for the performance on a test if participants are interacting with an instructor during the listening task. This is surprising since talking and listening is cognitively very demanding (Lee, Cerisano, Humphreys, & Scott, 2017), and this might thus distract too much attention from the words participants are expected to learn. Thirdly, it was found that form recognition tests were easier for participants than meaning recollection tasks. This too is unsurprising considering the incremental process of vocabulary acquisition (Nation, 2001). Lastly, it was also concluded that whether studies include control groups in the design is relevant for the outcome. It was found that studies that lacked a control group presented larger effect sizes.

### **2.3 The Role of Rhyme in Noticing and Learning Vocabulary**

The previous sections provided evidence for the idea that new words are appealing, and that they can be learned incidentally. They also make clear that acquiring vocabulary is an incremental process in which exposure frequency plays a key role. Although this is undisputed, there are ways in which the learning process can be accelerated. L1 learning strategies for children use the orthographic and phonological properties of words to focus attention on them. This is particularly useful for acquisitions purposes, for example when the spelling of a word is used for a mnemonic device to aid retention. There are several orthographic properties of language that have this potential, such as alliteration in poems (Dowker, 1989), and rhyme in children's nursery rhymes

(Bryant, Bradley, MacLean, 1987). This has been investigated in studies with both written as spoken language. For instance, Wimmer, Landerl and Schneider (1994) found that awareness of rhymes becomes increasingly more important for the language development of elementary school children. They showed that rhymes help the construction of mental representations, as words that rhyme can be grouped together in the brain. These representations are firmly established, and this is beneficial for the learning process.

It is generally assumed by many scholars that rhyme aids phonological awareness in children (Raz & Bryant, 1990), and this is linked to vocabulary acquisition (Gathercole and Baddely, 1989). A longitudinal study by Gathercole and Willis (1991) first examined this relationship. Groups of 4 and 5 year old children were tested on phonological memory and measured on rhyme detection, non-verbal intelligence, and vocabulary knowledge. The general question was if both phonological memory and rhyme awareness tap into the same skill. The results showed that both factors are related to reading proficiency and vocabulary development. It is claimed that “children’s ability to learn new words is closely associated with their skills at temporarily retaining phonological material” (p. 405), and rhyme awareness positively affects this. These findings were extended in a further study into phonological awareness and vocabulary acquisition by deCara and Goswami (2003). They claim that at early stages of first language acquisition, children are particularly sensitive to constructions that have a high neighbourhood density. These are words that have a similar phoneme organisation such as rhyming words like “hat-cat” (Munson & Soloman, 2004). This was hypothesised to be the most important phonological skill that children use as a vocabulary acquisition mechanism. An oddity task, in which children were asked to select the odd word out of three words, was designed to provide evidence for this hypothesis. Most of the 48 five-year-olds indeed chose the word that did not rhyme (meat, *weak*, seat) as the odd word out of the three. The results were paired with the performances on a vocabulary skill task, which showed that children with large vocabularies made fewer mistakes than children with small vocabularies. This is seen as evidence that children use rhyme awareness as an acquisition tool for vocabulary, at least before they become literate. Although it is clear that this changes when children grow older, Dollaghan (1994) already suggested that these effects can also expected be with adults. He stated that adults have a larger lexicon and are thus better at discriminating words from each other. There is evidence that shows that phonological and orthographic overlap (e.g., rhyme words) in words leads to faster processing than words with no overlap (Grossi, Coch, Coffey-Corina, Holcomb & Neville, 2001). This holds for all modalities and

is also found with L2 learners (Marian, Blumenfeld, & Boukrina, 2007). There is thus no reason to assume that adults can not use the skill of rhyme awareness in acquiring vocabulary.

The question what orthographic properties of rhymes make them notable has been tried to answer in the previous century. Seidenberg and Tanenhaus (1979) observed that many theories of memory reserve a key role for auditory characteristics of language in cognitive processes. This is based on the assumption that apart from semantic and phonological codes, orthographic information becomes available in word recognition. A first experiment was designed to test if people were able to detect rhyming words faster than orthographically dissimilar words. Participants were presented with a single word for two seconds (cue), followed by a list of five words each appearing one second after the other. They then had to decide which of the five words was similar to the cue. Results showed that when the cues were similar in form and audio to the target words (*plate-gate*), participants were faster at responding than when the cues were dissimilar in form to the target words (*freight-gate*). This was seen as evidence of a key role for orthography in rhyme detection. A second experiment was conducted to replicate this effect with an auditorial presentation. Latencies were again significant lower in the similarity condition, also when the list of target words was made shorter or longer. The results also showed that the effect was stable across phoneme and syllable variations. Experiment three was designed to see if this effect would hold in other experimental tasks. Participants were presented with the audio of a word (cue), followed by the audio of orthographically similar second word (target) two seconds later, which either rhymed or did not rhyme. Response latencies were remarkably low in the first condition compared to the second condition, suggesting that orthographic similarity facilitates recognition of rhymes and interferes with the recognition of non-rhyming words. The results of the three experiments led to the conclusion that orthography plays a key role in rhyme detection across multiple modalities.

Other studies have reached similar conclusions using different methodologies. Navon and Shimron (1993) looked at the effect of rhymes on noticing and were specifically interested in which phonological properties of words and phrases are available to people in online processing. They designed a complex procedure with two groups who read different paragraphs of text, one paragraph containing six instances of orthographically similar rhymes and the other containing six instances of orthographically dissimilar rhymes. As a second manipulation, some participants were not presented with paragraphs of text but only with the target sentences. They were also asked to either listen, read orally, or read silently, to see if modality plays a role in noticing rhymes. The participants were instructed to focus on the meaning of the text in order to mask that this was an experiment of incidental rhyme noticing. After the procedure, participants had to indicate if they

had noticed the rhymes. Results showed that the rhymes were noticed significantly more often in the orthographic similarity condition. Second, it was observed that participants who listened and read the text out loud noticed the rhymes better than the participants who were asked to read silently. Lastly, the effect of context was found to be strong. The rhymes in the paragraph were noticed less frequently than the rhymes in the isolated sentences, suggesting that contextual influences play a large role in rhyme noticing. Experiment 2 was designed to see if the findings of the first experiment were not just the result of a failing short-term memory, i.e. the possibility that all participants noticed the rhymes but some could simply not remember them. If this was indeed the case, it was to be expected that this group would perform worse on a counting-backwards task that was included in the procedure of the first experiment. Results showed no differences in performance between the groups suggesting that the working memory did not play a significant role in post-procedural rhyme noticing. Overall, it was concluded that there is a strong effect of orthographic overlap on the processing of words and phrases across modalities.

The well-attested benefit of rhyming for attentional purposes directly affects learning. This has been studied in different contexts, inside and outside the context of language learning. McQuarrie and Mick (2009) investigated the effect of rhyme on message recollection in an experiment with magazine advertisements. An experiment was set up in which 218 participants were asked to go over a binder containing several magazines, before they had to give judgments about them. They were not told the magazines would include the advertisements, which were the targets of the experiment. This procedure was repeated with a second binder to include exposure frequency, and to ensure that the participants were not aware that they were being tested on their cognitive performances. A questionnaire was presented next assessing their affective interest in the magazines, whilst also measuring aided recall, repetition levels, and form recognition. They found that participants were better at recognising and recalling ads when they contained rhetorical figures. This was assumed to be because of the strong effect of rhyme on cognitive processing. No such effect of puns was found. This was in line with the results from the affective measurements, which indicated that participants rated the advertisements containing rhymes consistently higher than other advertisements. It can thus be concluded that rhyme ads not only attract incidental attention resulting in cognitive processing, but there is also a positive effect of rhyme on perceived likability. The analysis of message repetition showed that participants did not perform better after they had been exposed to the message multiple times. It is suggested that this could be the result of the incidental nature of the exposure, or it is due to an overload in information.

Attempts have been made to test the potential benefit of rhyme for second language vocabulary acquisition with adult learners. These, however, have been mainly focussed on using rhyme in experiments that are hardly naturalistic. Atta-Alla (2012), for instance, developed a computer vocabulary program with children's nursery rhymes and songs. This was used to instruct and train a group of adult L2 English learners. The main question was if these rhymes and songs would have an effect on vocabulary comprehension and production. Two vocabulary tests (a pre-test and a post-test) were designed to see if learners had developed their knowledge of the target vocabulary after instruction from the programme. Results from both tests indicated a significant increase in almost all learners' vocabulary size, both receptively and productively. This was seen as evidence of the aiding function of rhyme in developing the lexicon of adult L2 learners. As stated before, this experiment, however, was hardly reflective of a natural situation. The role of learner characteristics was also not taken into consideration. The present study aims at replicating a situation in which people find themselves often when listening to music, when factors outside of the linguistic material play a role in the success of learning.

It seems evident that word properties words have an important influence on noticing and learning processes. One example that has received a lot of attention in research on L2 vocabulary acquisition is the acquisition of nouns versus the acquisition of verbs. The following section will provide an example of how different words are learned in a different manner, by showing that differences in semantic and orthographic organisation between nouns and verbs have consequences acquisition success.

## **2.4 The Acquisition of Nouns and Verbs**

Vocabulary acquisition involves learning lexical items from different grammatical categories such as nouns, verbs, adverbs, and adjectives. It is often reported that in first language acquisition, children experience more ease with learning nouns than learning verbs (Tomasello, Akhtar, Dodson, & Rekau, 1997). Gendtner (1982) argues that this has to do with properties of the words. Verbs are not just different in form, they are also conceptually less basic than nouns. Nouns refer to concepts such as persons and items, whereas verbs are predicates of these entities expressing activities, relations, and changes of state. This has consequences for the acquisition of these words, as she argued in the Natural Partitions hypothesis. Gendtner's (1982) analysis of data from children learning different first languages showed that not only their first words are generally nouns, they continue to denote things in the world with nouns more often than verbs in their first few years.

This is taken as evidence of the acquisition benefit of nouns over words from other grammatical categories.

Several attempts have been made to challenge this claim ever since it was first proposed. They generally argue that it should not be assumed that young children have problems with defining actions and movements. In an experiment by Tardif (1996), Mandarin toddlers' speech was elicited in conversations with their parents. These showed that in the majority of the cases, children used verbs to refer to things or actions in the world more often than nouns. This is taken as counter-evidence to the claim that there is a universal benefit in the acquisition of nouns over verbs. Rather, he argues that there is a noun bias in the literature. De Bleser & Kauschke (2003) support this view, as they found that there is cross-linguistic variance in the acquisition dominance of nouns or verbs. English, as a verb second language, shows a noun benefit whereas Korean, a verb final language, shows a verb benefit. Languages that structurally fall in between these two categories can either be verb or noun-dominant according to their claim.

The reason why these findings are relevant to this study is that both perspectives have been used in SLA vocabulary research. A study by Pigada and Schmitt (2006), for example, showed a clear learning benefit of nouns over verbs. Participants in this study, who were Greek L2 learners of French, mastered nouns better than verbs in an incidental learning task. This finding was replicated in multiple measurements during several weeks after the experiment. Kweon and Kim (2008) found the same results in their study on incidental vocabulary acquisition from reading, but do stress that frequency effects can override the effect of grammatical category. If a verb has a higher occurrence frequency than a noun, so the argument goes, then it is to be expected that it is acquired faster. The benefit of nouns over verbs becomes even less lucid with their second finding that animacy (nouns) and transitivity (verbs) also have their effect on acquisition speed. There are thus a number of factors that might interfere with the presupposed benefit of nouns over verbs, but considering the majority of studies on incidental learning it is to be expected that in the case of English, there is a clear noun dominance in the acquisition of new words.

So far, the discussion of literature has provided insight into the acquisition of novel words. This mostly involved research of learning situations and vocabulary gains. There is, however, also something to be said for the role of the learner. One aspect that has received a lot of attention in research on L2 vocabulary acquisition is the role of personal motivation. This has been found to depend both on intrinsic learner properties as characteristics of the material (Gardner & MacIntyre, 1991). They can hardly be controlled for in an experiment, but measuring intrinsic motivation and affective thoughts of the participants might help with the interpretation of the results. The next



section will provide a brief survey of the most recent findings on the role of motivation in the acquisition of vocabulary by L2 learners.

## 2.5 Motivation in SLA

Learning a second language generally involves issues that cannot be attributed to lexical factors. It is widely assumed that, especially in the case of learning L2 vocabulary, learner characteristics play more than a marginal role. One of these characteristics in the success of learning is the degree of personal investment, also known as motivation (King & McInerney, 2014). It is not hard to imagine that learners who are highly motivated in getting familiar with words experience more knowledge growth than learners who are unmotivated. This assumption has been the basis of motivation research in relation to second language acquisition. A number of studies have critically examined the role of learner motivation in relation to L2 vocabulary acquisition. These provide insight into the key components of motivation, and provide direct and indirect evidence to explain certain variance in learning success among L2 learners.

The concept of motivation is integrated in several theoretical models of second language learning. Most of these key in on the distinction Gardner and Lambert (1972) made of two types of motivation, which is based on the separation of a language into a linguistic and a sociocultural phenomenon. *Integrative motivation* refers to learners' interest in the language because of an interest in the speakers and the culture of the L2. It is based on a "desire to interact and identify with members of the L2 community" (Dörnyei & Schmidt, 2001, p. 463). Learners can also be interested in a language for purely instrumental/occupational reasons, which is called *instrumental motivation*. These concepts explain how environmental factors can influence motivation on a general level. They do not, however, reflect the more refined nature of motivation and give little insight into the relation between motivation and types of tasks, settings, and instruction. These can influence motivation all in separate ways (Dörnyei, 1994b), but they have hardly been scrutinised in experimental studies.

Although motivation can have a large impact on learning success (Dörnyei, 2000), it is not an easily definable construct. One is hardly ever evenly motivated to do a task over a long period of time, and motivation levels can go up and down rapidly. The temporal nature of the experienced motivation is due to constant shifts in emphasis, which are related to several distinguishable aspects of motivation (Dörnyei, 2000). First, motivation determines the choice of a particular action. This means that motivation provides the reason for someone to do something. The persistence to

continue the action is what follows and is the second aspect of motivation. There is also the degree of effort that is determined by the level of motivation. This can be translated into both physical and cognitive effort. In relation to vocabulary learning, the temporal nature of motivation is particularly relevant as it takes high levels of motivation over a long period of time to significantly expand one's vocabulary size. Learners' motivation can fluctuate depending on a number of factors, such as the social relationship with the instructor (Gömleksiz, 2001), or the personal willingness and desire to achieve something (Engin, 2009).

### **2.5.1 Some Evidence of Motivation Studies**

A first attempt to assess the relevance of motivation in learning a second language was made by Gardner and MacIntyre (1991). Their study distinguished integrative and instrumental motivation as measurements of motivation. The first was measured using an Attitude/Motivation Battery which operationalised motivation as a construct existing of nine variables, which involved factors such as "attitude towards the language", "desire to learn the language" as well as items measuring integrative and instrumental orientation. The effect of instrumental motivation was part of the manipulation in the experiment. Participants were ninety-two students of psychology with little prior knowledge of French, who were asked to follow six trials in which they learned English/French word pairs. They were divided into two conditions: condition one formed the experimental condition and involved a learning task in which participants were encouraged with a \$10 reward if they succeeded. Participants in the second condition were only encouraged to do their best. The learning task was a translation task in which participants were confronted with an English word, and asked to provide the correct French translation. The time spent on each item and the correctness of the translations functioned as the two measurements of performance. The results from the Battery and the translation task showed a positive effect of both instrumental and integrative motivation on learning success. It was also found that participants who were highly motivated spent more time learning the word pairs than participants who were less motivated. These findings support the notion that motivation facilitates second language learning and provides the empirical evidence that was previously absent. Although this is one of the few studies that experimentally manipulates motivation, it formed the basis for other research on motivation.

Motivation can also explain why learners fail to divide any attention to certain information. This has been studied by Takahashi (2005), who looked at the effect of motivation in the learners' attention and awareness. Previous research (2001) had found that learners who were highly

motivated to learn a target language paid specific attention to pragmalinguistic cues in output, such as “you know” and “well” in English, which are cues indicating nativeness. The reason why the learners pay an increased attention to them is that they are motivated to become native-like. This theory was tested in the (2005) study, which assessed the role of motivation and proficiency as individual factors in noticing pragmalinguistic features. Eighty Japanese EFL students were asked to fill out a motivation questionnaire before taking a proficiency test. Over the following three weeks, they were exposed to a treatment in 90-minutes sessions per week. This involved several tasks related to listening audio fragments of native speakers of English interacting with non-native speakers. These conversations would either contain numerous bi-clausal complex requests as examples of interlanguage pragmatics (condition A) or lack these cues (condition B). Participants were asked to do a notice the gap task after listening to the conversations. This was designed to assess their knowledge of the pragmalinguistic cues. Immediately after each treatment session, they were asked to fill out the Awareness Retrospection Questionnaire. The results showed that there was systemic variation in noticing the pragmalinguistic features between the group of learners and that this could only be attributed to differences in levels of motivation. It was thus concluded that learners’ motivation is highly predictive in the success of second language acquisition.

Motivation has been used to explain the variance in success in incidental learning situations. Learners receive little or no instruction in incidental learning tasks in relation to the target information, as this would change the nature of the learning situation. There is no direct obligation to steer the attention to the target information as a learner in an incidental learning task, so it may be that individual characteristics such as motivation play a larger role than in intentional learning tasks. As the success of learning is a result of the interaction between learner characteristics and the learning contexts (Robinson, 2002), motivation could explain a substantial amount of variance. More specifically, a general motivation to learn an L2 could explain why some learners experience a larger knowledge growth in incidental learning environments than others. This is why it is relevant to assess motivation in these kinds of studies.

## **2.6 Present Study**

There is substantial evidence that L2 vocabulary learning can occur in all kind of incidental learning environments. It is also well-attested that there is an attention drawing effect of rhyme that can aid word learning processes. To this point, however, these findings have not yet been combined in experimental research with second languages learners. There are no experiments, at this point, that

have investigated hip-hop music as a potential environment of L2 word learning. This experiment aims at establishing an incidental learning effect with music that contains rhyming text.

In the present study, participants listen to a rap song with a modified text as a reflection of a real-life listening activity. They are exposed to either a version of the song containing eight pseudo words with rhymes (experimental condition), or to a version with eight pseudo words without rhyme (control condition). Two post-tests are designed to measure the performance on form and meaning recognition, as two aspects of vocabulary knowledge. It is hypothesised that participants who are exposed to the rhyming words are better at recognising the form of the target words than participants who see the non-rhyming words as a result of their higher level of attention (Navon & Shimron, 1993; DeCara & Goswami, 2003; Alcon, 2007, Godfroid et al., 2017). For the same reason, they are also expected to be better at inferring the meaning from the context than participants in the control condition (Grossi, Coch, Coffey-Corina, Holcomb & Neville, 2001, Godfroid et al. 2017). It can, however, not be excluded that non-rhyming words have an increased saliency as they occur right after or before a string of rhyming sentences. Although it may thus be expected from the theory that the performance on rhyming words is better than on non-rhyming words, in practice it may turn out that the non-rhyming words are more salient because of the context they appear in. This is why it is also hypothesised that participants in the non-rhyming condition score on or above the level of the participants in the rhyming condition in the two post-tests.

This study will include an experiment with rap music in which unknown words are presented in written and oral form. The rap context is an environment that has not been scrutinised in its use for L2 learners to increase their vocabulary knowledge. The results will provide answers to the following research questions:

*RQ1: What is the influence of rhyme on the recognition and recollection of unknown vocabulary in an incidental learning task with rap music?*

*RQ2: To what extent is it possible to learn the form and meaning of unknown vocabulary after limited exposure to rap music?*

The next chapter will explain how rhyme is operationalised in the lyrics of a rap song. It will also show how the experiment was set up and was designed to provide results for the question if second language learners can learn novel words from listening to music.

### **3. Method**

#### **3.1 Participants**

Participants in this study were 43 native speakers of Dutch. They were recruited from the Luzac College in Arnhem and the Kandinsky college in Nijmegen, two secondary schools in the province of Gelderland. Two participants were excluded as they were raised bilingually with English as one of the two languages. The final sample thus consists of 41 students (22 females) from two HAVO and VWO classes, which are the two highest educational levels in the Netherlands. Nine students followed the HAVO programme and 32 were in the VWO programme. Their mean age was 16.66 years (range 15-20), and students reported to have experienced an average of six years of English classes before taking part in this study. Their self-rated proficiency was 5.46 on a 7-point likert scale, which can be interpreted as relatively high since a score of 7 was labelled as “very good”. Not all students had the same language background as there were students who are third- or fourth generation immigrants. The largest part of the students had English as their L2 but there were several participants who had German and Chinese as their second language. Other third, fourth, and fifth languages that students reported were French, Spanish, Russian, Afghan, Turkish, and Moroccan. The participants indicated to be averagely exposed to English in 17.3% of their time over the last period.

The participants were randomly divided between two conditions. The twenty participants in the rhyme condition were presented with the stimulus material that contains the target words in rhyme contexts. The twenty-one participants in the control condition were presented with a slightly different text, in which different target words were constructed so that the rhyming context disappears.

#### **3.2 Materials**

##### **3.2.1 Music**

The music used in this study is a composition of an existing beat with lyrics voiced by the researcher. It was undesirable that participants would recognise voice of the rapper as the voice of the researcher. This is why the voice was modified using the voice alteration software of Adobe Audition (Breen & Breen, 2015). The beat was drafted from the instrumentals of Logic’s *The*

*Glorious Five*, a 5-minute song that provides a sample that can be rapped over with the rhythm that fits a standard tempo of rap songs. The text is a modified version of the original lyrics of a different song called *Last Call*, which was recorded by the same artist from which the beat was taken. Several short paragraphs of the original lyrics were re-written in order to incorporate 8 pseudowords as targets. These are units that may appear to be existing words in the English language, but are actually not part of the lexicon. The text consists of three verses and three interlude spits which together make up a total of 88 sentences. The verse length is typically 16 sentences long; the interludes vary in their length.

The vocabulary in the text was made appropriate for the proficiency level of the students. Some words (e.g. ‘undeniable’, ‘domestic’, ‘busting’) with a LOG FREQ of 2.0 or lower in the UGhent SUBTLEX-US database of American English words (Brysbaert, New, & Keuleers, 2012) were replaced by other words with a higher lexical frequency. This was done as one of the prerequisites of the experiment was that the participants incidentally focus on unknown words, and these should be the target words only. It was therefore required that students comprehend the other words and phrases, as it has been shown that learners can only guess the meaning of new words from the context when they know approximately 98% of a text (Hu & Nation, 2000). This also means that only one in 7 lines could contain a pseudo word. Some phrases in the sentences that had a low frequency word were also replaced. This was done in order to ensure that the sentence would still make sense semantically.

A pretest was conducted to check if the context provided enough information to infer the meaning from the non-words. Four people (two for each condition) were asked to take the meaning recollection test with a version of the lyrics at hand. All participants correctly identified the meaning of the pseudowords without error when they could consult the text, which leads to the conclusion that the context provides enough detail to the participants to infer the meaning of the words.

### **3.2.2 Target Words**

The target words are pseudo words, which were replacements of the original words such that only the form was new, but the meaning could be inferred from context. The pseudo words were constructed with Wuggy (Keuleers & Brysbaert, 2012), a tool that can provide a number of pseudoword synonyms for each word in a language. These pseudo words followed the phonological and morphological norms of the language of choice, so words with phoneme combinations like \*zt were not eligible for the English pseudo words. All 8 target words were either mono or bisyllabic

words. Each pseudo word occurs once in the middle of the sentence and once sentence-final. Target words were four nouns and four verbs, with a mean length of 5,1 letters (range: 4 - 6). The four verbs took inflectional forms (past tense -ed and progressive -ing) in one of the two instances in the text, to see if form variation results in more difficulty in recognising form and meaning than with nouns. The full text, with a list of the target words and their lexical and orthographical characteristics, is included in the Appendix.

Participants were exposed to the target words 4 times, twice in each time the song is played. This is less than the six to ten exposures that are said to be necessary for a learning effect (Godfroid et al., 2017), but the studies that founded this conclusion mostly included reading or listening tasks, no combination of the two. The second encounter with a target word appears in a different context shortly after the first encounter, to enhance the storage of the word in the working memory. As participants in this study not only read but also listen to the target words, and because the target words occur in a relatively short time, a number of four exposures was expected to be enough for the participants to experience a learning effect.

The following excerpt is an example of a target word featuring in the final text. The pseudo word ‘trishen’ is chosen as a synonym of the word ‘cellphone’. This is followed by an excerpt from the control versions of the text, which featured the word ‘antust’ as an alternative that does not rhyme in the relevant context:

Text Experimental Condition:

*I was working at 9 to 5, not just waiting homie,  
I was eating bagels, fantasising about baking homie,  
That was my job, but my dream wasn't waiting on me,  
This is for anyone with ambition,  
Calling anybody on their **trishen**,  
I wish that all your dreams will come true because mine did,  
And yeah, you know I had to put that in a rhyme kid,  
But this all came from sacrifice,  
Not on the corner selling drugs and rolling dice,  
And that's my mom, ringed me on my **trishen**,  
And told me that for once I should have just listened.*

Text Control Condition:

*I was working at 9 to 5, not just waiting homie,  
I was eating bagels, fantasising about baking homie,  
That was my job, but my dream wasn't waiting on me,  
This is for anyone with ambition,  
Calling anybody on their **antust**,  
I wish that all your dreams will come true because mine did,  
And yeah, you know I had to put that in a rhyme kid,  
But this all came from sacrifice,  
Not on the corner selling drugs and rolling dice,  
And that's when my mom, ringed me on my **antust**,  
And told me that for once I should try just listened.*

### **3.3 Comprehension posttest**

Participants took a comprehension post-test immediately after listening to the song. They were told before the experiment that this would follow. The test functioned to focus their attention on the meaning of the text and also measure their overall text comprehension. The test consisted of three multiple-choice questions about the contents of the text. Participants were awarded one point per correct answer and could thus score a total ranging from 0 to 3. This was later translated into a percentage. The test also included a scale through which participants were asked to rate their level of attention during the task, which ranged from 1 to 10 with 1 being the minimum attention level and 10 the maximum attention level.

### **3.4 Vocabulary tests**

Two tests of vocabulary knowledge were administered measuring two aspects: form recognition and meaning recollection. The first test was a word circling task to measure form recognition. The test included the target pseudo words and an even number of previously unseen filler non-words which were scattered over a piece of paper. The test of the experimental condition included the 8 target words, of which three verbs were presented in both forms as in the text ('diness-dinested',



‘prowned-prowning’, ‘gaked-gaking’). This gave a total of 11 target words paired with 11 filler non-words, making up a total of 22 words. The test in the control condition featured two verbs with multiple forms (‘nechan-nechanned’, ‘haid-haiding’) together with 10 filler-non words, which brings a total of words. The non-words were selected from a list of non-words provided by Wuggy (Keuleers & Brysbaert, 2012), and followed the same phonological and morphological norms as the pseudo words. They were also similar in syllable length, matching the original word in the text. The order in which the words were presented was random. The task involved circling the words they recognised as having seen before. Participants received one point for each correct word they circled. Each incorrect word they circled resulted in subtraction of the score with half a point. The total score was again turned into a percentage. Participants could not score less than zero percent, so if someone only circled incorrect words they would not receive a negative score.

The meaning recognition test was designed to see if participants were able to infer the meaning of the target words. This test consisted of 8 questions of multiple-choice that paired the targets with their original meanings. The multiple-choice test has been shown to be a valid measure of meaning retention by Hulstijn (1991). Participants could choose one out of four possible answers, of which one was the correct answer. The other three options featured one semantically related answer, and two semantically unrelated answers. All answers were from the same word class as the target, so questions with noun pseudo words only featured noun answers and questions with verb pseudo words only featured verb answers. All the incorrect answers were selected from the UGhent SUBTLEX-US Database of American English (Brysbaert, New, & Keuleers, 2012) and were matched in terms of lexical frequency. This rendered a few words that were potentially too difficult for the proficiency level of the participants. These were then accompanied with a Dutch translation. As there were 8 questions with four options, the baseline performance was 2 correct answers (25%). If participants scored higher than this percentage, they showed a learning effect.

### **3.5 Biographic Questionnaire**

The last part of information was collected via an abbreviated version of the LEAP questionnaire (Marian, Blumenfeld, & Kaushanskaya, 2007) asking for participants characteristics. This involved age, sex, age of onset, educational level, language use, self-rated proficiency, educational level, and possible disabilities. The survey also included a motivation section after Gardner (1985) with two questions and one statement aimed at measuring the participants’ general motivation to learn a second language. The questions were ‘how many half-hours per week do you spend on English

homework?', and 'how often do you seek contact with English speaking people on a holiday?'. The statement rated the participants assessment of the claim 'learning English is a waste of my time'. Participants were asked to provide their answer on a 7 point likert scale. Several check questions were also part of the questionnaire. There was one question that asked participants if they had figured out the purpose of the study. Lastly, the participants' assessments on the degree to which the pseudowords in their condition rhymed with the intended word in the text were measured. For instance, they had to rate the word pair 'trishen-ambition' on rhyme from 0 (no rhyme) to 7 (perfect rhyme).

### **3.6 Procedure**

Participants were tested in groups of four, six, or eight, depending on the number of assistants that were present in the two days of testing. The researcher and co-researchers would maximally assist three participants each, to ensure that each participant would get enough help if problems with the technology or the tests would occur. The researcher met with each group before conducting the experiment. They were asked to take a seat and listen to the instructions. These stated that participants were to listen carefully to the music and try to comprehend the text, as they would receive three shorts tests afterwords.

Participants were presented with the text in two modalities, as this is expected to enhance the learning gains (Bisson et al., 2014). The audio of the text was accompanied by the lyrical video on a computer screen, which played concomitantly with the music. Participants were asked to listen to the song twice, and they could push the replay button whenever the first time was finished (after 4 minutes). They could not rewind or forward to other screens. They were also told that they could adjust the volume to maximally 20% higher or lower than the level that was set up by the researcher. Together with his assistants, the researcher observed if participants did not encounter any trouble during the procedure.

Participants were told beforehand that they would receive a few tests about the contents of the song, without explicitly stating that these would measure vocabulary gains. Participants were encouraged to answer each question on the meaning recollection task, even if they were not sure of their answer. According to Ahmad (2012), this does not lead to guessing, but rather trains students to infer the meaning from context using their memory. Participants were given a number which they had to fill in on each test before the headphones could be put on and the experiment could begin.

The text was presented sentence-by-sentence, with a new screen popping up after three or four lines. Every screen would maximally present one pseudo word.

After participants were done listening to the song, the researcher would hand them the comprehension test. As soon as they finished this, they would raise their hands such that the researcher could take the test and hand them the following test, which was the word circling task to measure form recognition. The next test, which measured meaning recollection, was again handed to the participants when they had finished the previous one. The experiment was finished with the biographic questionnaire which participants had to fill in before they could leave the room. The total procedure took about 20 minutes time. At the end, participants were thanked for their participation.

The text was presented on a computer screen in Times New Roman font, size 20, spacing 1.5. The computers that were used were either MacBook Airs of “13, or “15 Windows computer. The headphones that participants used were from different brands. Seven of the total of nine headphones were Logitech H340 headphones, and two were from SMS-audio and had active voice cancellation to filter out disturbing sounds from the environment during the experiment.

### **3.7 Analysis**

The comprehension test was analysed by scoring the correct answers, whilst also computing an average for the entire sample. If participants would not answer any of the three questions correctly, they would be excluded from the sample. No participants scored lower than one correct answer so there was no one excluded from the sample based on the comprehension test. The same was done if participants had the self-report score of attention level was below 4. The question whether learners benefitted from rhyme in the acquisition of new vocabulary was answered in two ways. The data from the two vocabulary tests was analysed with two linear regression analyses for the form and meaning recognition test. The dependant variables were form recognition score and meaning recognition score. The independent variables were ‘condition’, ‘age’, ‘sex’, ‘years of English’, ‘Proficiency’, ‘years of education’, ‘educational level’, ‘motivation1’, ‘motivation2’, ‘motivation3’, and ‘attention level’. The data from the motivation variables was also put into a separate regression model after computing the inter correlation. A two-way Anova was conducted to see if participants performed better on verbs or nouns, and on monosyllabic words or bisyllabic words.

A second interest of this study was whether participants in both groups would experience an incidental learning effect from exposure to rap music. This was answered with a one sample t-test to

analyse the scores on the form recognition test, and with a second t-test for the meaning recognition test that compared the participants' scores to chance level. The final part of the analysis was the computation of the mean performance per pseudo word, to see if there were differences in performances on word level.

## 4. Results

Participants scored an average of 73.33% ( $SD = 23.28$ ) of the comprehension questions correctly, which was estimated to be an adequate comprehension level. The groups in both conditions performed similarly, with participants in the experimental condition performing slightly better with a mean of 88.33% correct answers ( $SD = 16.32$ ) compared to participants in the control condition with a mean of 69.83% of the answers correct ( $SD = 25.62$ ). This difference was not significant,  $t(39) = 2.87, p = .118$ . The results of the self-reported attention level showed a similar pattern, with participants in the experimental condition marginally outscoring ( $M = 7.35, SD = 1.18$ ) participants in the control condition ( $M = 6.90, SD = .995$ ). This difference was not significant,  $t(39) = 1.31, p = .199$ .

Whether participants from both groups scored higher than chance level, thereby showing a learning effect, was answered with an analysis of scores on the meaning recognition test. The results of a single sample t-test showed that exposure to the target words significantly affected performance ( $p = .000$ ) by the sample outscoring chance level, which was determined at 25% (there were 8 multiple-choice questions with 4 answers options). A mean score of 46.95 showed that on average, participants were able to infer almost half of the meanings of the pseudo words. One participant scored below chance level, whereas four participants scored exactly on chance level. Over half of the participants (21) had at least four answers (50%) correct. There were two participants who reached a perfect score by correctly answering all eight questions.

The performance on the form recognition test was analysed slightly differently. Because the task involved circling familiar words, and participants were not forced to circle any word, it was impossible to determine a chance level. This is why the percentile scores were compared with the scores of the study by Godfroid et al. (2017) which had a similar form recognition test. On average, participants in both conditions reported higher scores on the form recognition test ( $M = 48.09, SD = 3.45$ ) than the participants in the study of comparison ( $M = 30, SD = 13.17$ ). As Godfroid et al.

(2017) conclude a learning effect with a value of 30%, the same conclusion can be drawn from the analysis of the scores in this study.

Test scores did not differ significantly between the two vocabulary tests,  $t(40) = -.373, p = .711$ . A comparison of the results thus showed that participant on average did not score better on either of the two tests, as the mean score the form recognition test ( $M = 48.08$ ) was similar to the mean score on the meaning recognition test ( $M = 46.65$ ). It can thus be concluded that the two test were equally challenging to the participants. Table 1 provides an overview of the scores on the two vocabulary tests in the two conditions.

The participants' assessment of the degree of rhyme in the text was also tested. Participants in the control condition rated the word pairs, such as 'antust' - 'ambition', significantly lower ( $M = 24.67, SD = 5.511$ ) than the pairs of pseudo words, such as 'trishen' - 'ambition', in the rhyme condition ( $M = 41.5, SD = 8.03$ ). This difference in means was tested with an independent samples t-test that was significant  $t(39) = 7.853, p = .000$ . The operationalisation of the construct of rhyme was thus successful. The last question, which was a question about the purpose of the experiment, remained unanswered in a little less than half (18) of the cases. A few participants came close by guessing that this study was about the acquisition of language. There was one participant who accurately formulated that this study was "to test if fake words can be given a context that helps to infer what their meaning is".

Table 1. *Performance on the two vocabulary tests (max = 100%).*

|                             | Form Recognition<br>M (SD) | Meaning Recognition<br>M (SD) |
|-----------------------------|----------------------------|-------------------------------|
| Experimental Group (N = 20) | 45.38 (18.85)              | 50.67 (25.04)                 |
| Control Group (N = 21)      | 45.00 (16.91)              | 48.81 (14.74)                 |

Table 2. *A detailed performance on the form recognition test (max = 100%).*

|                 | Experimental Group | Control Group |
|-----------------|--------------------|---------------|
| Errors          | 10                 | 22            |
| Omissions       | 102 (46,4%)        | 97 (46,2%)    |
| Correct answers | 118 (53,6%)        | 113 (53,8%)   |

## 4.1 The Effect of Rhyme on the Recognition of Form and Meaning

The variable 'condition' was first transformed into a dummy variable before conducting the analysis. A linear regression was conducted to predict the effect of rhyme on the recognition of form. This included the variables condition, attention level, comprehension score, age, sex, and proficiency. The best model rendered an  $R^2$  of .296, which means that 29,6% of the performance on the test is explained by the experimental manipulation. The regression equation was found to be significant ( $F(12, 28) = 2.398, p = .028$ ). The model shows no significant effect of the individual variables. This implies that there was hardly any difference in performance on the form recognition test between the groups that could be explained by what the participants were visually and orally presented with.

The same analysis was done for the results on the meaning recollection test. The linear regression included the same variables initially, but these did not contribute to the fit of the model. The equation was also significant ( $F(12, 28) = 4.164, p = .001$ ). An  $R^2$  of .487 means that 48.7% of the variation in the results of the meaning recollection test can be explained by the condition, which is a number far too low to draw any valid conclusions from. Again, no variables were found to significantly affect the performance on the test. These results together show that participants' performances were not significantly affected by the condition they were in.

## 4.2 An Incidental Learning Effect

The last part of the analysis involved a close look at the performances on word level. The performance on the form recognition test was analysed without reference to chance level as this could be determined with the test. As observable in Figure 1 and 2, the performance on all pseudo words in the control condition was relatively high (range 38,1 - 76,2). This is the same for the results in the experimental condition, with scores reaching the maximum of 80% (range 25 - 80).

Fig. 1: Results of the form recognition test for each pseudo word in the control condition

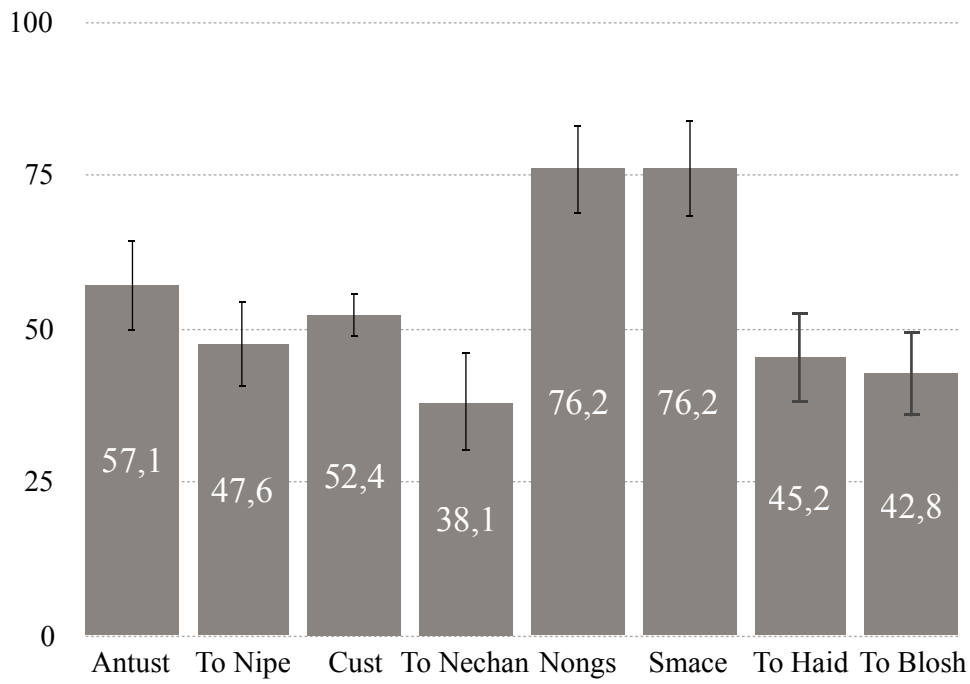
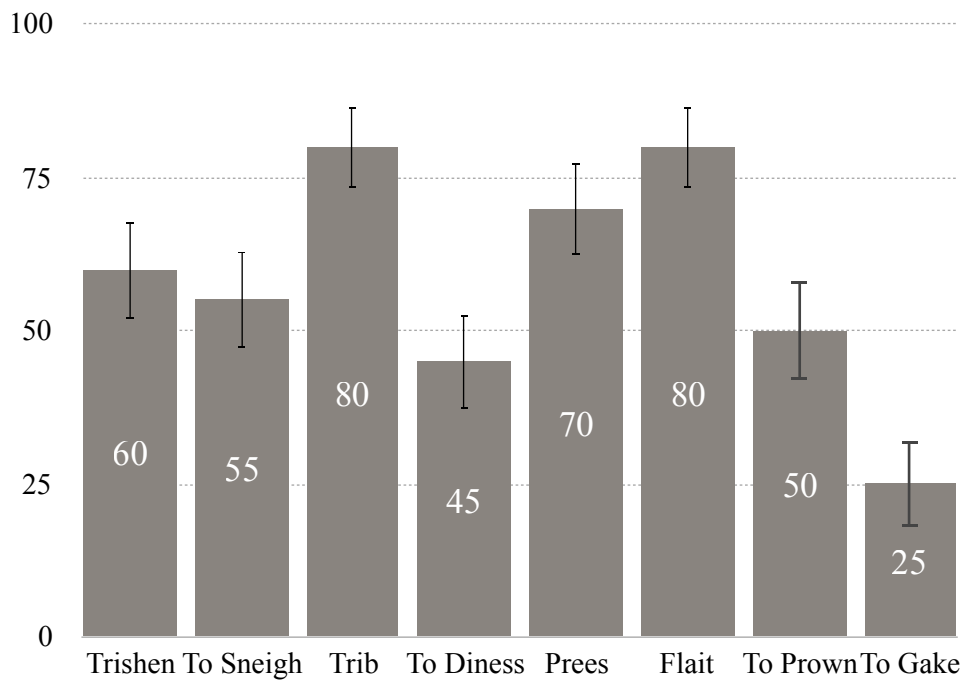


Fig. 2: Results of the form recognition test for each pseudo word in the experimental condition.



As for the results on the meaning recognition test, it can be observed that all but the performance on one word ('gaking' (= 'waving')) outscored the chance level of 25%. There were also some differences in performances between the test on the same words. For instance, the meaning of the pseudo word *cust* was correctly inferred by 90% of the participants, whereas only 52,4% was able to recognise the form. This pattern was observed in more cases in both conditions. The results of the performances on word level are shown in Figures 3 and 4. The red line represents chance level (25%).

Fig. 3: Results of the meaning recognition test for each pseudoword in the control condition.

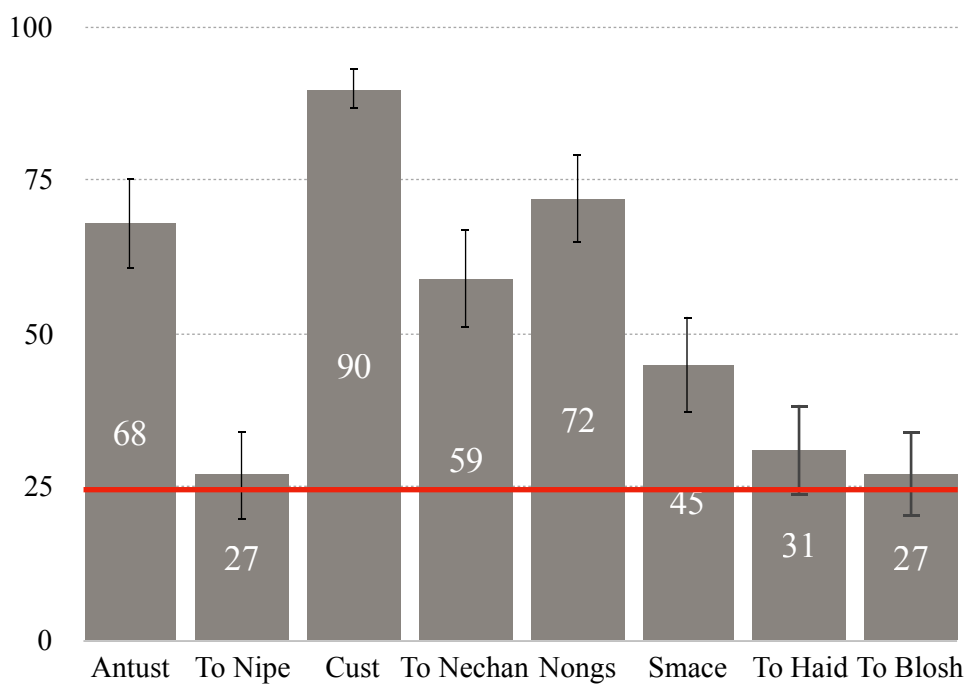
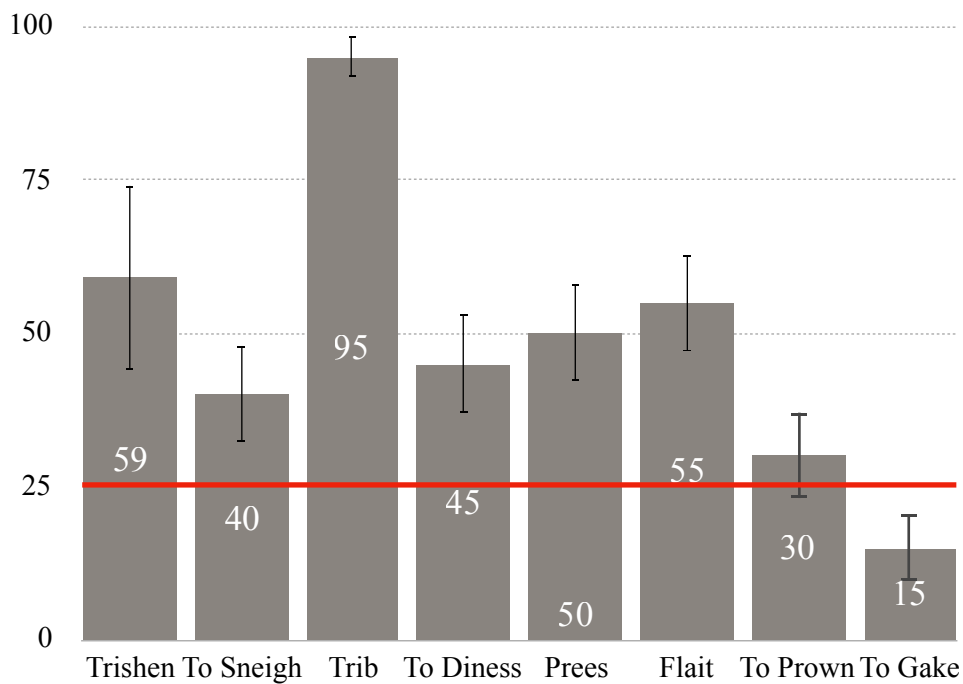




Fig. 4: Results of the meaning recognition test for each pseudoword in the experimental condition.



Since the meaning recognition test was a multiple-choice test, it can be argued that there is noise in the previous data that stems from correct guesses on the meaning recognition test after having failed to identify the correct form in the previous test. A subsequent analysis was therefore conducted that measured the hard numbers on the meaning recognition test. The following figures only involve the scores on the meaning recognition that can be paired with a correct identification of the words in the form recognition test.

Fig. 5: Results of the meaning recognition test in the control condition without noise.

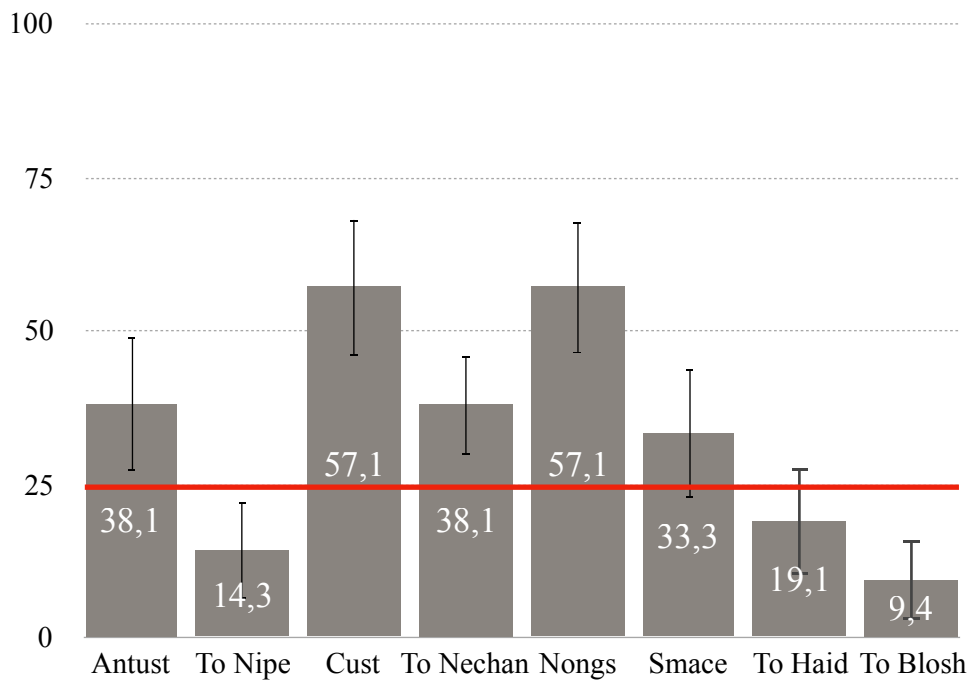
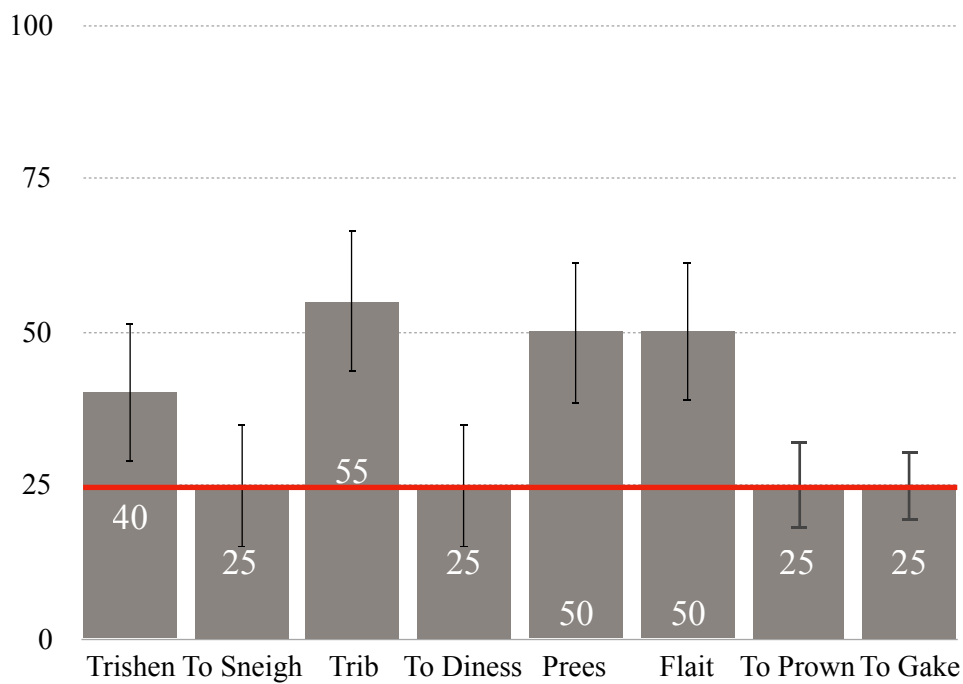


Fig. 6: Results of the meaning recognition test in the experimental condition without noise.



### 4.3 Word Class and Syllable Length

The effect of word class and syllable length was measured for both vocabulary tests separately. Participants in both conditions scored better on average with monosyllabic nouns ( $M = 72.47$ ,  $SD = 10.49$ ) than with bisyllabic nouns ( $M = 58.55$ ,  $SD = 2.05$ ) on the form recognition test. The scores on the meaning recognition test followed the same pattern with a higher mean score for monosyllabic nouns ( $M = 50.41$ ,  $SD = 8.98$ ) than for bisyllabic nouns ( $M = 39.05$ ,  $SD = 1.34$ ). The performance on monosyllabic verbs ( $M = 51.30$ ,  $SD = 5.23$ ) was also better than on bisyllabic verbs ( $M = 41.02$ ,  $SD = 8.74$ ). These scores were analysed with a two-way Anova which showed a significant effect of grammatical category on the performance on the form recognition test ( $F(1,12) = 13.98$ ,  $p = .003$ ,  $r = .475$ ). There was also a significant effect of syllable length ( $F(1,12) = 5.46$ ,  $p = .038$ ,  $r = .126$ ). There was no significant interaction between grammatical category and syllable length ( $F(1,12) = .959$ ,  $p = .212$ ,  $r = .074$ ).

The results on the meaning recognition test showed a significant effect of grammatical category ( $F(1,12) = 21.34$ ,  $p = .001$ ,  $r = .640$ ). In contrast to results on the form recognition test, the analysis did not show an effect of syllable length on performance on the meaning recognition test ( $F(1,12) = .550$ ,  $p = .473$ ,  $r = .044$ ). There was also no significant interaction between grammatical category and syllable length on the meaning recognition test ( $F(1,12) = 2.34$ ,  $p = .152$ ,  $r = .163$ ). It was also investigated if any of these findings could be attributed to the performance of one of the two groups. A between-group analysis showed that there were no differences between the experimental condition and the control condition in the performance on verb versus nouns and mono- versus bisyllabic words ( $t(39) = -.977$ ,  $p = .325$ ). Both groups thus showed a similar pattern in their performance.

### 4.4 Motivation

To see whether the motivation of the participants predicted the scores on the two vocabulary tests, the correlation between the three motivation variables was first measured. Contrary to expectations, the correlation between the three variables was not significant ( $p > .05$ ) even after controlling for the variable "half hours per week study", which showed scores that deviate strongly from scores on the two other variables. The three variables that were included in the linear regression analysis showed no significant  $R^2$  ( $p > .05$ ) for both the form recognition test ( $R = .003$ ) and the meaning recognition test ( $R = -.042$ ). Motivation was hence not a predictor of learning success.

## **5. Discussion**

This study expands previous work on incidental learning of second language vocabulary by testing a new environment with a high ecological validity in hip-hop music. This is, to the best of the researchers' knowledge, the first time that this kind of (or any) music has been used in an incidental learning task. Most studies included reading tasks (Paribakht & Wesche, 1999; Kim & Kim, 2008; Godfroid et al. 2017) or tasks with spoken input (Saffran, et al.,1997; Alcon, 2007; de Vos et al., 2018). Although the main goal was to translate the well-attested benefits on rhyme in child nursery rhymes to authentic music for adults L2 learners, it was also examined to what extent hip-hop music can contribute to second language word learning in general. The main findings were that (i) there was no effect of rhyme on the recognition of form and meaning of unknown words. They also showed that (ii) participants in both conditions showed a learning effect for all the 8 target words in this study.

### **5.1 Performance of the Groups**

There was a significant learning effect in both conditions. The mean score on the form recognition test almost reached 50% in both conditions, which can be considered as relatively high. The same counts for the scores on the meaning recognition tests, which were even higher in both groups. As this means that they scored above chance level, the conclusion can be drawn that the target words were (partially) acquired, at least temporarily. A second finding was that the scores on 4 out of the 8 words in the control condition, and 2 out of the 8 words in the experimental conditions were higher in the meaning recognition test than in the form recognition test. This can be seen as surprising and will thus be discussed later in this section, when the distinction between form and meaning in vocabulary acquisition is reiterated.

Participants in both conditions scored similarly on the two vocabulary post-tests. The mean score in the rhyme condition was similar to the mean score in the control condition, indicating no significant effect of condition. This pattern was also found when comparing the scores of the two groups on the meaning recognition task. These findings indicate that there was no effect of rhyme on the recognition of form and meaning of the pseudo words in this experiment.

## 5.2 The Effect of Rhyme on the Recognition of Form and Meaning

Previous work on the effect of rhyme on cognitive learning showed that first language learners benefit from rhyme in the acquisition of vocabulary (DeCara & Goswami, 2003). This stems from an increase in phonological awareness when a learner is exposed to rhymes (Gathercole & Willis, 1991). As there is no convincing reason why these effects should not arise in adult second language learning, it was expected that participants in the rhyme condition outperformed participants in the control condition. This was not found in this study, which perhaps can be explained by several other observations.

The experimental setting made it hard to control for external influences. A naturalistic environment is always preferable to an artificial environment in incidental learning studies. In the case of using music, however, it can not be excluded that the beat had any influence on the attention level and hence performance of the participants. It is important to stress that this can work both ways. The musical element may help participants in keeping the concentration over the entire listening task, but it can also not be ruled out that it can be a distracting factor. An experiment that compares spoken input to spoken input with a musical element would be one way of resolving this issue. Another benefit of presenting the material in two modes is that participants have more sources to draw knowledge from. This might have had a significant contribution to the learning effect that was found in this study. At the same time, presenting the material in two modes makes it hard to establish to which source the effect can be attributed. Although this may be less relevant in practice, it is still an interesting question to address if participants process music texts better from spoken or from written input, and how processing is affected when the two are combined.

An alternative explanation for the lack of a significant rhyme effect could be the degree of orthographic overlap between the target words and their rhyme words. As suggested by Seidenberg & Tanenhaus (1979), the recognition of rhyme in auditory settings is not solely dependent on the sound of the words. It is also relevant to what extent the words are similar in orthography, especially when people are also presented with the written forms. Orthographic similarity was not controlled in this study as the tool with which the target words were constructed did not take this into account. The consequence is that the words in the rhyme condition varied in orthographic similarity, from pairs with a high overlap (e.g. 'crib' - 'trib', 'fees' - 'prees') to pairs with a low overlap (e.g. 'day' - 'sneigh', 'ambition' - 'trishen'). This may have had an influence on the

perceived degree of rhyme of the word pairs, such that words with high overlap were considered as rhymes whereas words with low orthographic overlap were not considered as rhymes. This could explain the absence of an effect of rhyme on performance.

It is also possible that the rhyme words were not more salient than the words in the control condition. The text of hip-hop songs often contain numerous strings of rhymes, which was no different in the song of this study. The rhymes typically come from sentence-final word pairs, which is also the position that was used for the target words in this study. The end-word of almost every sentence in the song rhymed with the end-word of the previous sentence. It may thus be that the target words did not stand out, as the context cancelled out their salience. If this was the case, then the word pairs in the control condition would potentially be more salient. It could thus have been hypothesised that not participants in the rhyming condition, but participants in the control condition would experience a greater learning effect. This, however, does not show in the scores in this study. Although there were only a few participants who noticed that the target words were actually pseudo words, it could be that the target words in both conditions were evenly salient as they were pseudo words and thus unfamiliar to the participants. As indicated before, people naturally pay more attention to words that are unfamiliar to them than to words that they do know (Godfroid, Boers, & Housen, 2003).

The theoretical notion that rhyme can have a positive effect on the retention of information still stands. Since the practical implications of finding such a result would be considerable, it still remains interesting to study the effect of rhyme on L2 word learning. It can be argued that a more controlled, less naturalistic setting is more suitable to establish this connection. This, however, might have consequences for the performance of the participants. Most of the participants in this study declared in the debriefing that they had enjoyed listening to the song of which they also thought it was authentic. These observations may indicate an effect on attention and motivation levels in the subsequent vocabulary tasks. Godfroid et al. (2017) stress the importance of balancing ecological validity with experimental control, so it is advisable to take these observations into account when designing a follow-up study.

### 5.3 The Incidental Learning Effect

The second main result of this study showed that participants in both conditions showed a significant learning effect of form and meaning recognition for the majority of target words. This finding can be linked to a long series of studies on incidental learning of vocabulary. Most studies with reading activities, listening activities, and classroom conversations that found significant learning effects involved tasks that measured form- and meaning recognition (Alcon, 2007; McQuarrie & Mick, 2009; Petschko, 2011; Godfroid, Boersen, & Housen, 2013; Godfroid et al., 2017). Some even included longitudinal measurements to see if words are stored for a longer time in memory (Loewen, 2005; Pigada & Smith, 2006). The general finding is that participants score better on form recognition tests than on inferred meaning tests, and the scores that were significant on these tests were slightly above chance level. The scrutinised results of this study show scores that reached an average level of 56,28% (range 25 - 80) on the form recognition test and an average of 34,97% (range 9,4 - 57,1) on the meaning recognition test. These numbers can perhaps be best explained best by discussing the applied methodology.

This study differs from other incidental learning studies in the way that participants were presented with the target words in two ways. Apart from the oral presentation, they also read the text along on a computer screen. This element of the design could be responsible for the relatively high scores on both tests compared to the scores in previous studies, as Bisson et al. (2014) showed that multimodal presentations in incidental learning tasks significantly enhance learning gains. This observation is in line with previous research by Tseng (2019), who conducted similar research to this study. He had a group of second language learners watch subtitled videos to see if they would pick up words better than a control group who did not see any subtitles. The group of the subtitle condition showed better performance on two subsequent vocabulary learning tests that measured form- and meaning recognition. It was hence concluded that subtitled videos capture two domains (i.e. auditory and visual) and this has a positive effect on word processing.

A second interesting finding of Tseng's (2019) study was that participants were only presented with the target words a few times. The critical value of exposure frequency was determined at three, which entails that incidental vocabulary learning can already occur when people are exposed to a novel word three times, and that learning gains does not significantly increase after more exposures. This goes against previous research that proposed that novel words

need to be seen at least 6 to 10 times before any form of learning can take place (Rott, 1999; Pellicer-Sanchez, & Schmitt, 2010). This study found results similar to that of Tseng (2019), with significant learning results found after four exposures. It can thus be concluded that not only can a multimodal presentation aid in gaining a deeper understanding of new words, it can also override the robust factor of frequency exposure. These conclusions form an interesting contribution to recent research on incidental learning of second language vocabulary.

## **5.4 The Form-Meaning Distinction**

An interesting finding of this study is presented in Table 1, which shows that participants in both conditions perform better on the meaning recognition test than on the form recognition test. This is not in line with previous research that consistently found higher scores in vocabulary learning experiments with form recognition tests (Waring, 2003; Petschko, 2011; Godfroid et al., 2017). The difference in performance between the tests is often significantly large, with mean differences ranging from 20% (Godfroid et al., 2017) up to 44% (Waring & Takaki, 2003) higher scores on the recognition tests than on meaning recognition tests. Although the kind of tests that are used are not always the same, these findings are usually in line with the expectations. The results in this study do not necessarily contradict these findings as the scrutinised scores show a pattern that is similar to those found in previous studies, but at the same time they can not be fully explained by claiming that participants scored above expectations as a result of correct guessing. Scores that reach twice the chance level (50%) are simply too high to be ascribed to guessing.

The reason why this finding is remarkable is that in the theories of vocabulary acquisition, form mapping always precedes meaning knowledge (Jiang, 2002). This has to do with the basic assumption that meanings can only be learned when they can be attached to a lexical form. This mapping process is the first stage of vocabulary acquisition and the most central one (Henriksen, 1999). Although second language learners are generally already familiar with certain L2 concepts from their L1 knowledge, they also often show to learn forms before meaning. The reversed way of learning is not impossible in the sense that concepts can restructure lexical forms (Levelt, 1999), but is often the case that new meanings are mapped with forms that already exist in the brain. The raw results of this study do not support this idea that concept learning always follows form knowledge.



There are possible reasons for the relatively high scores on both vocabulary tests. One possibility is that the way in which the form recognition test was designed had an effect on the performance of the participants. Contrary to other tests used to measure form recognition, this test involved a circling task of words that were scattered around the paper. At first sight, this is not as well-ordered as a list of words. It might thus be that participants missed some words as a result of misses in scanning, not in recognising. Another possible influence is the instruction that was given in the task. This stated that participants had to circle the words they recognised, without any reference to a minimum or maximum number of words that was to be circled. Since there were at least 20 words on each version of the test, it might have been that participants missed some words as a result of the instruction. The observation that some participants only circled two or three words, whereas others circled more than fourteen words indicates that this indeed might have played a role in the performance.

A last note on the form recognition test revolves around the way in which the scoring was done. As stated in the method section, participants scored one point for each correct word they circled and scored minus half a point for each incorrect word they circled. This was done to prevent students from circling all the words, and still receiving a perfect score. Although there was good reason to do so, this scoring system is not applied in every study. The study by Godfroid et al. (2017) for example, did not subtract the participants mean score on the form recognition test if they circled an incorrect word. If this study had followed the same scoring system, then the same pattern of performance would have been found as in that study and different conclusions would have been drawn that support the idea that recognition of form is easier than recognition of meaning.

## **5.5 Word Class and Syllable Length**

The majority of studies discussed in this article's section on the influence of grammatical category on vocabulary acquisition concluded that nouns were easier to acquire than verbs. Although Tardif (1996) argued against this, the results of this study show a clear advantage of nouns over words in the acquisition. This counts for the form recognition test, in which participants showed a clear pattern of higher learning gains of the four noun pseudo words compared to the verb pseudo words, but also for the meaning recognition test. There was one exception of a verb ('to nechan') outscoring any of the noun words in this test in the first analysis. The scrutinised scores, however,

show that the performance on all noun pseudo words was above chance level whereas only one verb (again ‘to nechan’) reached this. This leads to conclude that nouns are easier to acquire than verbs when it comes to early stages of vocabulary learning.

A potential explanation for this finding is that the nouns were presented in one form, whereas the verbs sometimes occurred in their inflected forms. This means that participants were exposed to the bare verb form only four times, compared to eight times to the nouns. To compensate this, both the inflected and bare form were presented in the form recognition task, such that participants could circle both forms. The exposure difference, however, might explain why participants had more trouble recognising the verbs, bare or inflected. As the first stage of word acquisition is the recognition of form (Talamas, Kroll, & Dufour, 1999), it makes sense that participants also scored lower in the meaning recognition task on verbs than on nouns.

The learning advantage of nouns fits the expectation of two theories. The first propounds that concrete entities are easier to learn, as they represent real things and objects in the world (Gendter, 1982). This could very well be the explanation why the noun pseudo words in this study were easier to learn than the verb pseudo words. The nouns were translations of the words for telephone (‘trishen’ - ‘antust’), drugs (‘trib’ - ‘cust’), bad (‘flait’ - ‘smace’) money (‘prees’ - ‘nongs’), whereas the verbs denoted losing (‘to sneigh’ - ‘to nipe’), neglecting (‘to diness’ - ‘to nechan’), learning (‘to prawn’ - ‘to haid’), and waving (‘to gake’ - ‘to blosh’). This shows a difference in level of concreteness between the two categories that may well form the basis of explaining the difference in learning gains with the help of the Natural Partitions hypothesis.

The second explanation for the noun advantage in learning is that English is a noun dominant language. This has been shown to have consequences in the speed of acquisition of nouns and verbs (Kweon & Kim 2008). The latter are said to be acquired less easily in first language acquisition of English speakers, which entails that this learning preference continues later in life when second language acquisition takes place. The participants in this study were of course Dutch speakers, but since children acquire Dutch and English in an almost identical fashion (Christophe & Norton, 1998), it was to be expected that this preference was carried over cross-linguistically. The results of this study can thus also be regarded as evidence that the acquisition of nouns in a second language is easier than verbs when the speakers’ mother tongue is a noun dominant language.

## 5.6 Limitations of the Study

There are several improvements that can be made to this project if there is going to be a follow-up study. These mostly have to do with the experiment that was conducted. The first limitation is the operationalisation of the motivation construct. As can be observed in the results section, there were no correlations between the three variables. This is surprising, since the three variables ('half hours per week study', 'English learning is useful', 'I seek contact in English') all key in on the same construct according to Gardner (1985). Considering the lack of correlations, it can also be explained why the regression analysis showed no significant influence of motivation on performance. A possible explanation for this failure to operationalise motivation as a variable could be that they show too little theoretical overlap. The three variables in this study were sampled from a long list of variables. These were all designed to measure motivation, but it is not unlikely, for example, that participants who agree that learning English do not spend much time on homework because they are highly proficient. This would mean that instead of measuring motivation, a self-judgment of proficiency is measured.

Another aspect of this study that can be discussed in terms of limitations is that affect measures were not part of the questionnaire. The relevance of this construct came to the attention of the researcher when there seemed to be variation in the degree to which participants enjoyed participating in the experiment. Some students indicated that they went over the tests like any other school exercise, whereas others said that they particularly liked the song and the subsequent tests. These participants also seemed to perform better than others, which leads to assume that the role of affect to the music made a substantial contribution to the motivation to perform. It would thus have been advisable to include a question that assessed the participants' general interest in hip-hop music. The advice for following research on incidental learning experiments would be to include measurements of affect as a predictor of motivation and performance.

Although the experiment itself went according to standards, there were also some minor inaccuracies in the material. These had to do with the voice alterations that were made in construction of the song. One aspect that may have affected the results in an undesired manner was that some participants noticed that the researcher was the rapper in the song. Even though there were only a few participants who recognised this, it did show that these participants were shortly distracted from the song after they had made this connection. It could have been that this

interruption in the concentration negatively affected their performance. However, since the song was played twice and the majority of the participants did not have any clue about the rapper, this effect was most likely not too serious.

## **6. Conclusion**

This study aimed at investigating if rap music is an environment for the incidental learning of novel words by second language learners. The results of the experiment showed that, on average, participants scored above chance level on the form and meaning recognition task, indicating a learning effect after exposure to the words in the rap song. The second research question was designed to measure a possible effect of rhyme on the recognition of form and meaning of unknown vocabulary. The group that was exposed to rhyming target words score equally well on both tests as the group that was exposed to the target words in a non-rhyming context. It can thus be concluded that, at least for this study, there is no significant effect of exposure to rhyme on subsequent learning processes.

The environment of music in testing incidental vocabulary learning is far from exhausted. Apart from experimenting with different genres and contents, it is also interesting to look at songs with less text and from different lengths. There are a number of reasons to research this in potential follow-up studies. First, this study shows that incidental learning tasks do not necessarily have to involve long texts, such as chapters in a book. The song used in this study was only four minutes long. As participants already showed a learning effect after listening to the song twice, there is reason to assume that second language learners can acquire novel words significantly faster than previous studies suggest. It is still well-attested that participants need to know the vast majority of the words that form the context of the novel word, if they wish to learn them. There is, however, no consensus about which form of presentation, and how fast which words follow each other up, works best for vocabulary learning. There is also a lack of evidence about the role of affect in the success of learning in incidental learning environments. It might be that learners who experience more joy when listening to music than when reading a book, benefit more from exposure to music in their aim to acquire an extensive vocabulary. In sum, there are a number of factors that may have their

influence on vocabulary learning in incidental learning situations that can still be experimented with in future studies.

There are, however, some requirements when designing an incidental learning task. It is evident that participants need to be presented with the words multiple times, since exposure frequency is a robust factor in vocabulary acquisition (Henry, 1999). As argued before, the presentation of the material in a multimodal way can reduce this effect. This makes it more ambiguous to speak about an advised number of exposures in incidental learning experiments. Another factor to take into account in the design of an experiment is the repetition of the target words. One choice of this study was to place the second encounter with a target word relatively short after the first encounter, such that the word was still in the short-term memory when it was seen the second time. This was expected to stimulate learning in line with research by Robinson (2003) that argued that learning occurs as a result of rehearsal in the short-term memory. Although this can not be explicitly concluded from the findings in this study, it is likely to assume that participants benefitted from the orderly fashion in which the words were presented.

These findings have several practical implications. First, it offers the second language learning community some insight into the role that music can play in vocabulary learning. The results can serve as an encouragement for learners to carefully listen to music of their second language, as a high attention level can aid the processing and retention of unfamiliar words (Schmidt, 2010). Rap music, in particular, offers an extensive corpus of low frequency words that may be hard to come into contact with through regular channels. Second, popular streaming services like Spotify and Apple Music now offer the possibility to read the lyrics of a song along while it is playing. The context of the experiment in this study can thus easily be mimicked in real life situations. Since the results show that learners can (at least partly) pick up new words in these situations, they function as an encouragement for L2 learners to incorporate music in their strategies of vocabulary acquisition.

There are more areas that can draw knowledge from studies on the use of music for language learning, such as education. Hulstijn (2001) stressed that explicit instruction is an important factor in incidental vocabulary acquisition settings, which fits with the classroom structure. In line with the Focus on Form method (Long, 2000), an instructor can direct the attention of students to new words that feature in music texts, which can positively affect learning processes (Loewen, 2005). Although the FoF-method was not explicitly used in this study, it was clear to the

researcher and assistants that the short instruction helped students to get invested in the task. It is likely that it functioned as an attention focusing tool for students to perform at their best. If this was indeed due to instruction, then it can be argued that formal learning settings, such as the classroom, are the best area to apply the findings of this study.

There are already schools that see the possibilities of hip-hop culture for education. Some educational programmes are even based on the music and culture of hip-hop (Petchauer, 2012). This is possible because the culture is not just music and texts, but also includes dance, graffiti art, clothing styles. All these areas are said to show aesthetics and creativity that can help to develop young students' literacy (Ginwright, 2004). Hip-hop texts can also be used to empower students, teach academic content (Wakefield, 2006), and introduce students to cultural phenomena (Petchauer, 2009). Activities with hip-hop music include lessons that make students discuss the cultural identity, artistic creativity (Christen, 2003), and language used in hip-hop music (Pennycook, 2007). This study keys in on that as there are a number of different activities that can be thought of that engage learners in incidental learning situations with hip-hop music. This can give a boost to vocabulary learning and this benefits the learner, as an extensive vocabulary is important to become a proficient, autonomous, and fully functioning speaker of a second language.

## References

- Ahmad, J. (2012). Intentional vs Incidental Vocabulary Learning. *International Association of Research in Foreign Language Education and Applied Linguistics*, 1(1), 71-79.
- Alcon, E. (2007). Incidental Focus on Form, Noticing and Vocabulary Learning in the EFL Classroom. *International Journal of English Studies*, 7(2), 41-60.
- Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. New York: The Guilford Press.
- Atkins, P. W. B., & Baddeley, A. D. (1998) Working memory and distributed vocabulary learning. *Applied Psycholinguistics*, 19, 537-552.
- Atta-Alla, M. N. (2012). Developing Adult English Language Learners' Vocabulary Skills through Children's Rhymes and Songs. *English Language Teaching*, 5(11).
- Baddeley, A. 1990. *Human memory: Theory and Practice*. Needham Heights, MA: Ally and Bacon.
- Bisson, M., Heuven, van, W. J. B., Conklin, K., Tunney, R. J. (2014). The Role of Repeated Exposure to Multimodal Input in Incidental Acquisition of Foreign Language Vocabulary. *Language Learning*, 64(4), 855-877.
- Bleser, de R. & Kauschke, C. (2003). Acquisition and loss of nouns and verbs: parallel or divergent patterns? *Journal of Neurolinguistics*, 16, 213 - 229.
- Breen, C. and Breen, C. (2015). *Review: Adobe Audition CC a solid upgrade hampered by subscription pricing*. [online] Macworld. Available at: <http://www.macworld.com/article/2043340/adobe-audition-cc-solid-upgrade-hampered-by-subscription-pricing.html>  
Accessed 14 April 2019.

- Brown, R., Waring, R., Donkaewbua, S. (2008). Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories. *Reading in a Foreign Language*, 20(2), 126-163.
- Brybaert, M., New, B., & Keuleers, E. (2012). Adding part-of-speech information to the SUBTLEX-US word frequencies. *Behavior Research Methods*, 44, 991–997. doi:10.3758/s13428-012-0190-4.
- Cara, de B., Goswami U. (2003). Phonological neighbourhood density: effects in a rhyme awareness task in five-year-old children. *Journal of Child Language*, Cambridge University Press 30, p. 695 - 710.
- Chen, X. (2013). Tablets for informal language learning: Student usage and attitudes. *Language Learning & Technology*, 17(1), 20–36.
- Christen, R. S. (2003). Hip-hop learning: Graffiti as an educator of urban teenagers. *Educational Foundations*, 17(4), 57–82.
- Christophe, A., & Norton, J. (1998). Is Dutch native English? Linguistic analysis by 2-month-olds. *Developmental Science*, 1(2), 215-219.
- Choi, W., & Jacobs, R. L. (2011). Influences of formal learning, personal learning orientation, and supportive learning environment on informal learning, *Human Resource Development Quarterly*, 22(3), 239-257.
- Congos, D. (2006). Types of Mnemonics for Better Memory. Retrieved August 5, 2013 from <http://www.learningassistance.com/2006/january/mnemonics.html>.
- Coombs, P.H., & Ahmed, M., *Attacking Rural Poverty: How Nonformal Education Can Help*. Johns Hopkins University Press, Baltimore, 1974.
- Dabbagh, N. & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and Higher Education*, 15(1), 3-8.



- Dollaghan, C. A. (1994). Children's phonological neighbourhoods: half empty or half full ? *Journal of Child Language*, 21, 257–71.
- Dörnyei, Z. (1994b). Understanding L2 motivation: On with the challenge! *Modern Language Journal*, 78, 515–23.
- Dörnyei, Z. (2000). Motivation in action: Towards a process-oriented conceptualisation of student motivation. *British Journal of Educational Psychology*, 70, 519–38.
- Dörnyei, Z. & Schimdt, R. (2001) *Motivation and Second Language Research*. Honolulu, HI: University of Hawaii Press.
- Dowker, A.D. (1989). Rhyme and alliteration in poems elicited from young children. *Journal of Child Language*, 16, 181-202.
- Engin, A. O. (2009). Second Language Learning Success and Motivation. *Social Behavior and Personality*, 37(8), 1035–1042.
- Ellis, R. (2002). Does Form-Focused Instruction Affect the Acquisition of Implicit Knowledge? *Studies in Second Language Acquisition*, 24, 223-236.
- Ellis, N. (2011). Implicit and explicit SLA and their interface. In C. Sanz & R. Leow (Eds.), *Implicit and explicit language learning* (p. 35–47). Washington, DC: Georgetown University Press.
- Gardner, R. C. & Lambert, W. E. (1972). *Attitudes and motivation in second language learning*. Rowley, MA: Newbury House.
- Gardner, R. C., & MacIntyre, P. D. (1991). An instrumental motivation in language study: Who says it isn't effective? *Studies in Second Language Acquisition*, 26, 57–72.

- Gathercole, S. E., Willis, C., Baddeley, A. D. (1991). Differentiating phonological memory and awareness of rhyme: reading and vocabulary development in children. *British Journal of Psychology*, 82, 387-406.
- Gathercole, S. E., Baddeley, A. D. (1989). Phonological Memory Deficits in Language Disordered Children: is there a Causal Connection?. *Journal of Memory and Language*, 29, 336-360.
- Gathercole, S. E., Service, E., Hitch, G. J., Adams, A., Martin, A. J. (1999). Phonological Short-term Memory and Vocabulary Development: Further Evidence on the Nature of the Relationship. *Applied Cognitive Psychology*, 13, 65-77.
- Gardner, R. (1985). *Social Psychology and Second Language Learning: The Role of Attitudes and Motivation*. Edward Arnold: London.
- Gendtner, D. (1982). Why Nouns are Learned before Verbs: Linguistic Relativity versus Natural Partitioning. In S. A. Kuczaj (Ed.), *Language development: Vol. 2. Language, thought and culture* (pp. 301-334). Hillsdale, NJ: Erlbaum.
- Ginwright, S. (2004). *Black in School: Afrocentric form, Urban youth, and the Promise of hip-hop Culture*. New York: Teachers College Press.
- Godfroid, A., Housen, A., & Boers, F. (2010). A procedure for testing the Noticing Hypothesis in the context of vocabulary acquisition. In M. Putz & L. Sicola (Eds.), *Cognitive Processing in Second Language Acquisition: Inside the Learner's Mind*, pp. 169-197. Amsterdam: John Benjamins.
- Godfroid, A., Boers, F., Housen, A. (2013). Gauging the Role of Attention in Incidental L2 Vocabulary Acquisition by Means of Eye-tracking. *Studies in Second Language Acquisition*, 35(3), 483-517.
- Godfroid, A., Ahn, J., Choi, I., Ballard, L., Johnston, S., Lee, S., Sarkar, A., Yoon, H. (2017). incidental vocabulary learning in a natural reading context: an eye-tracking study. *Bilingualism: Language and Cognition*, 1-22.

- Gomleksiz, M. N. (2001). The effects of age and motivation factors on second language acquisition. *Firat University Journal of Social Science*, 11(3), 217-224.
- Grossi, G., Coch, D., Coffey-Corina, S., & Holcomb, P. J. (2001). Phonological Processing in Visual Rhyming: A Developmental ERP Study. *Journal of Cognitive Neuroscience*, 13(5), 610 - 625.
- Hanaoka, O. (2007). Output, noticing, and learning: an investigation into the role of spontaneous attention to form in a four-stage writing task. *Language Teaching Research* 11(4), 459–479.
- Hu, H.M. & Nation, P. (2000). What Vocabulary size is needed to read unsimplified texts? *Reading in a Foreign Language* (8), 689-696.
- Hulstijn, J. H. (1992). Retention of inferred and given word meanings: experiments in incidental learning. In P. J. L. Arnaud, & H. Béjoint (Eds.), *Vocabulary and applied linguistics* (pp. 113-125). Basingstoke: Macmillan.
- Hulstijn, J. H., & de Graaff, R. (1994). Under what conditions does explicit knowledge of a second language facilitate the acquisition of implicit knowledge? A research proposal. *AILA Review*, 11, 97–112.
- Hulstijn, J. H., Hollander, M., Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign-language students: the influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *The Modern Language Journal*, 80(3), 327-339.
- Hulstijn, J. H. (2001). Intentional and incidental second-language vocabulary learning: A reappraisal of elaboration, rehearsal and automaticity. In P. Robinson (Ed.), *Cognition and Second Language Instruction* (pp. 258-286). Cambridge: Cambridge University Press.
- Jacques, E. (1986). The Development of Intellectual Capability: A Discussion of Stratified Systems Theory. *The Journal of Applied Behavioral Science*, 22(4), 361-383.

- Jessop, L., Suzuki, W., & Tomita, Y. (2007). Elicited imitation in second language acquisition research. *Canadian Modern Language Review*, 64, 215–238.
- Jimenez, L. (2003). *Attention and Implicit Learning*. Amsterdam: John Benjamins.
- Keuleers, E., & Brysbaert, M. (2010). Wuggy: A multilingual pseudoword generator. *Behavior Research Methods*, 42, 627– 633.
- Kim, D., & Gilman, D. A. (2008). Effects of text, audio, and graphic aids in multimedia instruction for vocabulary learning. *Educational Technology & Society*, 11(3), 114-126.
- Kim, S. & Kim, H. (2008). Beyond raw frequency: Incidental vocabulary acquisition in extensive reading. *Reading in a Foreign Language*, 20(2), 191 - 215.
- Krause, A. E., North, A. C., & Hewitt, L. Y. (2015). Music-listening in everyday life: Devices and choice. *Psychology of Music*, 43(3), 155-170.
- Kweon, S. O., & Kim, H. R. (2008). Beyond raw frequency: Incidental vocabulary acquisition in extensive reading. *Reading in a Foreign Language*, 20, 191–215.
- Lee, A. M. C., Cerisano, S., Humphreys, K. R., Scott, W. (2017). Talking Is Harder Than Listening: The Time Course of Dual-Task Costs During Naturalistic Conversation. *Canadian Journal of Experimental Psychology*, 71(2), 111-119.
- Leow, R. P. (2000). A study of the role of awareness in foreign language behavior: Aware versus unaware learners. *Studies in Second Language Acquisition* 22: 557–584.
- Loewen, S. (2005). Incidental Focus on Form and Second Language Learning. *Cambridge University Press*, 27, 361-386.
- Levelt, W. J. M., Roelofs, A. & Meyer, A. S. (1999) A theory of lexical access in speech production. *Behavioral and Brain Sciences*, 22, 1–75.

- Li, X., & Brand, M. (2009). Effectiveness of music on vocabulary acquisition, language usage, and meaning for mainland Chinese ESL learners. (Undetermined). *Contributions To Music Education*, 36(1), 73-84.
- Lindstromberg, S., Boers, F. (2008). The Mnemonic Effect of Noticing Alliteration in Lexical Chunks. *Applied Linguistics*, 29(2), 200-222.
- Maclean. M., Bryant, P., & Bradley, L. (1987). Rhymes, nursery rhymes, and reading in early childhood. *Merrill-Palmer Quarterly*, 33, 255-281.
- Maftoon, P., & Shakouri, N. (2012). No Implicit Learning Is Possible without Awareness! In Favor of Noticing Hypothesis. *Journal of American Science*, 8, 56-63.
- Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech, Language and Hearing Research*, 50, 940–967.
- Marian, V., Blumenfeld, H. K., & Boukrina, O. V. (2008). Sensitivity to Phonological Similarity Within and Across Languages. *Psycholinguistic Research*, 37, 141-170.
- Marsick, V. J. (1987). *Learning in the workplace*. London, U.K.: Croom.
- Marsick, V. J., & Watkins, K. (1990). *Informal and Incidental Learning in the Workplace*. London and New York: Routledge.
- Marsick, V. J. (2016). *Informal and incidental learning in the workplace*. London: Taylor & Francis.
- Mayerl, J. (2013). Response latency measurement in surveys. Detecting strong attitudes and response effects. *Survey Methods: Insights From the Field*. Retrieved October 20, 2018, from <http://surveyinsights.org/?p=41063>

- McInerney, D. M., King, R. B., (2014) Culture's consequences on student motivation: Capturing cross-cultural universality and variability through personal investment theory. *Educational Psychologist*, 49(3), 175-198.
- McQuarrie, E., Mick, D. (2006). Verbal Rhetoric versus messages repetition under heavy processing load and incidental exposure to advertising. [www.commerce.virginia.edu/faculty\\_research/Research/Papers/JCR\\_McQuarrie-Mick.pdf](http://www.commerce.virginia.edu/faculty_research/Research/Papers/JCR_McQuarrie-Mick.pdf). Accessed 2 January 2019.
- Milton, J., & Hopkins, N. (2006). Comparing phonological and orthographic vocabulary size: Do vocabulary tests underestimate the knowledge of some learners? *Canadian Modern Language Review*, 63(1), 127–147.
- Munson, B., & Solomon, P. N. (2004). The effect of phonological neighbourhood density on vowel articulation. *Journal of Speech, Language, and Hearing Research*, 47, 1048–1058.
- Nation, K. (2001). Reading and Language in Children: Exposing hidden effects. *Psychologist*, 14, 238-242.
- Navon, D., Shimron, J. (1993). Incidental detection of rhyming in silent reading. *European Journal of Cognitive Psychology*, 5(1), 1-18.
- Nelson, L. J., Cushion C., J., Potrac, P. (2006). Formal, Nonformal and Informal Coach Learning: A Holistic Conceptualisation. *International Journal of Sports Science & Coaching*, 1(3), 247-259.
- Paribakht, Sima T. & Wesche, M. (1999) Reading and Incidental L2 Vocabulary Acquisition: An Introspective Study of Lexical Inferencing. *SSLA*, 21, 195-224.
- Pennycook, A. (2007b). Language, localization, and the real: Hip-hop and the global spread of authenticity. *Journal of Language, Identity, and Education*, 6(2), 101– 115.

- Pelicar-Sanchez, A. & Schmitt, N. (2010). Incidental vocabulary acquisition from an authentic novel: Do Things Fall Apart?. *Reading in a Foreign Language*, 22(1), 31-55.
- Petschauer, E. (2009). Framing and Reviewing hip-hop Educational Research. *Review of Educational Research*, 79(2), 946-978.
- Petschauer, E. (2012). *Hip-hop Culture in College Students' lives: Elements, Embodiment, and Higher Edutainment*. New York: Routledge
- Petschko, K. (2011). Input Enhancement, Noticing, and Incidental Vocabulary Acquisition. *Asian EFL Journal*, 13(4), 229-252.
- Pigada, M., & Schmitt, N. (2006). Vocabulary acquisition from extensive reading: A case study. *Reading in a Foreign Language*, 18(1), 1-28.
- Raz, I. S., Byrant, P. (1990). Social Background, Phonological Awareness and Children's Reading. *British Journal of Developmental Psychology*, 8(3), 209-225.
- Rhyme. (2019). In *Oxford Online Dictionary*. Retrieved from <https://en.oxforddictionaries.com/definition/rhyme>.
- Robinson, P. (1995). Attention, Memory, and the Noticing Hypothesis. *Language Learning*, 45(2), 283-331.
- Robinson, Peter. 2003. Attention and memory during SLA. In Catherine J. Doughty and Michael H. Long (eds.) *The handbook of second language acquisition*. New York: Blackwell Publishing, pp. 631-678.
- Rupley, W. H., Blair, T. R., & Nichols, W. D. (2009). Effective Reading Instruction for Struggling Readers: The Role of Direct/Explicit Teaching. *Reading and Writing Quarterly*, 25(2), 125-138.

- Saffran, J. R., Newport, E. L., Aslin, R. N., Tunick, R. A., Barrueco, S. (1997). Incidental Language Learning: Listening (and Learning) out of the Corner of Your Ear. *Psychological Science*, 8(2), 101-105.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11, 129–158.
- Schmidt, R. (1993). Awareness and second language acquisition. *Annual review of applied linguistics* 13: 206–226.
- Schmidt, R. (1995). Consciousness and Foreign Language Learning: A Tutorial on the Role of Attention and Awareness in Learning. In Richard Schmidt (Ed.) *Attention and Awareness in Foreign Language Learning* (Technical Report #9) (pp. 1-63). Honolulu, Hawai'i: University of Hawai'i, Second Language Teaching & Curriculum Center.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction*, (pp. 1-32). Cambridge: Cambridge University Press.
- Schmidt, R. (2010). Attention, awareness, and individual differences in language learning. In W. M. Chan, S. Chi, K. N. Cin, J. Istanto, M. Nagami, J. W. Sew, T. Suthiwan, & I. Walker, *Proceedings of CLaSIC 2010*, Singapore, December 2-4 (pp. 721-737). Singapore: National University of Singapore, Centre for Language Studies.
- Schmitt, N. (2008). Instructed Second Language Vocabulary Learning. *Language Teaching Research*, 12(3), 329-363.
- Seidenberg, M. S., & Tanenhaus, M. K. (1979). Orthographic effects on rhyme monitoring. *Journal of Experimental Psychology: Human Learning and Memory*, 5(6), 546-554.
- Sorace, A. (2003). Near-Nativeness. In C. J. Doughty & M. H. Long (Eds.), *The Handbook of Second Language Acquisition*. Oxford: Blackwell.



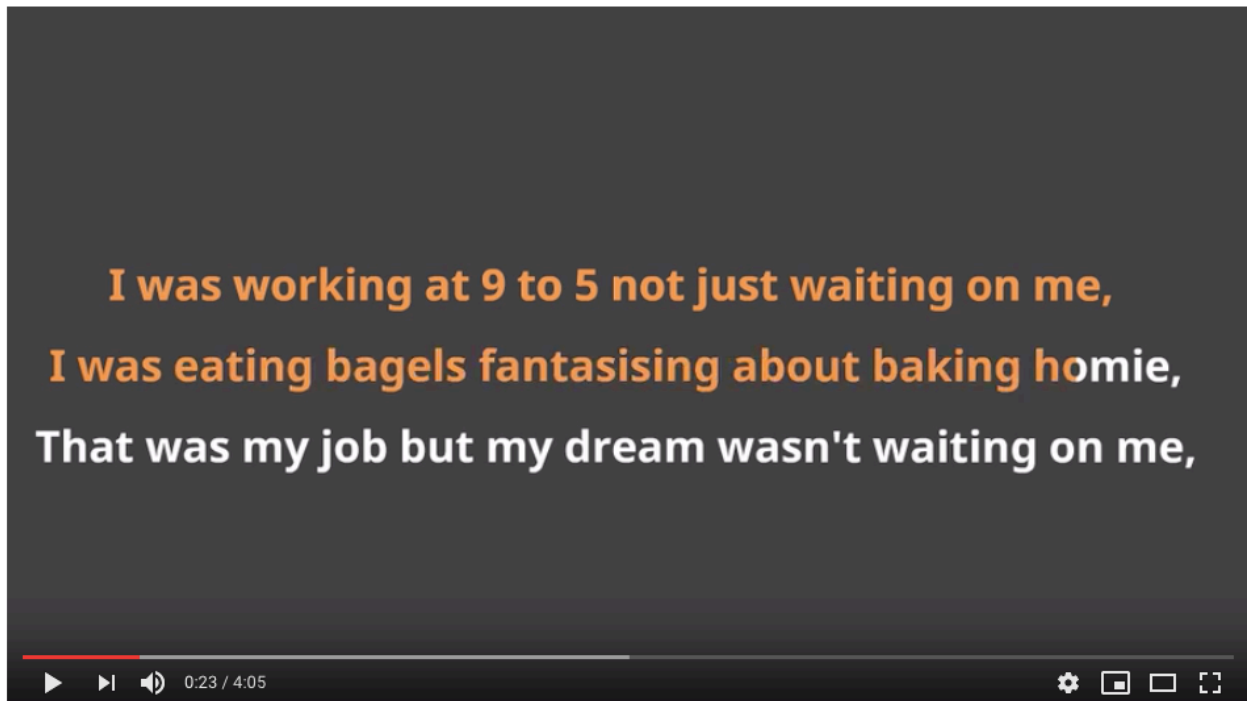
- Spolsky, B. (1995). Prognostication and Language Aptitude Testing. 1925–62. *Language Testing*, 12, 321–340.
- Takac, V. P. (2008). *Vocabulary learning strategies and foreign language acquisition*. Clevedon, UK: Multilingual Matters.
- Takahashi, S. (2001) ‘The role of input enhancement in developing pragmatic competence’ in K. R. Rose and G. Kasper (eds): *Pragmatics in Language Teaching*. Cambridge: Cambridge University Press, 171–99.
- Takahashi, S. (2005). Pragmalinguistic Awareness: Is it Related to Motivation and Proficiency? *Applied Linguistics*, 26(1), 90-120.
- Talamas, A., Kroll, J. F., & Dufour, R. (1999). From form to meaning: Stages in the acquisition of second language vocabulary. *Bilingualism: Language and Cognition*, 2(1), 45-58.
- Tardif, T. (1996). Nouns are not Always Learned Before Verbs: Evidence from Mandarin Speakers’ Early Vocabularies. *Developmental Psychology*, 32(3), 429 - 504.
- Tomasello, M., Akhtar, N., Dodson, K., Rekau, L. (1997). Differential Productivity in Young Children’s use of Nouns and Verbs. *Journal of Child Languages*, 24(2), 373 - 387.
- Toro, J. M., Sinnett, S., & Soto-Faraco, S. (2011). Generalizing linguistic structures under high attention demands. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37(2), 493-501
- Tseng, W.T., Schmitt, N. (2008). Toward a Model of Motivated Vocabulary Learning: A Structural Equation Modeling Approach. *Language Learning*, 58(2), 357-400.
- Tseng, F. W. (2019). Incidental vocabulary learning for primary school students: the effects of L2 caption type and word exposure frequency. *The Australian Educational Researcher*, 46(1), 113-136.

- Uggen, M. S. (2012). Reinvestigating the Noticing Function of Output. *Language Learning*, 62(2), 506-540.
- Velmans, M. (1991). Is Human Information Processing Conscious? *Behavioral and Brain Sciences*, 14, 651-669.
- Vos, de J.F., Schriefers, H., Nivard, M.G., & Lemhöfer, K. (2018). A meta-analysis and meta-regression of incidental second language word learning from spoken input. *Language Learning*, 68, 906-941. doi: [10.1111/lang.12296](https://doi.org/10.1111/lang.12296)
- Wakefield, S. R. (2006). Using Music Sampling to Teach Research Skills. *Teaching English in the Two-Year College*, 33(4), 357-360.
- Wallace, W. T., & Rubin, D. C. (1988). "The Wreck of the Old 97": A real event remembered in song. In U. Neisser & E. Winograd (Eds.), *Emory symposia in cognition, 2. Remembering reconsidered: Ecological and traditional approaches to the study of memory* (283-310). New York, NY, US: Cambridge University Press.  
<http://dx.doi.org/10.1017/CBO9780511664014.012>
- Watanabe, T., Nañez, J. E., Sasaki, Y. (2001) Perceptual learning without perception. *Nature*, 413, 844–848.
- Waring, R. & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15, 130–163.
- Wimmer, H., Landerl, K., & Schneider, W. (1994). The Role of Rhyme Awareness in Learning to Read a Regular Orthography. *British Journal of Developmental Psychology*, 12, 469-484.
- Zeeland van, H. & Schmitt, N. (2013). Incidental vocabulary acquisition through L2 listening: A dimensions approach. *System*, 41(3), 609-624.

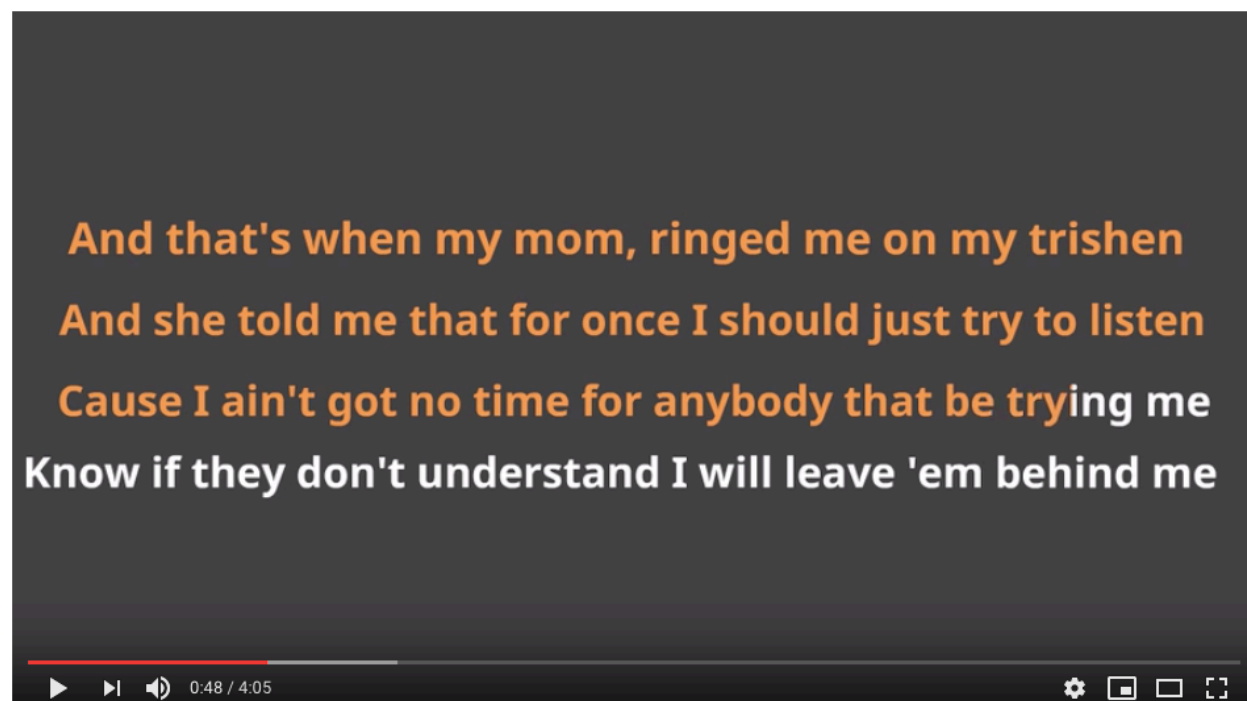
# Appendices

## 1. Links to the songs:

- Control Condition: <https://www.youtube.com/watch?v=MTfRDm-PkXQ>



- Rhyme Condition: <https://www.youtube.com/watch?v=bQbWNd8dr1U>



## 2. Text Control Condition

[verse 1]

*Yo, back in the day I wasn't shit homie,  
It was so bad I couldn't even pay the rent homie,  
Think about it, I wonder were all the years went homie,  
Just a young boy trying to survive yeah they hated on me,  
I was working at 9 to 5, not just waiting homie, 5  
I was eating bagels, fantasising about baking homie,  
That was my job, but my dream wasn't waiting on me,  
This is for anyone with ambition,  
Calling anybody on their **antust**,  
I wish that all your dreams will come true because mine did, 10  
And yeah, you know I had to put that in a rhyme kid,  
But this all came from sacrifice,  
Not on the corner selling drugs and rolling dice,*

[bridge]

*And that's when my mom, ringed me on my **antust**,  
And told me that for once I should try just listened. 15  
'Cause I ain't got no time for anybody that be trying me  
Know if they don't understand, I will leave them behind me  
Obviously  
I don't have the time, no, no  
I said obviously 20  
I said I don't have the time, no, no, no, no, no*

[verse 2]

*Yeah, yeah  
I treat the beat like it's my only chance, win or **nipe**  
And this is like we're playing domino like way back in the day  
Back in the day, I looked Young, good and Infamous 25  
A young performer who would **nipe** to get a kiss  
Who welcomed you to this story under pressure  
And told you the story of the word messer  
To everybody who is listening live  
Goddamn, it feels good to be alive 30  
And all these women that I passed up  
Couldn't go witcha 'cause your hair was too messed up  
Remember creeping through the crowd, masked up*

[interlude]

*God damn, it's kinda crazy to think back on all this shit man  
What it was like growing up 35  
Damn man, just, a bunch of idiots running in and out of the crib  
Doing speed, selling coke, all types of **cust**  
Meanwhile, I was just tryna keep it together  
I was tryna make sense—sense of all this shit around me*

*I didn't know how to take it, how to see it, you know what I mean? 40  
And then meanwhile I'm supposed to be going to school and getting good grades and shit  
But I'm seeing like, people doing **cust** in my house  
And everywhere in the crib, like on the couch  
And I'm sure everybody was probably like, "Man, yo"*

*[verse 3]*

*"Why little Bobby didn't come to school today?" 45  
On the real, I was doin' anything to run away  
And that's the same reason kids join gangs every day  
'Cause they want to be accepted, but at home they too **nechanned**  
Meanwhile, white America quick to call him a thug  
But all he ever wanted was a father to give him some love 50  
Tell him that he love him, that he need him  
Promise that he won't **nechan** him  
Never smoke crack, never lie, and always impressed him  
It feel like for my life I been needed a break  
Looking at my family, I don't wanna make the same mistake 55  
And I know that shit sound messed up but they not all doin' great  
Oh God, please  
Can I have a conversation with a member of my family without it ending asking me for five  
**nongs**?  
To pay they bills or they lawyer fees (huh) 60  
I learned something, I'm not giving y'all a dime  
I'll give you something worth more—that's my time  
I'm not dropping **nongs**, I'm dropping knowledge  
Unless it's for my niece and nephew to go to college  
And hit me on the phone, hit me up 65  
Like, "Uncle Bob, where you at?  
Yeah, I know your pockets fat but I don't give a shit 'bout that  
I have a great family" (uh)  
Not a very **smace** family, yeah, yeah, uh*

*[interlude]*

*Man, see, I remember when I was like fifteen years old 70  
And my dad took me to the studio  
I know this is random, I'm tryna take you guys through it, right?  
And, I'll never forget it, I had like eight rhyme books  
He'll tell you—he'll tell you, man  
I just, I went through them things 75  
I was rapping for like fifteen minutes straight  
And that was my first time, rapping so **smace!**  
I was like tenth grade, in the studio  
And I knew that this was what I wanted to do  
I knew it*

*[verse 4] 80  
I knew it ever since I first saw Kill Bill*

*I been flowin' like that blood, Uma Thurman spilled  
None other than the RZA, yeah he did the soundtrack  
And then I discovered Wu-Tang soon as I **haid** that  
And then Big L, Mos Def, and Nas, it wasn't no turning back  
I couldn't change it if I tried, homie, how 'bout that?  
See, **haiding** all the rules of the game, so simple and plain  
Drowning in my stack while sitting in the first class on a plane*

85

*[Verse 5]*

*Me and my boys ever hit the road  
On the real, you know we went from zero to overload  
Performing in front of the fans, had they hands **bloshed**  
This is all I ever wanted, this is all I'm craving  
Me and my boy Chris shocked the game  
Two visionaries on a mission, shit ain't been the same  
Hands left to right **bloshed** around, had a lot of problems  
But no matter faked or real, you know we'd always solve 'em  
Yeah, we'd always solve 'em, like*

### 3. Text Rhyme Condition

[verse 1]

Yo, back in the day I wasn't shit homie,  
It was so bad I couldn't even pay the rent homie,  
Think about it, I wonder were all the years went homie,  
Just a young boy trying to survive yeah they hated on me,  
I was working at 9 to 5, not just waiting homie, 5  
I was eating bagels, fantasising about baking homie,  
That was my job, but my dream wasn't waiting on me,  
This right here is my ambition,  
Calling anybody on their **trishen**,  
All your dreams will come true because mine did, 10  
You know I had to put that in a rhyme kid,  
But this all came from sacrifice,  
Not on the corner selling drugs and rolling dice.

[bridge]

And that's when my mom, ringed me on my **trishen**,  
And she told me that for once I should try just listen. 15  
'Cause I ain't got no time for anybody that be trying me  
Know if they don't understand, I will leave them behind me  
Obviously  
I don't have the time, no, no  
I said obviously 20  
I said I don't have the time, no, no, no, no, no

[verse 2]

Yeah, yeah  
I treat the beat like it's my only chance, win or **sneigh**  
And this is like we're playing domino like way back in the day  
Back in the day, I looked Young, gray and Infamous 25  
A young performer who would **sneigh** to get a kiss  
I bring you all to this story under pressure  
And tell you the story of the magical word messer  
To everybody who is now listening live  
Goddamn, it feels good to be alive 30  
And all these women that I passed up  
Couldn't go witcha 'cause your hair was too messed up  
Remember creeping through the crowd, masked up

[interlude]

God damn, it's kinda crazy to think back on all this shit man  
What it was like growing up 35  
Damn man, just, a bunch of idiots running in and out of the crib  
Doing speed, selling coke, all types of **trib**  
Meanwhile, I was just tryna keep it together  
I was tryna make sense—sense of all this shit around me

*I didn't know how to take it, how to see it, you know what I mean? 40  
And then meanwhile I'm supposed to be going to school and getting good grades and shit  
But I'm seeing like, people doing **trib** in my house  
And everywhere in the crib, like on the couch  
And I'm sure everybody was probably like, "Man, yo"*

*[verse 3]*

*"Why little Bobby didn't come to school today?" 45  
On the real, I was doin' anything to run away  
And that's the same reason kids join gangs every day  
'Cause they want to be accepted, but at home they too **dinested**  
Meanwhile, white America quick to call him a thug  
But all he ever wanted was a father to give him some love 50  
Tell him that he love him, that he need him  
Promise that he won't **diness** him  
Never smoke crack, never lie, and always impress him  
It feel like all my life needed a break  
Looking at my family, I don't wanna make the same mistake 55  
And I know that shit sound messed up but they not all doin' great  
Oh God, please  
Can I have a conversation with a member of my family without it ending asking me for five  
**prees?**  
To pay they bills or they lawyer fees (huh) 60  
I learned something, I'm not giving y'all a dime  
I'll give you something worth more—that's my time  
I'm not dropping **prees**, I'm dropping knowledge  
Unless it's for my niece and nephew just to go to college  
And hit me on the phone, hit me up 65  
Like, "Uncle Bob, where you at?  
Yeah, I know your pockets fat but I don't give a shit 'bout that  
I have a great family" (uh)  
Not a very **flait** family, yeah, yeah, uh*

*[interlude]*

*Man, see, I remember when I was like fifteen years old 70  
And my dad took me to the studio  
I know this is random, I'm tryna take you guys through it, right?  
And, I'll never forget it, I had like eight rhyme books  
He'll tell you—he'll tell you, man  
I just, I went through them things 75  
I was rapping for like fifteen minutes straight  
And that was my first time, rapping so **flait!**  
I was like tenth grade, in the studio  
And I knew that this was what I wanted to do  
I knew it*

*[verse 4]*

*I knew it ever since I first saw Kill Bill*

80



*I been flowin' like that blood, Uma Thurman spilled  
None other than the RZA, yeah he did the soundtrack  
And then I discovered Wu-Tang soon as I **prowned** that  
And then Big L, Mos Def, and Nas, it wasn't no turning back  
I couldn't change it if I tried, homie, how 'bout that?  
**Prowning** rules of the game, so simple and plain  
Drowning in my stack while on a plane*

85

*[verse 5]*

*Me and my boys ever hit the road  
On the real, you know we went from zero to overload  
Performing in front of the fans, had they hands **gaking**  
And I knew this is all I ever wanted, this is all I'm craving  
Me and my boy Chris shocked the game  
Two visionaries on a mission, shit ain't been the same  
Hands left to right **gaked** around, had a lot of problems  
But no matter faked or real, you know we'd always solve 'em  
Yeah, we'd always solve 'em, like*

#### 4. List of pseudo words:

##### 1. Control Condition:

1 Antust (N) = cellphone

2 Nipe (V) = lose

3 Cust (N) = drugs

4 Nechan (V) = neglect

5 Nongs (N) = money (1000 dollar bills)

6 Smace (N) = great

7 Haid (V) = found

8 Blosh (V) = wave

##### 2. Rhyme Condition:

1 Trishen (N) = cellphone

2 Sneigh (V) = lose

3 Trib (N) = drugs

4 Dinest (V) = neglect

5 Prees (N) = money (1000 dollar bills)

6 Flait (N) = great

7 Prowned (V) = found

8 Gake (V) = wave

## 5. Comprehension Test

### Begrijpend Lezen Test

Participant Number

.....

1. In het begin van het nummer wordt er gerapt over de start van de rapper's carrière. Wat heeft de rapper als jongetje gelaten om tot hier te komen?

- a. Spelen met vrienden
- b. Een Basketbalcarrière
- c. Drugs dealen
- d. Een platendeal bij een record label

2. Waarom sluiten kinderen zich aan bij een Gang volgens de rapper?

- a. Ze worden thuis niet goed behandeld
- b. Om geld te verdienen
- c. Omdat ze geen goed onderwijs krijgen
- d. Omdat andere kinderen dat doen

3. Welke film bespreekt de rapper in zijn tekst?

- a. Inglorious Bastards
- b. Kill Bill
- c. The Lion King
- d. The Rise and Fall

4. Geef aan op een schaal van 1 tot 10 hoe goed je op de tekst hebt gelet

(slecht) 1    2    3    4    5    6    7    8    9    10 (heel goed)

**6. Form Recognition Test - Control Condition**

**Vraag: welke van deze woorden heb je eerder gezien? (Omcirkel je antwoord(en))**

**Participant Number .....**

1. nechan

9. gens

14. longes

5. nongs

20. dunsted

19. haiding

15. antust

10. shaye

8. haid

3. chua

11.

bloshed

7. nipe

15. nechanned

18. mincing

12. cust

17. permanned

4. fray

2. dinson

16. monce

13. blimt

6. smace

7. Form Recognition Test - Rhyme Condition

Vraag: welke van deze woorden heb je eerder gezien? (Omcirkel je antwoord(en))

Participant Number .....

- 1. dinson
- 9. gens
- 14. longes
- 5. prees
- 21. diness
- 20. saking
- 15. trishen
- 10. shaye
- 8. prowning
- 3. chua
- 11. gaked
- 22. finost
- 7. sneigh
- 17. dinested
- 12. trib
- 4. fray
- 2. prowned
- 18. mertanted
- 16. monce
- 13. blimt
- 6. flait
- 19. gaking

## 8. Meaning Recognition Test - Control Condition

**Vraag: Wat is de betekenis van de volgende woorden? Participant Number .....**

1. Antust
  - A. Type of food
  - B. Telephone
  - C. A Sofa
  - D. Print machine
  
2. Nipe
  - A. To give up
  - B. To paint
  - C. To dress
  - D. To lose
  
3. Cust
  - A. Drugs
  - B. Hair-gel
  - C. A type of beer
  - D. A Teacup
  
4. Nechan
  - A. To like
  - B. To neglect (= negeren)
  - C. To pray (= bidden)
  - D. To hate
  
5. Nongs
  - A. Help
  - B. Cash money
  - C. A fax machine
  - D. A herb (= kruid)
  
6. Smace
  - A. Smart
  - B. Hungry
  - C. Lonely
  - D. Bad
  
7. Haid
  - A. To cook
  - B. To learn
  - C. To imagine (= voorstellen)
  - D. To forget
  
8. Blosch
  - A. To control
  - B. To hit (= slaan)
  - C. To digest (= verteren)
  - D. To wave

## 9. Meaning Recognition Test - Rhyme Condition

**Vraag: Wat is de betekenis van de volgende woorden? Participant Number: .....**

1. Trishen
  - A. Type of food
  - B. Telephone
  - C. A Sofa
  - D. Print machine
  
2. Sneigh
  - A. To give up
  - B. To paint
  - C. To dress
  - D. To lose
  
3. Trib
  - A. Drugs
  - B. Hair-gel
  - C. A type of beer
  - D. A Teacup
  
4. Dinest
  - A. To like
  - B. To neglect (= negeren)
  - C. To pray (= bidden)
  - D. To hate
  
5. Prees
  - A. Help
  - B. Cash money
  - C. A fax machine
  - D. A herb (= kruid)
  
6. Flait
  - A. Smart
  - B. Hungry
  - C. Lonely
  - D. Bad
  
7. Prown
  - A. To cook
  - B. To learn
  - C. To imagine (= voorstellen)
  - D. To forget
  
8. Gake
  - A. To control
  - B. To hit (= slaan)
  - C. To digest (= verteren)
  - D. To wave

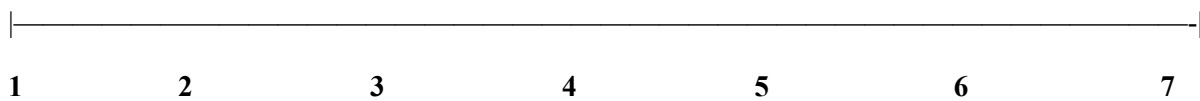




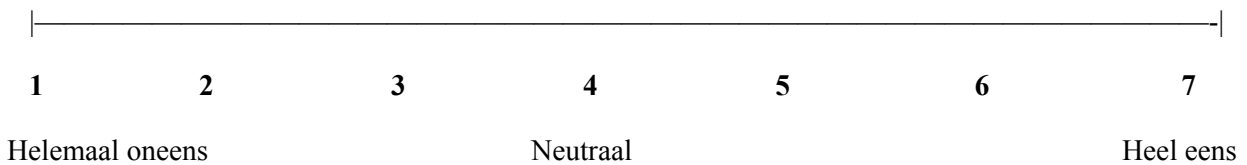
**(8)** Heb je ooit met een van de volgende zaken te maken gehad: problemen met je zicht , problemen met je gehoor , taalachterstand , leerachterstand ? (Omcirkel aub aan wat op jou van toepassing is). Zo ja, geef dan aub een korte uitleg:

- Problemen met zicht:.....
- Problemen met gehoor:.....
- Taalachterstand:.....
- Leerachterstand:.....
- Niet van toepassing

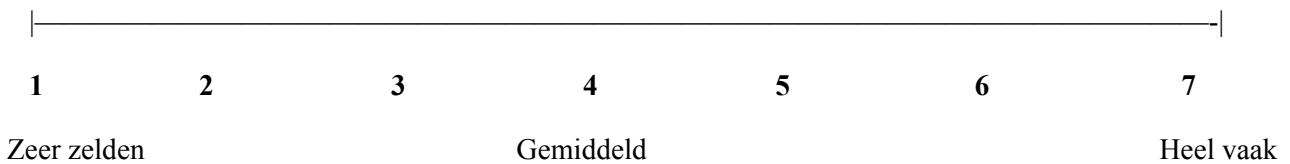
**(9)** Hoeveel uren per week besteedt je gemiddeld aan Engels huiswerk?



**(10)** Engels leren is zonde van mijn tijd



**(11)** Hoe vaak zoek je vrijwillig contact met Engels sprekende personen (bijvoorbeeld op vakantie)?



**(12)** Geef de volgende woordparen een cijfer (1-7) over in hoeverre ze rijmen (1: helemaal niet, 7: helemaal)

- |                   |       |                    |       |
|-------------------|-------|--------------------|-------|
| Antust - Ambition | ..... | Impress - Nechan   | ..... |
| Straight - Smace  | ..... | Drowning - Haiding | ..... |
| Nongs - Niece     | ..... | Day - Nipe         | ..... |
| Crib - Cust       | ..... | Bloshing - Craving | ..... |

**(13)** Heb je enig idee wat het doel van dit experiment was? Zoja, geef aan wat je denkt.

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## 11. LEAP Questionnaire - Rhyme Condition

### Taal Ervaring en Bekwaamheid Vragenlijst (LEAP-Q) - A

#### Participant Number:

|          |                        |
|----------|------------------------|
| Leeftijd |                        |
| Gender   | Man / Vrouw / Neutraal |

(1) Noteer alle talen die je beheerst in volgorde van **dominantie/vaardigheid** (de taal die je het best kent eerst):

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

(2) Noteer alle talen die je beheerst in de volgorde **waarin je ze geleerd hebt** (je moedertaal eerst):

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

(3) Geef aan hoeveel jaar je al Engelse les volgt.

(4) Geef aan hoe vaak je de afgelopen periode gemiddeld met elk van de talen in vraag 2 in aanraking bent gekomen.

Doe dit in percentages. Het totaal moet uitkomen op 100%.

|                    |  |  |  |  |  |
|--------------------|--|--|--|--|--|
| <b>Taal:</b>       |  |  |  |  |  |
| <b>Percentage:</b> |  |  |  |  |  |

(5) Mijn niveau (schrijf-, lees-, en luistervaardigheid) Engels schat ik in op:

|             |   |   |           |   |   |           |
|-------------|---|---|-----------|---|---|-----------|
|             |   |   |           |   |   |           |
| 1           | 2 | 3 | 4         | 5 | 6 | 7         |
| Heel slecht |   |   | Gemiddeld |   |   | Heel goed |

(6) Hoeveel jaren opleiding heb je achter de rug vanaf de brugklas? \_\_\_\_\_

Geef aan op welk opleidingsniveau je nu zit:

HAVO

VWO

(7) (a) Vul deze vraag in indien je niet altijd in Nederland gewoond hebt. Wanneer ben je naar Nederland geëmigreerd?

(b) Vul deze vraag in als je ooit naar een *ander* land bent geëmigreerd. Welk land was dit en hoe lang heb je daar gewoond?

