Incidental vocabulary learning through Rap music: study in a Greek context and affect measurements

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Abstract

The present study aimed to replicate a previous research conducted by Rossen (2019) on incidental vocabulary learning in a music listening task and the role of rhyme as a mnemonic device. This study differed from the previous one as affect measurements were integrated through in-practice questionnaires to keep track of participants' motivation, attitude and enjoyment towards the musical context. Greek EFL young adult learners were assigned in two groups, namely an experimental and a control group. Both groups were exposed to a rap song containing 8 pseudo words, referring to either concrete or abstract words. Participants were subjected to a comprehension test and two post vocabulary tests on form recognition and meaning recollection. To measure participants' affective thoughts in addition to the in-practice questionnaires another questionnaire on interests in hip-hop/rap music was distributed. One week after the actual experiment a delayed post-test took place which aimed to investigate whether subjects still remembered the target items.

Findings of the study revealed that the control group had higher motivation than the experimental group. Such affect was also reflected to their vocabulary scores demonstrating that there is a correlation between behavior and performance. Participants of both conditions showed a learning effect in form recognition and meaning recollection as the scores in the delayed post-test were unexpectedly higher than the first time point. The study seems to suggest that for the Greek EFL context rhymes do not play a significant role rather than learners' motivation, attitude, and enjoyment.

Keywords: *incidental vocabulary learning, noticing hypothesis, form recognition, meaning recollection, effect of rhyme, affect measurements.*

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Introduction:

For many years the acquisition of vocabulary in second language learning had been an overlooked linguistic aspect. In the last decades, linguistic research has given more attention to the development of vocabulary as a language skill as it is considered essential in the language learning process both for first (L1) and second language (L2). However, the context in which first and second language are acquired differ. During pre-school age, the development of language is rapid and children implicitly conquer the linguistic competencies that allow them to use speech effectively and communicate with people around them (Tzouriadou, 1995).

Nevertheless, the ultimate language attainment and the pace at which it is acquired hinge on the influence of environmental factors. In line with the approach of socio-cultural theory, the acquisition and the development of language occur within the framework of children's social interactions with other people, and in particular with parents (Vygotksy, 1997). On the other hand, learning an L2 is normally subject to explicit classroom instruction (Ellis, 2011). For this reason, past research has demonstrated that L2 learners have difficulty in reaching a proficient language level compared to L1 learners (Sorace, 2003) as the level of immersion differs (Rossen, 2019).

Researchers and educators in the field of Applied Linguistics have argued that exposure to L2 plays a significant role throughout the language learning process especially in terms of vocabulary development. However, according to Takac (2008) exposure alone is not sufficient to expand one's vocabulary. Consequently, educators are expected to systematically integrate and provide new learning strategies that will assist in learners' vocabulary enrichment.

According to Rossen (2019), a strategy that can be applied when teaching L2 vocabulary is by using mnemonic devices that can stimulate learners' working memory. Mnemonic devices seem to have a positive effect on cognitive processes when it comes to learning (Baddeley, 1990). As a matter of fact, mnemonic techniques aid in turning abstract information into concrete ones allowing our brain to recall and associate words to mental images. Such strategies have proven to be quite influential in second language retention. Empirical studies demonstrated that mnemonics are highly effective when used in the right circumstances and support the idea of integrating mnemonic techniques in education (Levin, 1993; Worthen & Hunt, 2011). Among the different types of mnemonic devices, music and rhyme mnemonics appear as techniques.

Rhymes appear to benefit memory as they impose a pattern through repetition that serves in meaningfully organizing new information in our memory (Baddley & Hitch, 1994; Lamb & Gregory, 1993). In his thesis, Rossen (2019) mentions the example of early childhood exposure to nursery rhymes where children associate an already familiar word with a new one due to their phonological neighborhood density that is presented via musical stimuli. In this way, new linguistic information is available to the child allowing him/her to acquire new vocabulary. De Groot (2006) when studying the effect of music as a background in vocabulary learning in adults, demonstrated that more learning can also occur in a music condition, confirming Felix's (1993) conclusion that retention is best when music is played during both learning and testing. Such finding is said to exemplify the Context-Dependent Memory phenomenon.

Hence, rhyme mnemonics in a music context are not exclusively useful for young learners but also for adults. In their study, Nimmo and Roodenrys (2004) showed that rhymes have a "facilitative effect on the recall of item information" (p. 245) by generating the activation of short-term memory. In fact, when a word is stored in our short-term memory that does not imply that the meaning of the word is instantly acquired as added conceptual information is necessary in order to have a deeper understanding of the lexical item (Henriksen, 1999). For a word to be stored in our long-term memory it is essential for a learner to repeatedly retrieve the word and associate it to contexts.

Nevertheless, regardless of age, rhymes seem to stimulate and attract learners' attention and due to their salience, they first transfer in the short term memory (Rossen, 2019) which has demonstrated to be strongly linked with the acquisition of second language vocabulary (Gathercole, Service, Hitch, Adams & Martin, 1999) and eventually end up in our long-term memory.

According to Schmidt (2011), the complex system of attention "seems to be the heart of the matter" (p.724) as conscious attention to novel information can result to actual learning. Therefore, for a second language learner to build on existing language knowledge he/she is expected to notice the gap between what the learner already knows and the input and pay attention to that input. Moreover, the author suggests several factors that decide learners' attention namely, external factors such as the complexity and the context in which discourse occurs but also internal factors that individually differ that is linked to one's motivation, aptitude as well as learning styles and strategies (Schmidt, 2011). In other words, in order for learning to occur a degree of attention is essential as acquisition cannot be an unconscious process (Schmidt, 2001). Such claim aligns with theoretical frameworks of memory, which support that "attention is the necessary and sufficient condition for long-term memory storage to occur" (Schmidt, 1995, p. 9). Thus, we can understand why occasionally learners fail to correct language mistakes or also acquire novel words even after recurrent exposure.

The degree of attention that every learner requires in order to take input can vary depending on one's motivation. As it has already been established, learners with increased attention are more successful throughout their vocabulary acquisition process in respect to those who pay little attention (Rossen, 2019). Based on previous research, motivation is not the only factor that determines a second language learner's success. Especially for adults, aptitude seems to play a significant role in every learning condition, namely explicit, implicit, or even incidental learning (Schmidt, 2011; Spolsky, 1995; Tseng & Smith, 2008). Incidental differs from implicit learning as the former can occur unintentionally without the learner wanting to learn. Richards and Schmidt (2002) also suggested that incidental learning can also take place when one learns one thing while the initial aim could be another, therefore occurring as a byproduct of an activity. Such a condition of learning appears to be an effective way for second language learners to acquire vocabulary through different contexts. However, as Godfroid , Ahn, Choi, Ballard, Cui, Johnston, Lee, Sarkar & Yoon (2017) also support, incidental vocabulary cannot occur without a degree of intentionality, as learners ought to notice the input for it to be stored in their short-term memory (Schmidt, 2011).

To transfer novel vocabulary gains from short-term memory to long-term, learners need to be systematically exposed to the target words. Also, for this transfer to happen, learners should be able to infer meaning through contextualization so that they associate words with mental images. Additional studies have validated the effectiveness of incidental vocabulary learning with different stimuli. Specifically, Godfroid et al. (2017) used an authentic novel maintaining ecological validity in their study along with other similar studies of learners acquiring vocabulary when reading books (Brown, Waring, & Donkaewbua, 2008). Pelicar-Sanchez and Schmitt (2010) proved that incidental learning can also occur through videos and further acoustical stimuli.

Language and music are two domains that share "structural and auditory complexity" (Zeromskaite, 2014, p. 78). Previous research has supported similarities as well as differences between music and language. In the field of SLA and Applied Linguistics, researchers and educators have attempted to propose the benefits and possible practical applications of music informal educational settings (Strait & Kraus, 2011). It has been reported that music can assist students in acquiring vocabulary and developing language skills. The effects of music in second language learning will be further elaborated on in the following chapter.

With English songs dominating the global charts, it is expected that L2 learners are repeatedly exposed to them (Rossen, 2019). Recently, more emphasis has been given on the interest of the possibility of integrating hip-hop pedagogy. Hip-hop and specifically rap music are a "growing presence in the classroom" (Duncan-Andrade & Morrell, 2005) as they are a rich site of "cultural production" (Richardson, 2006) that has a major and extensive global impact. Richardson (2006) also argues that rap music is a genre rich in lexical dexterity. Therefore, rap music is considered to be a highly developed discursive system. A significant feature of rap music that is essential for the following study is the inclusion of rhymes. Taking into account the abovementioned evidence that rhymes mnemonics and music have a positive effect on language learning, the present study aims to carry out an incidental vocabulary learning experiment in a hip-hop context by using pseudowords. In addition, the present study will include affect measurements that will assist in having a better understanding of the extent to which motivation predicts vocabulary gains.

The following chapter will examine relevant past literature and will provide an overview of existing evidence. The first section will discuss the role of attention and the Noticing Hypothesis in SLA by providing theoretical, practical as well as historical evidence that has contributed to the matter. Moreover, a section on the role of rhymes shall be scrutinized in terms of noticing and vocabulary learning. Next, the role of motivation in a L2 class will be examined and further studies will be analyzed that have attempted to operationalize motivation as a variable for experimental purposes. Last, a section on the effectiveness of Music in a formal educational setting will be discussed as well as a short outline on the difference between the acquisition of concrete and abstract words.

Literature:

2.1 The Role of Attention and Noticing in SLA

For more than two decades now the role of attention has generated numerous experimental studies and caused a lot of controversial views in the field of Second Language Acquisition (SLA). Attention as a conscious factor seems to be at the core of the cognitive SLA view in terms of second language (L2) learning. Over the years, three different views have been established which vary in their approach towards the function of attention.

The first representatives support the idea of L2 learners having to study language rules that facilitate them when they are required to apply those rules in their output (Rossen, 2019). As a matter of fact, the scholars of this view emphasize the importance of conscious understanding in the L2 process by also pinpointing the significance of form (Schmidt, 1995). Crucially, it is argued that in order to learn a second language, learners should consciously pay attention to explicit instruction so that their output cannot be distinguished from native-like production. Thereby, mistakes in second language production can be considered a product of lack of attention. Nevertheless, this view does not contradict the role and benefits of communicative practice but it is viewed as "of secondary importance compared to instruction, explanation, and drill" (Rossen, 2019, p. 4).

The second school of thought claims that language learning is an unconscious process. In contrast to the first stream of scholars, in this view communicative practice plays a key role as learners that are naturally immersed in a second language environment are expected to unconsciously and effortlessly learn form. Based on past literature, however, this implicit learning process that learners undergo requires more cognitive effort in terms of attention to meaning. According to Tomlin and Villa (1994), attention alone is not sufficient, and therefore not the sole prerequisite for learning effect to occur. Rather, through their known fine-grained analysis of attention, the researchers concluded that 1) the construct of attention consists of three separable processes, namely detection, alertness and orientation and 2) that attention and awareness are two distinctive concepts (p. 198). Tomlin and Villa, drawing on Posner and Peterson's neurocognitive model of these three interrelated networks, claim that detection of input is more important than the other two. Specifically, they argue that detection alone is sufficient and an indispensable condition for additional cognitive processing (Tomlin & Villa, 1994) and that alertness and orientation are not required for detection to take place. The concept of detection is defined as "the cognitive registration of some stimuli" (p. 190) which can be transformed into intake. Simultaneously, orientation is a byproduct of alertness, as the former occurs when learners start dividing the attentional resources arose by expected incoming stimuli. Overall, Tomlin and Villa seem to suggest that these processes can unconsciously lead to learning effects by registering stimuli that differs from noticing stimuli (Rossen, 2019).

The most predominant view in the field of SLA merges aspects of both views. In fact, this third view combines the significance of form focus with the benefits that full exposure to communicative contexts can provide to learners in becoming proficient in L2. For a learner to start acquiring language, it is necessary for

oneself to be consciously aware and pay attention to the information perceived as input. Considering that only when input is noticed, it is only then that it can become stored and implicit knowledge. In contrast to Tomlin and Villa's concept of detection, here it is argued that a learner should be consciously aware of the input. In the attempt to accommodate a few aspects of Tomlin and Villa, Robinson (1995) suggests that noticing is a "detection plus rehearsal in short-term memory, prior to encoding in long-term memory" (1995, p. 296). Given that short-term memory is part of long-term memory, such a statement implies that detection along with activation of short-term memory can generate learning. According to Godfroid et al. (2010), the type of instruction (either explicit or implicit) in such case is of little importance, as noticing form leads to identical cognitive processes as when learners independently direct their attention. In addition to the type of instruction and attentional resources, Krashen (1982) supported that when explicit knowledge over time starts transforming into implicit knowledge, learners devote less attentional resources to form. This does not imply that learners become unaware of the input rather they automatize language rules by "forgetting the actual metalinguistic rules" (Robinson, 1995).

The fundament of the Noticing Hypothesis coined by Schmidt (1990) advocates the idea that a learning effect in second language learners cannot occur without attention and awareness. Through the hypothesis, the concept of noticing is presented as "the necessary and sufficient condition for the conversion of input to intake" (Schmidt, 1994, p. 7) with intake being the gap in the input that learners ought to notice (Schmidt, 1990). Unless a learner notices the gap between his production and someone else's it is highly likely that he/she will carry on making the same mistakes. For this reason, attention and awareness are key roles in noticing which will prevent an L2 learner from falling within the so-called fossilization zone (Jung, 2009). Despite the fact that the Noticing Hypothesis distinctly outlines common struggles that second language learners encounter, the hypothesis itself has triggered controversy. Tomlin and Villa (1994) claimed that the hypothesis itself was conceptually vague (Tomlin & Villa, 1994). This is due to Schmidt's unclear distinction between awareness at the level of notice and awareness when related to understanding. Another reason that the hypothesis has received criticism is due to the difficulty of measuring an abstract and subjective concept like noticing. Evidence that has hitherto been obtained seems to "provide some insight into the attentional processes" (Rossen, 2019, p.5) that occur in experimental setups.

Another fundamental aspect that Schmidt (1990) pinpointed through the Noticing Hypothesis is the role of consciousness in second language learning. In fact, he identified three aspects of consciousness involved in language learning: awareness, intention, and knowledge, with consciousness as awareness embracing the process of noticing (Schmidt, 1990). Firstly, learners notice the input and stimulate their short-term memory. In this regard, Schmidt (1990) suggests that noticing itself does not lead to intake, but it is a crucial starting point. Subsequently, once the input is retained the L2 speaker starts comparing the new language feature with prior knowledge on the feature. This previous knowledge can either be in their L2 or their L1. If it is based on

the latter, then such a concept is what linguists refer to as Apperception[1]. Thus, when the reanalysis of existing features takes place it is highly likely that it leads to a new correct representation of it, and therefore to learning effect (Rossen, 2019). Attended input entering short-term memory considerably activates long-term storage, confirming that noticing is essential for retention and excluding the notion of subliminal learning (Rossen, 2019). Subliminal language learning occurs when L2 learners can pick up language features without paying attention. This is possible in infants and toddlers however, it is very unlikely for adults unless they are repeatedly exposed to the input. The second aspect of consciousness supports that an input can be incidentally noticed, and eventually learned. The last level suggests that input can turn into intake and implicit knowledge.

Several empirical studies have investigated the validity of the Noticing Hypothesis. Researchers have examined a variety of linguistic aspects that learners tend to notice. However, as Godfroid et al. (2010) interestingly noted, for a certain period, researchers would conduct studies with predetermined linguistic features. Therefore, subjects' attention in the majority of the studies was to some extent directed. According to Williams (2001), several studies have reported that learners when unconsciously look into linguistic items to learn they tend to focus their attention on (new) words. This suggestion advocates the assumption that learners give more importance to meaning-bearers (Godfroid et al., 2010) than to linguistic formal features such as syntax, morphology, etc.

Hence, vocabulary appears to be an "attractive target" (Godfroid et al., 2010, p. 173) to assess the associations between noticing and learning assuming the validity of the Noticing Hypothesis (Schmidt, 1990). Two of the following studies that will be introduced have explored the relationship between awareness and learning through online registration, namely eye-tracking.

Spinner, Gass, and Behney (2013) through eye-tracking investigated 20 English speakers of L2 Italian and their noticing of morphophonology and syntax. Specifically, the aim was to understand which morphophonological and syntactic aspects learners attend to when dealing with gender agreement on adjectives (Spinner, Gass & Behney, 2013). Subjects were required to fill in a forced-choice task in which they had to choose the suitable form of predicate adjectives. While participants were making their decisions on gender marking, the researchers measure their eye fixations on the noun and article ending (Spinner, Gass & Behney, 2013). The findings of the study demonstrated that participants paid equal attention to both nouns and articles. Such conclusion arose from the eye-tracking that indicated that subjects spent equal time when fixating articles and nouns, which suggests that L2 Italian learners use both cues to determine noun gender (Spinner, Gass & Behney, 2013). Even in the cases where noun endings did not provide sufficient information or unfamiliar nouns lacked gender specification (Spinner, Gass & Behney, 2013) subjects could determine

[1] Apperception is a type of intervention that also involves noticing and drawing L2 learners' attention to language form (Robinson et al., 2012). In fact, L2 learners consciously relate the new information perceived to "prior knowledge which has been stored"(p.201) in their experience. Apperception is considered to be a prior stage before the learner actually comprehends the input before converting it into intake (Robinson et al., 2012).

noun gender. Such results support the notion "that learners actively look for relevant information (2013) concerning gender wherever they identify it.

Godfroid and Schmidtke (2013) in their study distinctly measured attention and awareness through triangulation. Specifically, they investigated eye-movement recordings and verbal reports aiming to identify how these two mechanisms contribute to receptive vocabulary learning (Godfroid and Schmidtke, 2013). In this study, advanced EFL learners were exposed to 12 novel pseudowords embedded in 20 paragraphs in the target language. Learners were tested on the meaning of these pseudowords. Simultaneously, the eye-tracker would record their eye movement while encountering the target words. Participants were not informed that they had to recognize the pseudowords used in the texts, and they were surprised with a posttest on meaning recognition. Findings supported that both fixation time and word recollection predicted word recognition for EFL learners. As abovementioned, participants' awareness levels were also investigated through a self-report in which they determined whether either autonoetic awareness or noetic awareness[2] or no awareness (Godfroid and Schmidtke, 2013). The eye-tracking evidence seemed to demonstrate that subjects that reported autonoetic awareness presented significantly higher gazing time than those reporting noetic awareness. Fixation times and awareness levels were analyzed through a linear regression model in order to prove if the levels of awareness predicted word recognition scores. Results indicated that the attention dedicated when looking at a word activated one's awareness, which together constitutes a strong predictor of vocabulary learning.

Another pertinent element contributing to understanding the association between language learning and noticing is the degree of attention attributed to an item. In spite of the fact that it has not been established if the correlation between noticing and learning has a linear function (Rossen, 2019), it has been demonstrated that the former has a positive effect on the latter.

Mackey (2006) conducted a study that integrated multiple measures of noticing along with (a possible) development of attention. In her aim to closely investigate the matter, the researcher set up a conversational and interactive fictional game show for ESL learners. Participants were randomly distributed in two conditions, namely the experimental group, which consisted of additional subgroups who would partake in the show, and a control group. During the three 50-minute sessions, subjects of the experimental condition were exposed to consistent feedback on their English. The feedback was given by the researcher and the participants' teacher, present throughout the experimental procedure. The control condition was subjected to the same procedure, however, participants, in this case, did not receive any feedback, either that be negative or positive. Based on research, feedback for L2 learners "prompts attention to language and steers the attention" (Rossen, 2019, p. 7) of subjects. To keep track of the development of attention, the researcher exposed participants to online learning journals, while also asking them to transcribe introspective comments at the time of class. Last, participants were also tested with an offline questionnaire. All learners, across both groups,

[2] Tulving (1985) defined autonoetic consciousness as a personal episodic memory that is retrieved and relived through the 3-time dimensions. Noetic consciousness is defined by the same author, as a level of consciousness connected to people's knowledge and familiarity with the world (Tulving, 1985).

were tested before and after every session to examine whether their performance in their L2 would increase with time. Findings supported that L2 learners that were exposed to feedback paid significantly more attention to the target forms than those who received no feedback. Scores in performance for the feedback group were also significantly higher in respect to the other group. The conclusion drawn from the study was that feedback has a positive effect on noticing and that learners that notice forms through feedback are most likely to pick up the forms in contrast to those who did not notice them. The most important of the study, however, was participants' unawareness of being part of a language learning study, therefore, the forms that they learned occurred incidentally supporting Godfroid, Boer, and Housen's assumption that "higher levels of awareness lead to higher learning gains" (p. 172).

Numerous studies have explored form recognition as the first indicator of a learning effect however, Bion, Borovsky and Fernald (2013) claim that learning a word also involves the ability for an L2 learner to map form to semantic meaning. An example of a study that investigated this aspect was Petschko's (2011) attempt to measure the effect of input enhancement on second language vocabulary. Participants of this study having an intermediate level of English were exposed to 12 pseudowords embedded in a text story. Subjects were tested in terms of form and meaning recognition as well as meaning recollection. One of the two groups of the study was tested on pseudowords that were textually enhanced in bold letters, a feature that was subtracted in the second condition. After the exposure, participants of both conditions were required to complete a comprehension test and additional vocabulary tasks in form and meaning recognition as well as meaning recollection. Results of the three measurements supported a learning effect for both conditions. However, according to the data, textual enhancement did not facilitate one condition to outperform more than the other as participants in both conditions noticed the non-words equally often. No significant differences were shown in the vocabulary tests however, findings supported that form recognition is easier compared to the other two vocabulary aspects. Simultaneously, some learners performed very well on all tasks, suggesting that they had gained a deeper understanding of the lexical items. Hence, it could be argued that under certain circumstances, long-term semantic memory storage is attainable (Rossen, 2019).

2.2 Learning Contexts and Incidental Vocabulary learning

As a result of the previous section, it can be claimed that attention plays a key role in learning. In order to trigger and stimulate learners' attention, educators and researchers ought to scrutinize the context in which second language learners find themselves into. According to Tremblay (2006) language learners are not only exposed to a target language only through traditional explicit classroom teaching. Instead, learners can regularly receive language input through a plurality of stimuli. In their paper, Collentine and Freed (2004) reported Hymes's (1972) claim that "the key to understanding a language in context is to start not with language but with context" (Collentine & Freed, 2004; Hymes, 1972, p. 19-57) and that the two aspects should be systematically related (Collentine & Freed, 2004; Hymes, 1972, p. 19-57).

Hence, it is important to analyze the contexts in which second language learners are immerged as different external factors can have a major impact on one's perception of the target language per se, but also of the channel through which the language is imparted. It is a well-known fact that L2 exposure typically takes place in classroom settings where learners are explicitly taught a target language. This type of instruction is considered to be a formal teaching method. Simultaneously, language learners can learn a second language through informal instruction. Namely, learners do not follow a stringent and formal learning structure instead, they base their learning on a "learning by doing" (Boekaerts & Minneart, 1999, p. 534) approach. Informal learning can occur in numerous forms and through numerous channels for example by watching movies and sitcoms, listening to music, or reading a book. In such contexts, a learner feels more at ease with no institutional and social pressure (Collentine & Freed, 2004) and he/she can be fully exposed to the target language and lower the Affective Filter suggested by Krashen (1986). Thus, it is likely for a second language to be enriched and acquired as a byproduct of another task (Rossen, 2019). As already noted, this can be regarded as incidental learning (Marsick, 1987) that can occur in an informal context. Hence, it is crucial to review the various learning environments to broaden our understanding of the aspects and the extent to which the learning environments can affect learners' second language learning process.

2.2.1 Informal Setting and Incidental Vocabulary Learning

Within the field of Second Language Acquisition (SLA), one of the main aspects that have been thoroughly investigated is related to teaching (Loewen, 2013). Formal Teaching or Formal Instruction is mainly "structured, purposeful and school-based" (Bahrani, Shu Sim & Nekoueizadeh, 2014, p. 1715). Hulstijn and De Graaf (1994) state that through formal instruction learners can acquire more complex language structures as it is unlikely for those rules to be learned implicitly. Primarily, in formal classrooms, the focus is on form (Long, 1998). On the other hand, informal learning can be seen as a very essential part of learning with the focus being on meaning (Lightbown & Spada, 2001; Marsick & Watkins, 1990) with form being a secondary aspect.

Although formal and informal learning share the same objective, the setting and the type of instruction render them quite different processes. While we could say that in formal settings educators seem to emphasize more on the instruction per se and content, informal learning is based on each learner's experience. Moreover, some students can feel pressured and respond adversely to a highly structured environment. This justifies students presenting differences in language level among peers of the same educational level (Lohnman, 2013). Rossen interestingly referred to two researchers Dabbagh and Kitsantas (2012) that suggested that due to the nature of Formal Instruction second language learners seem to desire a more informal type of learning. In this way, learners are more self-directed and feel more motivated when using their own material at their own pace. As already pointed out, informal learning is an extensive yet beneficial part of learning. While there is some

correlation between informal and incidental learning, there are some significant differences between the two (Rossen, 2019).

Marsick (1990) makes a very clear distinction between incidental learning and the two learning settings (formal and informal).In fact, the author states that incidental learning cannot be either planned or intentional. A learner can incidentally learn a language feature without the intention of learning it. This is why incidental learning can occur as a byproduct of another activity (Marsick, 1990; Richards & Schmidt, 2002) and in this way is "largely embedded in the context of the core activity" (Rossen, 2019, p. 10). Although attention in incidental learning is lower than in informal educational environments (Marsick & Watkins, 2016), it is necessary to devote some attention to the byproduct for a learning effect to arise (1990). Again, this idea aligns with Schmidt's (1990) view that a learner should be aware and notice the gap in the input in order to learn. Paribakht and Wesche (1999) argue that attention is not the only variable that can contribute to one's learning; working memory and aptitude seem to be crucial factors in incidental learning.

After having scrutinized the general concept of incidental learning, the following paragraphs will closely examine the potential of incidental vocabulary learning, which is also the main interest of the present study. Considerable research has demonstrated that incidental learning is an effective way for learners to acquire vocabulary when supported by context. Second language learners, in their effort to infer the meaning of unknown words out of the context, engage in a mechanism that requires more mental processing. This idea aligns with the theoretical framework of the Involvement Load Hypothesis. Hulstijn and Laufer (2001) were the first ones to refer to this theory suggesting that retention of new and unfamiliar words is possible depending on the amount of involvement that each learner dedicates to each task. The two researchers identified three components that are essential for a learner to retain a new word: *need*, *search*, and *evaluation.* The first component, *need*, is related to learners' motivation when finding themselves in a situation when they need to use a word. Hulstijn and Laufer (2001) propose that *need* can be strong or moderate; strong if the learner self-imposes the need to use a word, whereas moderate if an external agent (e.g. a teacher) expects the learner to use a word (Jin and Janbin, 2009). Search is allocated to learners' initiative to look for the meaning of an unfamiliar word either by consulting a dictionary or an instructor. Last, with evaluation learners start comparing the new word and thinking in which contexts this fits better (Jin and Janbin, 2009). It can be argued that the Involvement Load Hypothesis encompasses both cognitive and motivational dimensions (Alcaraz- Marmol and Almela, 2013). Certainly, each task induces different involvement loads (Hustijn & Laufer, 2001). Hulstijn and Laufer (2001) conducted five experiments in which directed learners' attention on meaning when reading a text. The rationale behind this is connected to the authors' intention to maintain an incidental vocabulary learning situation. Participants were distributed in two conditions, namely the inferred-meaning group and a control group that used a glossary while reading for the follow-up vocabulary synonym tests. Moreover, participants' attention was directed to meaning by letting them know that they would be tested on the content of the reading material. First findings of the study revealed that subjects in the inferred-meaning condition performed marginally better than the control group however, this can be justified by participants' limited exposure to the stimuli. Another possible explanation of the marginal effects could be

that the context was not rich enough so that subjects would infer the meaning of target items only with one exposure. Another purpose of the study was to explore whether a multiple-choice test would lead to better results than the synonym test. Results reported that participants would perform better in multiple-choice tasks than in synonym ones, implying that the former supports subjects' higher retention. One could say that these results could arise as a product of learners' random completion of the tasks. Even so, 3 out of 5 studies revealed that participants that were more involved and asked to infer meaning benefitted more than the control group that used a glossary. These findings again seem to suggest that the more cognitive effort a learner employs the more likely for him/her to retain a new word. Last, participants that had higher concentration rates performed better in the multiple-choice test than those who reported low attention rates. These data favor the idea that attention plays a key role in incidental learning situations.

Varnosfadrani and Rafiee (2012) looked into the effects of incidental vocabulary learning in the form of different gloss types both in learners' first and second language using State Rating Tasks (SRT), which showed how learners' vocabulary awareness changed over time. The second scope of the study was to clarify the connection between incidental vocabulary learning when using glosses, and how receptive and productive vocabulary develops in students. In this study 59 Iranian EFL learners that have not used English in their home country were tested on a list of 20 target words in two glosses (L1 and L2). The target words were selected based on the frequency and visual similarities, namely words with 4 to 10 letters corresponding to three-word classes (nouns, verbs, and adjectives). In addition to the 20 target words, 13 more control words were added that functioned as distracters. The passage that subjects were exposed to was from a university book which was simplified in order to match participants' language level. Before the actual experiment subjects were asked to fill in a version of SRT as a pretest to measure their previous knowledge on both target words and the distracters. This was done to compare participants' vocabulary development before and after the treatment. After this, participants were randomly assigned to two groups with one group using L1 gloss and the other one using the L2 gloss. Both glosses were used by the learners while reading the passage. Findings suggested that incidental vocabulary learning increased subjects' knowledge states from lower to higher. However, the data from the SRT regarding the relationship between the types of gloss and development of receptive and productive vocabulary gains in participants indicated that subjects with the L1 gloss condition outperformed the L2 gloss condition in terms of productive vocabulary knowledge whereas the L2 gloss type was more effective for receptive vocabulary growth.

Although several studies have proved that glossaries can assist L2 learners throughout their language learning process, Hulstijn (2001) suggests that it is necessary for learners to have some sort of guidance to notice their knowledge gap in incidental learning situations. Explicit focus on target items will lead to higher performance in situations where learners use a glossary (Rossen, 2019). This idea was primarily elaborated by Long (2000) as Focus-on-Form instruction. Long (2000) suggested a particular method that can direct learners to novel vocabulary while maintaining an incidental learning situation. Namely, the author suggested that learners can focus on form (FoF) in order to enhance vocabulary gains. Moreover, the role of the instructor, in this case, would be that of a facilitator and a guide when the learner is in difficulty during a

communicative task and make sure that their attention is “briefly shifted to linguistic code features” (Long, 2000, p.1) thus, maintaining an incidental learning situation. Loewen (2005) carried out a study in which he aimed to direct learners’ attention on target items by ensuring that words would still be learned incidentally. The researcher recorded 32 hours of conversations taken in the classroom where the teacher was providing learners unknown vocabulary when it was necessary for them to express specific concepts. During the week learners were tested several times in order to verify whether they would benefit from the FoF- teaching method. Findings reported a 60% of success in word recollection from learners tested the first day and an 50% of success two weeks later. Such results suggest that learners had picked up incidental vocabulary and stored it in their long-term memory. Thus, the FoF-instruction appears to be an effective teaching method that can maintain incidental learning situations.

Several studies have attempted to analyze how an L2 learner can incidentally learn vocabulary by scrutinizing the cognitive processes and the division of attention that a learner attributes to lexical items when reading. Godfroid et al. (2017) carried out an ecologically valid research on native and non-native speakers of English exposing them to an authentic novel including 29 Dari words which were used as the target words of the study. The reading material that was therefore used had no pedagogical purposes with the target words naturally occurring in the novel (Godfroid et al., 2017). The data was gathered through an online eye-tracking method in order to have a better view of how learners’ fixation time on an item can either decrease or increase after multiple exposures. The second purpose of the study was to explore whether eye fixation measures and frequent exposure predict learning gain on three vocabulary tests measuring form recognition, meaning recollection, and meaning recognition. The experimental study was conducted in two days; the first day participants of both conditions read 3 chapters following a comprehension test and the second day following the same procedure reading 2 more chapters. During the second day of reading, subjects were also tested on the three vocabulary tests. Findings from the eye-tracking indicated that eye-fixation time decreased after repeated exposure to the target words, which can be treated as a confirmation of the Noticing Hypothesis as the more one is acquainted with the word the less the word is noticed. Both conditions performed better on form recognition and meaning recognition than on meaning recollection. These findings seem to suggest that meaning recollection requires a deeper cognitive process when figuring out the meaning of a word than merely registering a form (Henry, 1999). Non-native speakers read at a slower pace than Native speakers, however, both groups' reading times decreased at similar rates. The conclusion of the study supported that participant became more familiar with new vocabulary after repeated exposure. Not only frequency of exposure but also how long participants engaged with the word predicted acquisition of meaning recall and meaning recognition in the posttests. Frequency alone predicted form recognition in participants of both conditions. Last, results advocated the importance of deliberate focus on words in context and how this helps in gaining vocabulary. Overall, the researchers concluded that attention and frequency contribute independently to vocabulary growth and that the largest gains in Reading Times take place during the initial encounters with the words (Godfroid et al., 2017).

Recent studies have focused on investigating the benefits of audio-visual input in vocabulary learning which is also the interest of this study. For this reason, the following paragraphs will engage in providing a better understanding of the possible vocabulary benefits that can arise from a multimodal stimulus.

Neuman and Koskinen (1992) investigated the effects of incidental vocabulary learning in comprehensible input when using captioned television in minority students. For the study, 129 bilingual 7th and 8th graders were tested. Participants were randomly distributed in four different conditions, namely a) captioned tv, b) Tv with no captions, c) reading while listening, and a control condition in which subjects were only exposed to a textbook. The stimuli that learners were exposed to were 40-segment selected from a Children's Television Workshop in science production (Neuman & Koskinen, 1992). Ninety target words, 10 words of different word classes for each segment were selected. The treatment group was exposed to their stimuli-depending on their group- to the series twice per week for an overall of 12 weeks.

Peters and Webb (2018) looked into the learning effects of a full-length TV program in Dutch EFL Business students. The authors supported that TV programs can provide helpful insights about incidental vocabulary learning given that they are authentic spoken input that has no pedagogical purposes (Peters & Webb, 2018). Thus, an authentic audiovisual input can better reflect the authentic viewing effect in learners (Peters & Webb 2018). The purpose of the study was twofold: firstly measure three word-related variables, namely frequency of occurrence, cognateness, and word relevance, and secondly measuring a learner-related variable that identified prior vocabulary knowledge in learners. Two experiments were conducted with participants being tested on Form Recognition and Meaning Recall in the first experiment, and in the second on Meaning Recognition. In the first experiment, 63 Flemish EFL Business students of B1-B2 level were exposed to a BBC Documentary on J.M. Keynes. Before the actual experiment, a piloting study was conducted aiming to understand whether the material was appropriate for the target group. For the Form Recognition and Meaning Recollection study, 64 target items were tested on the four variables previously mentioned. The documentary along with the target words are seen as ecologically valid. The same target words were used for the pretest, post-test, and delayed post-tests. Participants were presented to items both in written and oral form (Peters & Webb, 2018). The data was collected in three sessions. One week before the experimental treatment subjects took a pretest and a test on prior vocabulary knowledge on the items plus distracters. Next, participants were assigned to two groups an experimental and a control group. In the experimental group, subjects were exposed to audio-visual input whereas in the control condition participants were exposed only to the tests. After watching the documentary and listening to the target items, subjects of the experimental group completed a questionnaire that asked them about their opinion on the experiment and what they think they learned from it before taking a surprise post-test one week later. In the delayed posttest participants in the experimental group were tested on the target items on form recognition and meaning recollection. As previously mentioned, words were audio-recorded. After identifying whether they have seen the word, learners had to provide a meaning to the items that would determine whether they can recall the meaning of the word. The control condition was not exposed to the audiovisual input and therefore, only took the test on prior knowledge, pretest, and immediate posttest. Target items that were not known in the pretest

and known in the posttest were considered as learned (Peters & Webb, 2018) whereas words that were known both in the pre-and post-test were considered as already known. Findings supported that the experimental group learned 4 words, whereas subjects in the control group learned 1.5 words. For the second experiment, the researchers decided to use different participants so they would not complete the tests based on memory. Again, 62 Dutch EFL Business students were tested on the same stimuli but this time meaning recognition was measured. Participants were once more assigned in two groups, experimental and control. The same rationale and experimental procedure were followed as in the first experiment. The difference was that in terms of a vocabulary test, subjects had to complete a multiple-choice test with isolated words. Target items were again presented in two forms written and aural. Results suggested that participants in the experimental condition recognized 14% more target items in the posttest when compared to their pretest (Peters & Webb, 2018), and learning gains were also larger when compared to the control condition. Overall, viewing a full-length documentary appeared to benefit learners in both experiments. The parameters that have a positive correlation with word learning were prior vocabulary knowledge, cognateness as well as the frequency of occurrence. Cognateness seemed to affect more on vocabulary test scores. However, evidence showed that there is no correlation between relevance and word learning (Peters & Webb, 2018). These findings explain that spoken input along with visual information plays an essential role in incidental vocabulary growth, which is also supported by Van Heuven, Conklin, and Tunney (2014). Unsurprisingly, the authors demonstrated that multiple communicative modes enhance incidental vocabulary learning (Van Heuven, Conklin, Tunney, 2014).

2.3 The Effect of Rhyme in Noticing and Learning Vocabulary

To our knowledge, the process of L2 vocabulary learning is one of the most demanding and time-consuming language skills to develop. Second language learners can spend hours trying to memorize words as they are aware that the only way for them to successfully communicate in another language is to stringently devote their time to learning useful vocabulary. Empirical and experimental studies support that there are possible techniques that can benefit learners' learning process and actually accelerate it (Rossen, 2019). Mnemonists and researchers advocate the use of mnemonic techniques that allow people to learn and remember at a faster pace large amounts of information (Putnam, 2015). The focus of the present study is on Rhyme as a mnemonic device. In the following paragraphs, we shall scrutinize the role of Rhymes from an early age and how these can be effective also in adults for better retention. Past studies addressing how rhymes to aid phonological and orthographic awareness and therefore faster word processing will be analyzed.

Several studies have demonstrated that nursery rhymes play a significant role in a child's first language (L1) development. Crucially, nursery rhymes have phonological and orthographic properties that help children

notice and blend sounds during the acquisition process (Bryant, Bradley & MacLean, 1987). Thus, children convert such an abstract concept as rhyming into mental images that through repetition are stored in their memory, and eventually orally produced. This can be seen as evidence that nursery rhymes have a positive learning effect in children from a very young age. Harper (2011) in her study examined the importance of early knowledge in children through nursery rhymes. The author supports that children through nursery rhymes are able to build phonemic awareness and discriminate different sounds. Such exposures assist in the child's linguistic and literacy development. The purpose of the study was to investigate 3-year-old Pre-K children on phonological awareness training and the effects of explicit nursery rhyme teaching. The two measures of the study were existing Euro-American nursery rhyme knowledge, along with the development of phonological awareness literacy (Harper, 2011). Children were already assigned in two different classes by their teachers, however, for the sake of the experiment children were again randomly distributed in an experimental and a control group. The experimental group was administered to the phonological awareness training. The training consisted of audiovisual as well as kinesthetic activities. Children of both conditions were first exposed to songs that they already knew to test their existing knowledge of nursery rhymes.
In this Completion Statement task children needed to match the song with the correct image. Consequently, segments of the Pre-K-Pals phonological test were selected based on children's age appropriateness. Three-year-olds were asked to repeat a given word and then discriminate only the first sound of the word; later, the task consisted of children identifying among 3 words the rhyming pair (e.g. cat, bat, rap). Children were subjected to one last task to test their nursery rhyme awareness. Namely, the administrator would start singing and suddenly pause, and the children were expected to end the sentence with the correct nursery rhyme. Findings of the study revealed that children subjected to the phonological awareness training outperformed those in the control condition in both rhyme awareness and completion statement measures (Harper, 2011). This is seen as evidence that nursery rhymes help children enhance their phonological awareness and sensitivity both to rhymes and individual phonemes (Harper, 2011). In addition, nursery rhymes appear to stimulate phonemic skill development which is significant in a child's future linguistic and literacy development. Bradley and Bryant (1983) demonstrated that rhyme awareness is a strong predictor of children's later success in reading and writing. In one of the main tasks, children were introduced to three words and were required to identify the word that did not have the same sequence of sounds, for instance, *peg*, *hat*, and *cat* (Bradley & Bryant, 1983). The longitudinal study suggested that children that were more sensitive in phonological awareness and had higher scores in the rhyming task, later on, were more likely to succeed in reading and writing.

Further studies investigated the contribution of phonological awareness in vocabulary acquisition (Gathercole & Baddeley, 1989). Gathercole and Baddeley (1989) in a longitudinal study explored the influence of short-term phonological working memory on vocabulary acquisition in toddlers. Children were tested before becoming literate at the ages of 4 and 5 and then one year later when they started attending school. Findings of the study revealed that there is a strong correlation between early phonological vocabulary scores and later vocabulary acquisition of both 4 and 5-year olds. Such findings aligned with the study

conducted by deCara and Goswami (2003) that suggested children's sensitivity to words with high neighborhood density when tested on rhyme awareness. The data supported that rhyme awareness is a primary tool through which preliterate children develop their vocabulary (deCara & Goswami, 2003) and that children are more sensitive to common word patterns during their early years of development (Storkel, Armbrüster & Hogan, 2006). This had been earlier demonstrated by Treiman and Zukowski (1996) where Neighborhood Density (ND) and Word Frequency (WF) were seen as two dominant factors that predict children's lexicon size, with ND accounting to a larger extent in vocabulary acquisition.

Although children appear to make effective use of their phonological awareness, this does not imply that such effects cannot be discerned in adults as well. Grossi, Coch, Coffey-Carina and Holcomb (2001) in a developmental ERP study investigating the phonological processing in adults through visual rhyming concluded that when words overlap both phonologically and orthographically they induce faster word processing. Thus, phonological and orthographical processes play a pivotal role in vocabulary development (Gathercole & Baddeley, 1989). Further studies looked into orthographical properties having a central role in rhyme detection. Navon and Shimron (1993) investigated the potential phonological properties available to adults and the rhyming effect on noticing. The researchers conducted two experiments attempting to direct subjects to incidentally detect rhymes in short paragraphs or two prose sentences. In the texts, six graphemically similar rhymes were embedded; meanwhile, in the second prose sentence, six more graphemically dissimilar rhymes were integrated. In the first experiment, participants were required to listen, read out loud or silently read the material. This was done in order to demonstrate whether there were differences in noticing among the conditions. Target items were either similar or dissimilar in terms of orthography, and sentences were supported either by rich or poor context. Aiming to maintain an incidental rhyming detection situation, the authors guided participants' attention on the content of the passages. After their exposure to the stimuli, participants were asked whether they had noticed the rhyming words. The data of the first experiment reported that rhymes were significantly more noticed in the graphemically similar condition. In the silent reading condition subjects appear to have noticed far fewer rhymes compared to those who orally read the short passages. Moreover, context played a significant role in participants' rhyme noticing across all modalities. The second experiment of the study was conducted in order to verify whether participants who seemed to not have noticed the rhymes had indeed not detected them or if they merely could not remember them. To test this, another group of participants was subjected to an interpolated task between reading and testing time (Navon & Shimron, 1993). The expectation of this second experiment was that if participants in Experiment 1 had actually forgotten having seen the rhymes then the new group of participants would have an overall poor performance (Navon & Shimron, 1993). The method of Experiment 2 was similar to Experiment 1 differing on the fact that all participants had to silently read the texts. Both experiments (1 & 2) included a task in which subjects had to count backward from 100 and jump after every third counting. Subsequently, participants were stopped at 40 and a question on rhyming would be posed and an additional on the content of the texts. Results of Experiment 2 did not support significant differences in performance

between groups. Therefore, the "possibility of a memory artifact was ruled out" (Navon & Shimron, 1993, p. 1) as it did not affect post-procedural rhyme detection. As a whole, the study suggested that graphemic overlap has a significant effect on the processing of linguistic input across modalities. Fallon, Groves and Tehan (1999) carried out two experiments on phonological similarity in a serial recall task by investigating the role of item and accuracy scoring of rhyming, similar nonrhyming, and dissimilar lists (Fallon et al., 1999). Therefore, authors attempted to operationalize similarity by using either item from rhyme categories (Fallon et al., 1999) or items that had a high phonemic similarity. Participants were exposed to 50 three-letter words containing *–a* as a second letter (Fallon et al., 1999). Target items were organized in two sets of 8 dissimilar, 8 similar nonrhyming, and 8 rhyming six-word lists. In the first experiment, five open word pools were inserted. By word pools we refer to random collection of words (Macmillan, 2019). Participants were provided with a paper sheet in which they had to report the words they remembered having seen on the screen in each trial. The study conditions for each of the lists differed for the two sets of participants since half of the subjects were required to pronounce "THE" before every item appeared on the screen. On the other hand, the other half did not have to say anything and remain silent. The second experiment looked into serial recall on the same lists. However, in this experiment, open word pool was substituted with closed ones to test whether this would have an effect on item and position accuracy. The new targets were two 8-items, one containing dissimilar and the other non-rhyming similar items. The conclusions of this study were that phonological similarity has to be thoroughly operationalized as that has a major influence on one's performance. Rhyming lists aided better recall than non-rhyming similar lists across all conditions (Fallon et al., 1999). Moreover, findings revealed that rhyme-ending cues assist participants in retrieving and recalling target items better. In the meanwhile, phonological similarity affected item and position accuracy. Overall, Fallon et al. (1999) concluded that rhyming items are better recalled.

Additional studies have established the benefits of rhyme in learning, as it is believed that the patterns of sound repetition are rather noticeable and easier to remember for people (Cook, 2000). To our understanding, whenever we listen to catchy rhymes on a daily basis those draw our attention even without us intending to do so. For this reason, studies of such nature have been conducted in fields unrelated to second language learning. Lambert, Chang and Lin (2003) explored the effects of phonological and orthographical similarities in Pharmacists and college students when trying to immediately recall names of three-syllable medicines. Four experiments were conducted to serve the study. The authors measured prescribing frequency, familiarity, and orthographic and phonological properties that functioned as predictors of error in the immediate free recall tasks (Lambert et al., 2003). The design of the study consisted of computer-based, word memory, and prospective experiments (Lambert et al., 2003). Findings related to the orthographic and phonological effect revealed that when words were graphemically similar they were better recalled in both groups and that fewer errors were made when this was the case. The lists that included similarly spelled medicine names were easier to be recalled compared to the dissimilar ones given that similar phonological and orthographical cues facilitate "the retrieval.. of short-term memories" (Lambert et al., 2003, p. 156). This can be seen as further evidence that also adults can benefit from phonological and orthographical overlap for better word retention.

Another interesting study was that of McQuarrie and Mick (2009) assessing affective thoughts along with aided recall, form recognition, and repetition levels in people when using magazines. The results of the study proved that subjects could recognize and recall ads that included rhetorical figures because of the strong effect of rhyme on one's cognitive processing (Rossen, 2019). As a matter of fact, the affective measurements suggested that subjects rated advertisements containing rhymes higher than those who did not. Hence, it can be attested that rhymes "attract incidental attention" (Rossen, 2019, p. 18) and can result in potential new vocabulary acquisition.

The following section will analyze the integration of music, and consequently also rhymes in an EFL/ESL classroom. Empirical and experimental studies will be analyzed to obtain a view of the benefits that music, rhymes, and rhythm can benefit both young and adult learners throughout their vocabulary learning process.

2.4 Integration of music in an ESL classroom

Although the focus of this study is to investigate the benefits of rhyme as a mnemonic device, it is important to analyze the context in which rhymes are mostly present, namely in songs. In addition, the present study includes a musical stimulus, meaning that it is essential to understand how and to what extent a musical context also containing rhymes can assist second language learners throughout their acquisition process.

In the last decades, the integration of Music in ESL classrooms has been a very debatable pedagogical topic. Educators have attempted to introduce music as a possible teaching tool as a new approach in ESL teaching. Although music per se is appealing to the majority of people, in terms of language learning/teaching the extent of its effectiveness is still to be explored. Huy Le (2007) supports that the integration of music had a very positive learning effect in her Vietnamese students as their language skills would show strong improvements over time. In addition, Li and Brand (2009) claimed that many educators have seen the impact that music has had on second language learners not only in their language development but also in their attitude towards the learning process. Thus, learners feel more uplifted and confident while engaging in second language activities. Research in the various fields that have explored the relationship between music and language has demonstrated that these two have more in common than one can think. In fact, Maess and Koelsh (2001) claim that even though music and language appear to be two separate forms of communication, not only are they processed in the same part of the brain, but also they activate the very same brain mechanisms. Taking into consideration such a claim, one could say that music is the ideal medium through which teachers can approach their students during their learning process as it is the closest to someone's inner speech (Vygotsky, 1934).

Piri (2018) argues that music has the ability to reduce stress and create a positive learning environment for second language learners benefitting them both psychologically and linguistically. Hence, when learners are exposed to such an environment they are more motivated and they are more likely to recall a larger amount of

information (Rukholm, 2015). This can be seen as further evidence that music can stimulate learners to better retain, transferring new information from short-term to long-term memory. Given that the majority of songs present repeated rhythmical and lyrical patterns (Murphey, 1990), learners after a number of exposures can pick up information without intending to. Murphey (1990) demonstrated in what he called the "song-stuck-in-my-head phenomenon" (p. 55) that there is a strong correlation between one's working memory and music (Murphey, 1990). Taking into account the fact that music is similarly processed as language, and that frequency plays a key role in one's linguistic memory (Murphey, 1990; Gathercole and Baddeley, 1989), it can be assumed that learners can implicitly and incidentally benefit from a musical context which is used as a medium for the ultimate learning goal.

Interestingly, Zbikowski (2015) pointed out that although pedagogues and researchers have enough evidence to support second language gains through musical contexts, they have investigated the matter separately. Namely, they both "seem to be on parallel, non-intersecting paths" (Zbikowski, 2005, p.1) without frequently citing each others' investigations (Zbikowski, 2015). With regard to incidental vocabulary learning in a musical context, there are very few experimental studies that have studied the matter. Hitherto, the majority of research has focused on demonstrating vocabulary learning effects emerged from explicit instruction to second language learners. Taking into account the goal of the present study, the following paragraphs will engage in the analyses of existing experimental studies that addressed the potential of incidental vocabulary gains through musical stimuli.

Medina (1993) looked into incidental vocabulary learning across four conditions, namely music and no music, and spoken input of the story with illustrations and without illustrations. The purpose of the study was to determine whether songs will indicate a stronger learning effect on 2nd grade Spanish EFL students or illustrations. As previously mentioned, participants were also exposed to conditions with no instructional medium or extralinguistic support (Medina, 1993). After a pretest that determined their vocabulary level, subjects were randomly assigned to the four treatments. Consequently, young learners were subjected to pre- and posttests with repeated measures (Medina, 1993). The material on which children were tested was *A Surprise for Benjamin Bear* by Nelson (1989), a children's book. The material included both audio and a book with illustrations (Medina, 1993) which were separately used for the experiment. According to the author, the story included 20 unfamiliar words to the young learners which were used as target items. The two versions of the story (sung and spoken version) were the same for all subjects. The instrument that the author used for her experiment was inspired by Elley (1989) that assisted in measuring vocabulary gains when listening to aural stories (Medina, 1993). Hence, pretest and posttests were measured through a 20-item multiple-choice test which participants had to manually complete. Given the nature of the experiment, children were not exposed to written input instead they were presented three times to oral language testing (Medina, 1993). In the Music group, students were presented with a sung version of the story whereas in the No Music condition subjects were presented to a spoken delivery of the story (Medina, 1993). In the other two treatments students in one case were exposed to vivid illustrations from the story having the audio-recording on the background to listen to; in the other case, subjects had only to listen to the audiocassette without illustrations thus, having to infer

meaning from the context. At the end of the four-day treatment, an immediate posttest was administered and a week later an additional posttest took place. The data revealed no significant differences between the Music and No Music condition in vocabulary acquisition scores. Similar results were also indicated from the Illustration and No Illustration groups. Regarding the interaction between music and illustration again no significant differences were shown, however, the author revealed that the raw data of the study seem to suggest that the integration of extralinguistic support increase vocabulary gains in learners (Medina, 1993). Maneshi (2017) argued that such findings may have arisen due to the fact that the material was not suitable for participants as it was appropriate for even younger students.

For this reason, Maneshi (2017) investigated the same topic attempting to maintain a more ecologically valid study by using two songs that students are most likely to listen to in their leisure. In her research, the author aimed to examine spoken-form recognition, form-meaning relationship, and collocation recognition in vocabulary learning that can incidentally occur (Maneshi, 2017). In addition, Maneshi (2017) investigated the effects of rehearsal and the correlation between frequency of exposure and learning gains. In this study, 300 Thai 5th and 6th graders of elementary school were tested. The independent measures of the study were the 3 experimental conditions, namely E1, E3, E5 that corresponded to the number of times that students were exposed to the songs, and the control condition that completed only the tests. Given the large amount of participants, samples were distributed to additional subgroups, concluding to an overall of 8 groups, 2 control groups (1 for each grade), and 6 experimental groups (3 for each grade). The dependent measures of the study were the pretests, immediate posttest, and delayed posttests that assisted in monitoring participants' incidental vocabulary development measuring the three vocabulary knowledge dimensions (Maneshi, 2017). Results indicated small vocabulary gains through listening to songs in young learners, but according to Maneshi (2017) and previous literature incidental vocabulary learning occurs in small sizes at first, and it gradually increases over time with more exposures to target input (Maneshi, 2017). Therefore, it can be assumed that the study demonstrated that songs lead to an incidental vocabulary learning effect. As expected, rehearsal had a positive effect on vocabulary learning, as well as, frequency of exposure in learning gains (Maneshi, 2017).

In her thesis, Schwarz (2012) researched incidental vocabulary learning from oral input outside of school context, specifically from pop music in Austrian EFL learners of B2 level. The Austrian educator reported that pop music was the ideal music genre for her students as it motivated them and was closer to their interests. The design of the study consisted of repeated measures and a quasi-experimental methodology with only an experimental group. Participants were taught through different teaching methods and were subjected to surveys and lexical analyses of song lyrics. The author through her research affirmed that Austrian EFL learners indeed incidentally learned vocabulary through pop songs outside of the classroom. In addition, multiple factors contribute to second language learners' incidental vocabulary acquisition with one of those being motivation (Schwarz, 2012). The author supports that students who put more effort in trying to understand vocabulary and in inferring meaning out of the context present higher vocabulary scores than those who do not notice the gap between what they already know and the input. Only those who actively engage in lexical items acquire new vocabulary (Schwarz, 2012). Last, Schwarz encourages educators to realize that

children nowadays have multiple stimuli and multiple resources that they make use of and that can benefit from (Schwarz, 2012). Hence, she suggests that educators teach their students in developing self-learning strategies that can help them in enhancing their incidental learning outside the classroom context (Schwarz, 2012). In this way, second language learners can incidentally learn with some degree of intentionality (Godfroid et al., 2017).

As it was previously mentioned, research on incidental vocabulary learning through songs is very limited. Perhaps the justification of the lack of empirical evidence lays in the fact that music is one of the resources that learners make use of in their personal time as Schwarz mentioned. Milton (2008) argues that learners' success in persistently retaining vocabulary that they incidentally learn through music (and other audiovisual stimuli) is an ability that depends on their willingness to carry on with their informal learning. Undoubtedly, one's motivation in learning another language is the essential factor that shapes the second language learning process and accompanies the second language learner throughout the entire learning experience. Both intrinsic and extrinsic motivation in a learner can determine the degree of success and their development in second language learning over time. The following section will scrutinize the role of motivation and will provide theoretical and practical evidence of how motivation influences students' attitude and performance in their L2.

2.5 The role of motivation and its effect on vocabulary learning

Ever since Gardner and Lambert (1972) instituted the concept of motivation, numerous theorists and researchers have investigated the definition and the multiple aspects of the concept. In the field of Linguistics and Psychology, the exact definition of motivation has still not been well-established as each scholar approaches this abstract and inner concept from different perspectives. In any case, they all mutually agree that motivation is a significant factor in learning another language (Gardner, 1985; Gardner, 2001). In broad terms, motivation can be defined as one's attitude and desire to carry out an activity, as well as the "effort concerning energy, direction, persistence, and equifinality- all aspects of activation and intention" (Ryan & Deci, 2000, p. 69). In his theory, Gardner (1985; 2001) illustrates motivation as a central engine that encompasses three cornerstones: effort, cognitive desire to learn an L2, and affective thoughts while learning the target language (Gardner, 2001). In this section, attention will be drawn to the two basic classifications of motivation, intrinsic and extrinsic motivation.

Based on Pintrich and Schunk (2002) intrinsic motivation can be identified as "motivation to engage in an activity for its own sake" (p. 245) whereas extrinsic motivation is mentioned as "motivation to engage in an activity as a means to an end" (p. 245). In other words, extrinsic motivation is a construct that is associated with an external factor and an activity that is carried out to attain a distinct result, and intrinsic is related to the motivation that starts from within an individual for the sake of enjoyment (Naserabadi, 2014). Educators have traditionally acknowledged intrinsic motivation to be a more dynamic force within a learner as it can lead to

better learning results than extrinsic motivation (Deci et al., 1999). It goes without saying that learners' motivation can present repeated fluctuations depending not only on inner factors but also on external ones. For this reason, in the field of Applied Linguistics researchers and educators systematically propose different methods and approaches that hold learners' attention, interest, and motivation over time. Learners' energy center (Gardner, 1985; 2001) has to constantly be kept active by instructors by providing material and emerging learners in friendly learning environments close to their interests that will allow them to lower psychological barriers. Sadeghi (2013) examined the impact of motivation on vocabulary learning in Iranian EFL learners. The study did not concern incidental vocabulary learning but explicit instruction throughout the academic semester. In this study, 89 undergraduate students of English major were tested. All participants had the same English language level. Motivation was operationalized as a variable and was measured with Herman's scale of achievement motivation. The scale consisted of a self-report with 29 items and 9 additional subscales that measured components of motivation achievement (Sadeghi, 2013). The components measured were aspiration level, upward mobility, persistence, task tension, time perception, time perspective, partner choice, recognition behavior, and achievement behavior (Sadeghi, 2013). Based on learners' responses two conditions were created, those highly motivated and those with low motivation. Next, these two groups were compared in terms of behavior and performance. Findings revealed a significant difference between the two conditions both in their motivation scores and their vocabulary performance. Students that were highly motivated outperformed in the vocabulary tests. This implies that the more motivated a learner is the most likely to pick up vocabulary. However, this cannot be seen as evidence apropos of incidental vocabulary learning. In a previous chapter in which the role of rhyme and its effect on incidental vocabulary learning was analyzed a study from McQuarrie and Mick (2009) was mentioned. In their study, the authors concluded that rhymes helped participants in retaining better advertising messages. The affective measurements that McQuarrie and Mick (2009) included in the study demonstrated that the advertisements that had higher liking scores were those that presented rhymes. Hence, it can be deduced that learners' affective thoughts and rhyming interacted in such a way that they both resulted in incidental vocabulary gains. Part of the question that arises from this study is whether songs can motivate learners to the extent that they can incidentally pick up new vocabulary in L2 English. Lozanov (1970) developed a teaching method that according to him would benefit primarily adult second language learners in developing their vocabulary skills. This unconventional teaching method called Suggestopedia consisted of a relaxed and comfortable environment with music playing in the background. The Bulgarian teacher and psychiatrist suggested that this way learners' stress levels would be reduced during the acquisition process and this would contribute to better vocabulary learning. De Groot (2006) in her experimental study exposed her participants to a similar learning environment, with music playing in the background. The data of her research supported that participants that were emerged in a musical environment performed better in vocabulary tests compared to those with no music. Thereby, it can be deduced that music could benefit second language learners in learning more vocabulary even played as a background. This again proves that music can reduce stress and activates similar brain patterns that lead to a similar inner process that resembles one's inner speech (Maess & Koelsh, 2001; Vygotsky, 1934). There is no

reason why we could not consider songs as potentially contributing to one's incidental learning as it is a common experience that people have in their free time (Rossen, 2019).

Overall, the present study will cover several research gaps. As it has been already mentioned, there is very limited research on incidental vocabulary learning when listening to songs in young adults. In addition, previous research has primarily focused on measuring performance overshadowing the importance of learners' behavior towards the material they are exposed to. Rhymes as a mnemonic device embedded in songs can be seen as a proposal for educators to integrate them in their teaching material and assist learners in incidentally learning a larger amount of information by ensuring high motivation as much as possible. Even though one's intrinsic motivation may fluctuate, it is educators' and researchers' task to explore the extent of effectiveness of various stimuli that activate and engage learners in activities that could accelerate their vocabulary growth.

2.5 The Acquisition of Concrete and Abstract words

A number of studies in second language acquisition have explored word properties that appear to be more appealing to second language learners when the learning process begins. Hitherto, numerous investigations have explored L2 vocabulary acquisition in nouns versus verbs (Rossen, 2019) demonstrating that nouns seem to be easier to acquire from a very early age. Surprisingly, studies on incidental vocabulary learning in L2 English have concluded that "there clearly is a noun dominance" (Rossen, 2019, p. 20) when it comes to learning novel words. However, the following study seeks to address the acquisition of concrete versus abstract words by drawing on the differences between concreteness and abstractness as word properties, and how these influence learners' acquisition process and success.

While abstract words seem to be more elaborated and complex due to their conceptual representation of intangible concepts (Mestres-Misse, Munte, & Rodriguez-Fornells, 2013), concrete words are associated with rather a small number of tangible concepts, and "they, therefore, develop more consistent and denser information than abstract words" (Mestres-Misse, Munte, & Rodriguez-Fornells, 2013, p. 193). Such organization can justify why learners need rich and supportive context in order to be able to infer meaning from an abstract word, while concrete words are easier to be recognized and recalled given that they have solid core meanings (Schwanenflugel and Shoben, 1983). For this reason, abstract words are more dependent on the context in contrast to concrete words which can be presented in isolation and still be accessed faster compared to abstract ones (Mestres-Misse, Munte, & Rodriguez-Fornells, 2013). Schwanenflugel and Shoben (1983) claim that abstract words are less likely to be inferred as they can be used in various contexts assuming different aspects in their meaning. De Groot, Dannenburg and Van Hell (1994) confirmed such suggestion by demonstrating in their study that learners translated concrete words faster than abstract words, as the former present more equivalent meanings across languages than the latter. Nonetheless, Mestres-Misse et al.

(2013) suggest that concreteness and abstractness should not be categorically discerned, instead, they could be better perceived as less or more imaginable depending on their degree of concreteness.

Taheri and Zade (2014) investigated the effects on short-term and long-term memory in concrete and abstract vocabulary. A second goal of the study was to look into the effectiveness of teaching concrete and abstract words through incidental vocabulary learning using L1 and L2 glosses. In the study, 62 Iranian EFL learners of upper-intermediate level were tested. Firstly, subjects were subjected to a proficiency test. Next, participants were exposed to two passages following six comprehension questions. In one condition participants were exposed to concrete and abstract target items using an L1 gloss, whereas in the other condition both target items were accompanied by L2 gloss. According to the authors, the complex vocabulary items were marginally glossed in order to ensure that participants would still incidentally notice them and make sense out of the reading passages. Participants also completed a vocabulary test in which they were required to recall the abstract and concrete words 15 minutes after their reading. The data revealed that Iranian EFL learners better retained concrete words and incidentally learned more vocabulary when using an L2 gloss.

Further studies were conducted to investigate the effects and of concrete and abstract words. De Groot (2006) examined the effects of frequency, the concreteness of L1 words, and the typicality of the foreign language words with music playing in the background. The results on the concreteness effect supported that the denser image-like representation of concrete words facilitated learners in remembering the translation of a target word in their native language. The author explains that this evidence can justify learners' higher performance when translating concrete L1 words compared to L2. The technique in the following study was loosely inspired by De Groot's study in the experimental setup as it bears a slight resemblance. However, the experimental setup and goal of the study are based on Rossen's (2019) Master Thesis investigating Incidental Vocabulary Learning in a Music Listening Task and the Role of Rhyme. The following section will further elaborate on the replication of the study and its modifications and contribution to the field.

2.6 Present Study

The following study aims in replicating Rossen's study in a Greek context taking into account a musical environment in which people find themselves quite often when external factors of the linguistic material influence the ultimate attainment in learning (Rossen,2019).

The major contribution of the present research is to show the extent to which learners' affective thoughts towards hip-hop music influence their motivation and eventually their performance in second language acquisition. Hitherto, previous studies have not included measurements of affect when exposing second language learners to music listening tasks. Findings will contribute to obtaining a better understanding of whether motivation is a critical factor that influences learners' noticing unknown words.

Hence, the purpose of the present investigation is to cover the research gap of an existing study that demonstrated that the rap genre and the role of rhyme as a mnemonic device had a learning effect in Greek L2 learners of English in terms of form recognition and meaning recollection. The research gap will be covered by operationalizing motivation as a variable by using two in-practice questionnaires as suggested by Bodnar et al. (2017) after the first session and once again at the end. The in-practice questionnaires will assist in keeping track of participants' affective thoughts throughout the experimental process.
The following are the research questions that the proposed study aims to investigate:

1. What is the effect of rhyme on the recognition and recollection of unknown vocabulary in an incidental learning task with rap music? (Rossen, 2019)
2. To what extent is it possible to learn the form and meaning of unknown vocabulary after limited exposure to rap music? (Rossen, 2019)
3. To what extent does learners' motivation affect their performance in vocabulary gains when exposed to a hip-hop/rap song?

The following are the hypotheses that the study aims to investigate:

First hypothesis: participants who are exposed to the rhyming words are better at recognizing 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).

Second Hypothesis: the rhyming condition is also expected to be better at inferring the meaning from the context than participants in the control condition (Grossi, Coch, Coffey-Corina, Holcoms & Neville, 2001, Godfroid et al. 2017).

Third hypothesis: participants in the rhyming condition will present higher motivation and a more positive stance towards the integration of rap music as target words rhyme in the song following the typical rhyming patterns of the genre.

Fourth Hypothesis: participants' that have higher motivation, a more positive stance towards the process and that enjoy more the song will have higher vocabulary scores.

Fifth hypothesis: participants of both conditions will be more likely to remember target words connected to concrete words in the delayed post-test as concrete words are easier to be remembered and less complex to infer their meaning from the context compared to abstract words.

3. Design of study:

The present thesis intends to investigate the effect of rhyme in a music context when measuring form recognition and meaning recollection in second language acquisition, and the extent to which unknown words can be picked up. The major contribution of this study entails the integration of affect measurements which

determined participants' motivation, attitude and enjoyment, which assisted in obtaining a better understanding of the extent to which motivation can influence performance in a musical environment. In order to identify the effects of motivation on performance, the variable was operationalized. The procedure used bears a close resemblance as the one proposed by Bodnar (2017) when investigating motivation in the field of CALL.

The quantitative data will serve in the interpretation of findings deduced from the questionnaires throughout the experiment. For the first data analysis the dependent variables of the study will consist of *form recognition, meaning recollection* and *affect*. Our independent variables will be *condition, age, sex, years of English, Proficiency,* and *attention level*.

An analysis will be conducted for affective thoughts. The independent variable for this separate analysis will be *group* (experimental and control) whereas the dependent variables will be *motivation*, *attitude* and *enjoyment* taken into account as a set resulting from the participants' ratings.

3.1. Participants:

The sample population consisted of 50 (31 females and 19 males**)** native speakers of Greek L2 learners of English subjected to the study. The average age in the control group was 23.24, whereas in the experimental 22.96 years old (range 19-28). Their English proficiency was 4 on a 7-point likert scale deducted from the self-rated proficiency survey (Rossen, 2019)[3]. Subjects' language level is interpreted as intermediate meaning a B2 level since 7 was assigned as "very good". Participants had different language backgrounds; however, all subjects spoke Greek as their L1 given that they were born and raised in the country and received a Greek education. The majority of the participants were bilingual (Greek and Albanian or Greek and Italian) but none had English as their L1. All participants had English as L2 as in Greece all learners from a very young age follow English courses aiming to obtain an English Language Certificate. Other reported languages were German, French and Spanish. Participants were randomly distributed in two conditions, namely an experimental and a control group. The experimental group (25) was exposed to stimulus containing target words in a rhyming context. The control group (25) participants were presented to an audio-visual text with slight differences, namely target words being constructed so that subjects will have non-rhyming target words (Rossen, 2019).

[3] All young students in Greece take extra curricula English courses in Private Language Institutions or have already received language certificates; participants will report their English level based on their assigned language level.

3.2 Materials

3.2.1 Music

The music used for the present study is an original song with lyrics voiced by an amateur rapper in order to avoid using the researcher's voice. The lyrics were primarily written by the researcher along with the rapper aiming to both integrate the target words and also deliver the message of the song. The beat used was also an original one produced by a music producer with a rhythm suitable for rap tempo. The average length of the song is of 4 minutes and 18 seconds. The sentences, in which the 8 pseudowords were incorporated, were composed so that participants would be able to identify their meaning out of the context. Some sentences are more complex and others are easier to deduct meaning out of the target words. The text of the song consisted of three verses and three hooks which in total constitute of 79 sentences.

Furthermore, the vocabulary in the text is proficiency appropriate for the participants. The words of the song used are high lexical frequency so that participants focus solely on unknown words as those are the target words of the experiment (Rossen, 2019). This also supports the fact that the song was written from square one in order for learners to guess as easily as possible the meaning of the words, which based on Hu & Nation (2000) only happens if learners know 98% of a text.

A pretest was carried out to inspect whether the context provided enough cues to infer the meaning of the pseudowords. As Rossen (2019) suggested, two people of each condition- 4 overall- were requested to take the meaning recollection test with an additional draft of the original lyrics at hand. All participants managed to correctly recognize the meaning of the non-words when they consulted the original text. Thus, it can be concluded that the sentences contained rich context cues which provided more than sufficient information to the participants to infer meaning.

3.2.2 Target Words

As it has already been noted, the target words for this study are pseudowords. In her experimental paper, De Groot examined the effects of a musical background in vocabulary learning and forgetting by using pseudowords. The researcher claimed that the advantage of using non-words in a vocabulary study is related to the fact that it is ascertained that for all participants regardless of their language level, the vocabulary to be gained is unknown (2006).

The target words used for the study were identical to those used by Rossen (2019) in his study, although assuming different meanings. There is only one exception with the words *antust* and *trishen* in the control and experimental condition respectively, which maintained the meaning of *cellphone* as in Rossen.

The tool used to construct the non-words was Wuggy (Keuleers & Brysbaert, 2012). The pseudowords were deliberately selected to be in accordance with morphological and phonological norms of English (Rossen,

2019). The 8 target words in each condition were either bi- or monosyllabic that occurred either in the middle or end of sentence (Rossen, 2019). Therefore, the same logic was applied to the present study. In contrast to Rossen that categorized the words either as verbs or nouns, in this study the words were categorized as concrete and abstract. The meaning that the 8 non-words assumed, are associated to 4 concrete and 4 abstract words. The full versions of the texts along with the list of the pseudowords are included in the Appendix.

Subjects were exposed to each pseudoword 4 times, twice in each time the audio-visual stimulus was played. In a delayed posttest conducted a week after the actual experiment subjects were again exposed to the target words but this time only auditorily. The aim of the delayed posttest will be further explained in a following paragraph. According to Godfroid et al. (2017) the necessary exposure for a learning effect to occur is between six to ten times. However, as Rossen correctly argues, such conclusions have been drawn by either reading or listening tasks, not a blending of the two. For this reason, the first two exposures were be audio-visual and the last one, a week after was only acoustical. Owing to the support of two modalities in which participants both read and listened to the pseudowords that appeared in a rather short time, the number of four exposures was expected to be sufficient for a learning effect to occur. The justification behind the choice of not including visual stimulus lies on the fact that participants would not have the opportunity to read the words they were tested. Thus, they were not expecting to be tested on the target words again.

The following excerpts were taken from the texts of both conditions. The target word in the experimental or rhyming condition was “snaighs” which was used as a synonym for the word “eyes”. On the other hand, in the control group the corresponding pseudoword is “nipes” which does not rhyme in the song.

Excerpt of Rhyming/Experimental condition:

it was ok, aight but I want you to know I hate lies

I think that you got that, never feared to look at you straight in your ***snaighs***

“I saw it deep in her ***snaighs****” that’s what I used to tell*

But now babe it’s hard for me even your name to spell

you figured it out that I don't go

with the fake , with the lies, it's a no go

Excerpt of Control Condition:

it was ok, aight but I want you to know I hate lies

I think that you got that, never feared to look at you straight in your ***nipes***

*"I saw it deep in her **nipes"** that's what I used to tell*

But now babe it's hard for me even your name to spell

3.3 In-practice questionnaires

A considerable amount of past literature and experimental studies have identified motivation as a dominant and essential factor in the field of SLA. However, one could argue that as an abstract, complex and theoretical concept (Henriksson, 2017) motivation is rather a challenging variable to measure. As Henriksson (2017) argues it is quite demanding when attempting to tap into such an abstract concept but with sufficient operationalization of motivation "we could get a reliable indication of the effects" (Henriksson, 2017, p. 10).Thereby, for the sake of the study it was attempted to include affect measurements by operationalizing motivation as a variable and using 2 in-practice questionnaires which assisted in quantitatively survey participants' responses.

The design of the in-practice questionnaires consisted of a variation of Bodnar's procedure in his aim to keep track of students' motivation when using a CALL system (Bodnar et al., 2017). The researchers measured motivation, attitude and self-confidence as variables and how those can fluctuate throughout students' exposure to the stimuli. As previously noted, for the present study the three semantic scales were slightly altered. Specifically, the three semantic differential scales designed to survey were *attitude* (learners' general stance towards the rap song), *motivation* (learners' desire to continue listening or stop listening to the song) and *enjoyment* (to what extent learners are enjoying the song). Those served in keeping track of subjects' motivation.

In order to measure their effect on performance we quantitatively surveyed overall 50 participants in both conditions and how their motivation could fluctuate throughout their exposure to the hip-hop song, and consequently measure the correlation with their performance.

After the first exposure of the song, participants filled in their first in-practice questionnaire which consisted of 5 questions on each semantic scale, therefore 15 questions overall. The same procedure was followed after the second exposure to the song; although this time the questions were in the Simple Past and three altered questions. Samples of the in-practice questionnaires are included in the Appendix.

3.4 Comprehension posttest

The comprehension post-test followed right after the two exposures to the rap song. Both comprehension and vocabulary tests were designed and distributed in paper. All participants in both conditions were informed that a comprehension test would follow in order to direct their attention on the meaning of the text than the target words. In this way, we tested whether they unintentionally noticed and gained the target words. Undoubtedly,

the comprehension test also contributed in having a better understanding of participants' overall comprehension of the text (Rossen, 2019). The test included 4 multiple-choice questions related to the text. For each correct answer subjects would be awarded with a point and the total score would range from 0 to 4. As suggested by Rossen, the test also included a scale through which participants were expected to self-report the degree of their attention throughout the tasks. The rate scale ranged from 1 to 10 with 7 being the maximum of attention level (Rossen, 2019).

3.5 Vocabulary tests

The two vocabulary post-tests that followed were focused on measuring form recognition and meaning recollection. The first vocabulary posttest was that of form recognition. The form recognition test was similar to Rossen's as the target words used were taken from his study. The aim of the exercise was for participants to identify the words that recognize having seen in the text. The pseudowords, either concrete or abstract, were included along with additional distracters with non-words that were not present in the text. The total of the words used in the test was of 22 non-words. As it has already been mentioned, the target words were selected from Wuggy (Keuleers & Brysbaert, 2012) that provided a list of non-words. Both phonological and morphological norms as the pseudowords were maintained (Rossen, 2019). Words were randomly presented to participants in order to render the exercise slightly more complex (Rossen, 2019). In Rossen's test, participants were asked to circle the words they had seen. In this study, the design of the worksheet required participants to drag and map the pseudowords in two groups, namely "*I have seen the word before*" and "*I have never seen the word before*". Every correct answer would reward participants with one point, whereas, for incorrect answers participants were given zero points to the overall score. The total score was converted to percentages as in all tests (Rossen, 2019).

The purpose of the meaning recollection test was to investigate whether subjects were able to infer the meaning of the target words supported by the context. This test was similar but not identical to Rossen's as the original meaning of the target words was different that Rossen's pseudowords assumed. The test consisted of 8 multiple-choice questions for each of the non-words. Participants were expected to recognize the correct answer the 4 answers (one correct answer and three other distacters). Hulstijn (1991) claimed that multiple-choice has proved to a valid tool to measure possible meaning retention. All the options provided as answers were from the same word class as the targets. Namely, the concrete target words provided answers that were related to concrete objects with one answer being the correct one. The same system of reasoning was followed for the abstract target words. The incorrect answers were chosen from UGhent SUBTLEX-US Database of American English (Brysbaert, New, & Keuleers, 2012) and were paired based on lexical frequency. Given that the test was consisted of 8 questions with 4 choices, "the baseline performance was 2 correct answers (25%)"

(Rossen, 2019, p. 29). Meaning that, participants were required to score higher than 25% so that the evidence would support a learning effect in Greek speakers with L2 English.

3.6 Interests in hip-hop/rap

In the field of SLA, the role of interest has become a widely analyzed construct. It has become a topic of discussion throughout historical overviews of the field in terms of the extent of its effect in learning (Renninger, Hidi, & Krapp, 1992; Renninger & Wade, 2001a; Schiefele & Wild, 2000). Hitherto, empirical studies have demonstrated that interest certainly has a positive effect on learning (Renninger, Hidi, & Krapp, 1992; Renninger & Wade, 2001a; Schiefele & Wild, 2000).

For this reason, the present study included a separate posttest that would determine the participants' interest have in terms of hip-hop/rap music. The posttest was assigned to both conditions. The goal of the posttest was to obtain a better view whether participants were more or less engaged to the stimulus because of their musical preference, and if that motivated them throughout the experiment. Another purpose of the posttest was to verify whether within the two conditions, additional subgroups would arise, namely those who are and those who are not interested in this genre of music. It is important to mention that past research seem to support that the effects of interests appear to be similar to intrinsic motivation (Naceur & Schiefele, 2005).

The short questionnaire consisted of 10 questions in which participants were to answer on a 5-point Likert scale, with 1 being *"I completely disagree"* and 5 being *"I completely agree*". Some of the questions included were *"I really enjoy listening to rap music"*, "*I listen to rap songs quite often during the week*". Other questions were related to where participants' interest is more focused when listening to a rap song. Namely, *"When listening to a rap song I emphasize more on the lyrics"* or "*When listening to rap songs I emphasize more on the beat".* The full version of the questionnaire can be found in the Appendix.

3.7 Delayed posttests

The delayed posttest was conducted a week after the experiment for participants in both condition. The purpose of delayed posttest was to test whether participants a week after their audio-visual exposure would remember the target words in the song. Participants were not informed of the nature of the questions they would be asked a week after to ensure that they would not answer to the questionnaires based on impulsive memorization, therefore conscious learning. Instead, the aim was to verify whether eventually there was an incidental learning effect by transferring their new vocabulary gains from short-term to long-term memory.

The circumstances of this delayed posttest were similar to one week before concerning the two vocabulary posttests. Specifically, participants would only listen to the song this time without reading the lyrics and would complete the two vocabulary posttests on form recognition and meaning recollection. For each of the

participants, 8 form recognition points and 8 meaning recollection points were calculated, with an overall of 16 points.

3.8 Biographic Questionnaire

The Biographic Questionnaire was the last part of the experimental procedure. The questionnaire was an abbreviated version of the Learning Experience and Competence questionnaire (Marian, Blumenfeld, & Kaushanskaya, 2007) that assisted in the collection of subjects' characteristics. The questions consisted age, sex, educational level, age that subjects were firstly exposed to English, language use, possible disabilities and self-rated proficiency level. Questions related to participants' stance and frequency of exposure to English were also included. The majority of the questions required an answer on a 7-point likert scale.

Furthermore, participants were asked whether they had realized the purpose of the study. As in Rossen (2019) participants were asked to assess the degree to which the non-words in both conditions presented a rhyming effect. The rating ranged from 0 (no rhyme effect) to 7 (perfect rhyme) (Rossen, 2019). Last, participants were also asked to evaluate the rap song they were exposed to based on their subjective judgment and likability.

3.9 Procedure:

Before the actual experiment 4 participants were subjected to a pilot in which participants were given the text of the song on which they would be tested to verify whether they could recognize the meaning of the majority of the pseudowords out of the context.

After the pilot, participants were randomly distributed in two conditions, namely experimental and a control group. After the distribution, subjects filled in the Learning Experience and Competence Questionnaire (LEAP) which contained one last question which will ask subjects whether they inferred the purpose of the experiment (Rossen, 2019).

The song was presented in two modalities as it is presumed that it would enhance the learning process (Bisson et al., 2014). Participants listened to the song three times; twice during the first day of the experiment, and once more one week after. Moreover, subjects of both groups were told beforehand that they would be tested after the experiment on the text so that they will pay more attention on the content rather than the vocabulary (Rossen, 2019). The song was presented through four different laptops which the researcher used for the sake of the experiment. The song was presented sentence-by-sentence (Rossen, 2019) as a common song we find on YouTube, and in almost every slide there will be a pseudoword to which subjects will be exposed to (Rossen, 2019).

After listening to the song the first time participants were asked to fill in their in-practice questionnaire which measured their motivation, attitude and enjoyment towards the stimuli. The same procedure followed after the second exposure to the song.

After the second exposure the researcher distributed the first test which focused on comprehension. The two vocabulary test followed firstly with the form recognition test and then the meaning recollection test. The last posttest consisted of a questionnaire which determined participants' interest in hip-hop/rap in order to see whether there are two distinct groups within the two conditions.

One week after the experiment, participants were exposed and tested following a similar procedure. Specifically, subjects of both conditions listened to the song again, although this time without the lyrics on the screen, and were asked to respond to the two vocabulary tests. Last, they will be asked to evaluate the song used in the experiment.

3.10 Analysis:

Before the actual experiment a pilot with four participants (two participants for each condition) was conducted. Participants had to listen to the song while having the lyrics in front of them on paper. No statistical analysis was computed to obtain the related results.

The effect of rhyme on form recognition (FR) and meaning recollection (MR) was analyzed with a 2(experimental and control) x2 (form recognition1 – meaning recollection 1) x2 (form recognition 2- meaning recollection 2) ANOVA for both groups across two time points (immediate post-test and delayed post-test). Linear regression was employed to investigate whether age, sex, English proficiency, attention levels, and group condition predicts form recognition (Rossen, 2019). Same analysis was applied for the meaning recollection test. For the delayed vocabulary post-test, scores were analyzed across the two time points- immediately after the experiment (1) and one week after (2). Linear regression model was applied for immediate post-test form recognition (FR1) and delayed post-test form recognition (FR2) for the two time points for both groups separately, as well as for the meaning recollection a linear regression model assisted in measuring immediate post-test in meaning recollection (MR1) and delayed post-test in meaning recollection (MR2) across the two time points.

A 2(group) x 2(in-practice1, in-practice2) ANOVA was computed to investigate the effect of the musical stimulus in participants' motivation, enjoyment and attitude. Additionally, a linear regression was computed to ascertain the relationship between *age, sex, years of English, proficiency, attention, evaluation of song* (IVs) and *affect* (DV).

To investigate whether participants remembered more concrete or abstract words in the delayed post-test a mixed 2(experimental/control) x2 (concrete/abstract) ANOVA was computed for both vocabulary tests to explore whether participants of both groups remember more concrete words than abstract words in the delayed post-test.

Last, in order to demonstrate a correlation between behavior and performance, we firstly computed a correlation between in-practice questionnaires and interest in hip-hop/rap music that are associated with

behavior. Next, a correlation analysis was computed to find whether there is a relationship between behavior and performance and thus a correlation across the entire data collection.

4. Results:

The pilot revealed that participants of both conditions encountered slightly more difficulty in inferring the meaning of the word *gold* (*prees* for the experimental condition and *nongs* for control), and *giving someone the chills* (*trib* for the experimental group and *cust* for the control). However, when they consulted the associated meanings to real words, participants of both conditions confirmed that if they had more time they could have inferred the meaning.

The 2x2 ANOVA revealed that Group had a significant effect rather than first in-practice questionnaire (IQ1) and the second in-practice (IQ2) in motivation, attitude and enjoyment. Specifically, Group had a statistically significant effect on affect $F(1,48)= 10.19$, $p= .002$, $\eta^2= .175$. Exposure did not have a statistical effect on affect $F (1,48)= .098$, $p= .755$, $\eta^2=.002$.

The mean score for IQ1 for the Experimental group was M=51.80 (SD= 9.08), and for the Control group M=59.32 (SD= 8.37). For the IQ2 participants in the Experimental group had a mean of M=51.52 (SD= 8.95) while the Control group M=59.20 (SD=8.41). These findings reveal that the control group had larger affect than the experimental group during both exposures. Between the first in-practice questionnaire and the second

Descriptive Statistics

	Group	Mean	Std. Deviation	N
IQ1_Total_Recoded	Control	59.3200	8.37516	25
	Experimental	51.8000	9.08754	25
	Total	55.5600	9.44622	50
IQ2_Total_Recoded	Control	59.2000	8.41625	25
	Experimental	51.5200	8.95414	25
	Total	55.3600	9.43454	50

Table 1. Descriptive statistics for in-practice questionnaire 1 (IQ1) and in-practice questionnaire 2 (IQ2)

in-practice questionnaire there is no considerable fluctuation, merely a slight increase in the second exposure for both conditions. The two-way ANOVA revealed that the mean difference (MD) between the two time points of the song exposure, referred to as Exposure 1 and 2 in the SPSS output, was MD= .200, whereas the MD between Groups was MD= 7.600. However the exposure to the stimulus and group were not statistically significant p= .901.

1. Group

Estimates

Measure: IQ_Motivation_Attitude_Enjoyment

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	59.260	1.683	55.875	62.645
Experimental	51.660	1.683	48.275	55.045

Pairwise Comparisons

Measure: IQ_Motivation_Attitude_Enjoyment

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Control	Experimental	7.600*	2.381	.002	2.813	12.387
Experimental	Control	-7.600*	2.381	.002	-12.387	-2.813

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 2. Two-way ANOVA mean differences in Group

2. Exposure

Estimates

Measure: IQ_Motivation_Attitude_Enjoyment

Exposure	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	55.560	1.236	53.075	58.045
2	55.360	1.229	52.889	57.831

Pairwise Comparisons

Measure: IQ_Motivation_Attitude_Enjoyment

(I) Exposure	(J) Exposure	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	.200	.638	.755	-1.082	1.482
2	1	-.200	.638	.755	-1.482	1.082

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Table 3. Two-way ANOVA, Mean differences in first exposure to song and second exposure to the song.

Tests of Within-Subjects Contrasts

Measure: IQ_Motivation_Attitude_Enjoyment

Source	Exposure	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Exposure	Linear	1.000	1	1.000	.098	.755	.002
Exposure * Group	Linear	.160	1	.160	.016	.901	.000
Error(Exposure)	Linear	487.840	48	10.163			

*Table 4: Exposure*Group*

A multiple linear regression model with sex, English proficiency, attention, and song evaluation as predictors explained 34.6% of the variance F(6,40)=3.52, p=.007. Attention (*b*= .33, t(46) = 2.16, p = .037) and song evaluation (*b* = .37, t(46) = 2.48, p = .017) significantly predicted affect.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	52.134	37.668		1.384	.174
	AGE	-.676	1.051	-.090	-.643	.524
	Sex	-.865	4.896	-.023	-.177	.861
	L-3 Ανέφερε πόσα χρόνια μαθαίνεις αγγλικά:	-2.870	4.777	-.098	-.601	.551
	L-5 Το επίπεδο μου στα Αγγλικά και των γλωσσικών δεξιοτήτων μου εκτιμείται (υπολογίζεται) να είναι: (writing, reading & listening)	4.520	4.453	.138	1.015	.316
	C-5 Πόσο προσεκτικός/ή ήσουν κατά την διάρκεια του τραγουδιού;	6.032	2.792	.330	2.161	.037
	L-13 Αξιολόγησε το τραγούδι το οποίο άκουσες στο πείραμα αυτό.	5.172	2.081	.378	2.485	.017

a. Dependent Variable: Affect_2

Table 5: significant variables in affect

The descriptive statistics of the three-way ANOVA revealed that in the immediate post-test in form recognition the control group had a mean score of M= 5.45 (SD= 1.38), and the experimental M=4.2 (SD=2.07). In the delayed post-test in form recognition the control group had a mean score M=6 (SD= 2.07) while the experimental M= 4.79 (SD= 2.06). For the meaning recollection in the immediate post-test the control group had a mean score of M=5.3 (SD= 1.129) while the experimental M= 5.1 (SD= 1.63). In the second time point the control group scored a mean of M=5.5 (SD= 1.17) and the experimental surprisingly had the same mean M=5.5 (SD= 1.61). The 2x2x2 ANOVA revealed that there was a Group effect in the form recognition p= .021, with control group performing better than the experimental group. Both conditions had larger learning effects in the second time point. The general linear model for the form recognition across two

time points showed that C5 (self-report of attention) p=.013 and L13 (evaluation of the rap song) p= .001 are the significant variables to predict the dependent variable of form recognition for the two time points. For the meaning recollection in the two time points Proficiency (L5) has a trend towards statistical significance, however it cannot be considered as statistically significant.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-1.228	6.636		-.185	.854
	AGE	-.133	.184	-.089	-.724	.473
	Sex	-.734	.841	-.102	-.873	.388
	L-3 Ανέφερε πόσα χρόνια μαθαίνεις αγγλικά:	-.112	.808	-.020	-.138	.891
	L-5 Το επίπεδο μου στα Αγγλικά και των γλωσσικών δεξιοτήτων μου εκτιμείται (υπολογίζεται) να είναι: (writing, reading & listening)	-.094	.755	-.015	-.125	.901
	C-5 Πόσο προσεκτικός/ή ήσουν κατά την διάρκεια του τραγουδιού;	1.241	.477	.354	2.599	.013
	L-13 Αξιολόγησε το τραγούδι το οποίο άκουσες στο πείραμα αυτό.	1.363	.370	.499	3.684	.001

a. Dependent Variable: Form_Recognition_Combined

Table 6: significant variable for Form Recognition in immediate and delayed post-tests

Results showed that there is a relationship between affect (IQ1+IQ2) and interests in hip-hop/rap music but not statistically significant ρ= .201 p= .161. Affect and interests in hip-hop/rap music are henceforward referred to as behavior. The Pearson correlation between behavior and form recognition and meaning recollection in two time points revealed that there is a relationship between affect and form recognition ρ= .478, p= .001 (two-tailed), and affect and meaning recollection have a positive relationship, however not statistically significant ρ= .375, p= .009 (two tailed). Finally, the correlation analysis demonstrated that behavior towards the stimuli and performance in the vocabulary tests have a strong correlation ρ= .424, and are statistically significant p= .003.

Correlations

Correlations

		Behaviour_2	Performance
Behaviour_2	Pearson Correlation	1	.424**
	Sig. (2-tailed)		.003
	N	50	48
Performance	Pearson Correlation	.424**	1
	Sig. (2-tailed)	.003	
	N	48	48

**. Correlation is significant at the 0.01 level (2-tailed).

The descriptive statistics for form recognition revealed that in the delayed post-test the control condition had a mean score of M= 3.04 (SD= .99) and the experimental M=2.29 (SD= 1.26) for concrete words. For the abstract words the control group had a mean of M=2.95 (SD=.99), and the experimental M= 2.50 (SD=1.14). Results in the mixed 2(experimental/control) x 2 (concrete/abstract) ANOVA for form recognition demonstrated a significant group effect $F(1, 46) = 4.8$, $p = .033$, $\eta^2 = .095$. Word class showed no statistically significant effect $F(1, 46) = .14$, $p = .706$, $\eta^2 = .003$. Participants in the experimental condition showed a reduction of .604 in form recognition compared to controls ($p = 0.33$).The descriptive statistics for meaning recollection revealed that in the delayed post-test the control condition had a mean score of M= 3.20 (SD= .72) and the experimental M=3.04 (SD= .99) for concrete words. For the abstract words the control group had a mean of M=2.45 (SD=1.14), and the experimental group M= 2.37 (SD=1.00).

Results in the mixed 2(experimental/control) x 2 (concrete/abstract) ANOVA for meaning recollection demonstrated that there is no group effect in both vocabulary tests however, there is a significant word class effect. Results reported that word class had an effect on what participants remembered more after one week $F(1, 46) = 17.3$, $p < .001$, $\eta^2 = .274$.

5. Performance of Groups:

According to the statistical results the control group had higher motivation compared to the experimental group during the first in-practice questionnaire. Participants in the control condition were more motivated, enjoyed more, and had a more positive stance towards the rap song. During the second in-practice questionnaire participants of both conditions had a slight decrease in their affect with the control conditions maintaining higher motivational scores in their affect to the experimental. This can be seen as evidence that rhymes did not play an important role in subjects' behavior rather the song itself.

In the immediate vocabulary post-tests in form recognition and meaning recollection the control condition had slightly higher scores in both tests compared to the experimental condition. This again can be seen as evidence that rhymes did not facilitate the experimental condition to outperform. This implies that participants' intrinsic motivation affected their scores. However, the differences in scores between the two groups in both immediate vocabulary post tests were not significant (*Appendix 15).*

In the delayed post-test that took place one week after the actual experiment, in the form recognition test participants of the control group performed slightly better than the experimental group. Unexpectedly, in the meaning recollection test both conditions performed equally well with the experimental group presenting a slight dispersion from its mean score. Between the first time point of the testing and the second time point subjects of the experimental condition performed better in the delayed post-test. Nevertheless, the decrease in performance in the control group for both tests cannot be seen as steep rather as gradual. Possible explanations to such findings could be that either participants' attention either increased or decreased in the delayed post - test or that some participants provided some answers randomly selected. Undoubtedly, there is always a

possibility that some participants of the experimental group could have performed slightly better in the second time point due to memory.

Similar to Rossen (2019) meaning recollection presented higher scores compared to form recognition although this time in the experimental condition which to some extent contradicts previous findings that have showed that form is easier than meaning. In a following section, this aspect will be further elaborated by providing possible interpretations and justifications.

Regardless of the minor variations between the two conditions and between the two time points it can still be deduced that Greek EFL learners had a learning effect. Affect is a stronger factor than rhymes indicating that young adult learners are more engaged to a musical stimulus, and specifically to rap songs. Even though the exposures were limited, participants of both conditions performed rather well in both vocabulary tests between the two time points. These findings can be seen as evidence that affect is essential for a learner to pay more attention and unintentionally notice an unknown vocabulary item.

5.1. The Incidental Learning Effect, Music and Motivation

This study demonstrated that subjects in both conditions had a significant learning effect in both form recognition and meaning recollection for most of the target words. Nevertheless, findings seem to support that for the Greek context rhymes do not play a primary role and do not function as mnemonic device. The factor that influences Greek EFL learners is their motivation towards the stimulus they are exposed to. From a statistical perspective, Greek young adults prefer rap music to other musical genres meaning that educators could make use of these findings and create material that are based on learners' preferences aiming to generate an incidental vocabulary learning effect. Multimodal stimuli appear to enhance even further the learning effect as learners activate both their echoic and iconic memory. Taking into account learners' interests and preferences along with the learning objectives educators can simulate a naturalistic learning environment in which learners can feel comfortable and start to incidentally learn vocabulary without being aware of the didactic approach. Nation (2007) supported that for incidental vocabulary learning to occur, the materials used in the classrooms should be appealing to the learners. It is only this way that learners present heightened motivation and perhaps accelerate their incidental learning.

Significant corpus of past research delved into the influence that music along with lyrics have since early life development. Given that language and music are deeply intertwined, one could say that rehearsal and lowered Xenoglossophobia can interact in a constructive way for both children and adults in a foreign or second language context. Wells, William, Burnett and Moriarty (1989) claimed that "finger- snapping, toe-tapping songs have tremendous power because they are so memorable" (p.201). This can justify the findings of this study as participants' interaction with audiovisual rap input enhanced subvocal rehearse and thus benefitting retention, attentional resources and learning. As Rukholm (2015) supported that once learners become familiar with the melody of the music consequently they become more acquainted with the text as

well. This happens due to the connection that is gradually established after repeated exposures (Rukholm, 2015). Such evidence implies that lexical acquisition and retention can take place as a result of the connection between music and text. This can also justify participants having higher scores in the delayed post tests as they had the opportunity to listen to the song once more. Once again these findings seem to confirm that frequency is another robust factor for an incidental vocabulary learning effect.

5.2. Attention, Evaluation, and Form-Meaning Distinction

Based on the findings of this study form recognition (FR) presented a group effect as the control group performed better in form recognition compared to the experimental group. Both control and experimental conditions presented a larger effect in form recognition in the delayed post test, meaning that there was a learning effect for both groups in terms of form. In addition, the experimental group had a larger effect in the meaning recollection (MR) test that took place one week after compared to the control group. From the linear regression the significant variable appeared to be attention that also influenced participants' motivation. Therefore, participants that paid attention and noticed the words were more motivated while listening to the song leading to the conclusion that not only attention but also affect played an essential role in subjects remembering having encountered the word. This can be seen as evidence that learners when being exposed to appealing and multimodal stimuli they pay more attention to the words and notice they unknown word. Jiang (2002) claimed that form recognition anticipates meaning recollection as the former is easier to register than the latter. Godfroid et al. (2017) also supported such claim through their findings when they reported that in the connection between form and meaning, meaning requires deeper cognitive process in respect to form. As it has already been reported in the results section, for meaning recollection the significant variable was the years of English learning. From these results we can deduce that the higher the level of English the better the performance in meaning recollection. Several research has demonstrated that vocabulary size in learners has a direct association with learning gains and that the larger the vocabulary size of the learner the less the effort to pick up new words (Zahar, Cobb, & Spada, 2001).

The interesting finding of this present study when scrutinizing the experimental condition is that overall they performed better in the meaning recollection test than in the form recognition. Although this evidence cannot be fully justified and explained, past research has shown that learn could learn first the meaning of a word and then its form thanks to apperception. This means that foreign or second language learners associate meanings from their L1 to meanings that they have already been acquainted with in their L2 (Rossen, 2019). In spite of the fact that in this study pseudowords were the target items, therefore words that do not exist in the English language, we can assume that in the meaning recollection test, participants of the experimental group could approximately recall the context in which target words were found- after consulting them on the worksheet of the test- and they could have provided answers due to their apperception and short-term memory.

Taking this into account, the following paragraph will entail a brief comparison between the two studies in their scoring and lay out of the tests and how these could have influenced the results. The design of the form recognition test in Rossen (2019) required participants to circle the words that they remember having seen. The author suggested that the layout of the activity might have influenced participants' scores as it is possible that they had missed some words instead of merely not recognizing them. In addition, he suggested that a well-ordered list of words could perhaps avoid such possibility. For this reason, in this study the design of the form recognition test consisted of a well-ordered list on the left side of the paper and two groups, namely *"I remember having seen the word"* and *"I don't remember having seen the word"* and participants had to map the word to the group they considered correct. The instructions given to the participants of this study were consistent with Rossen's as subjects were not informed the number of words they were expected to identify. The author claimed that the instructions could have led some participants to miss a word or more since there were cases of participants that identified two or three words (Rossen, 2019) among twenty.

Another suggestion that Rossen mentioned in his thesis was taken into account. Specifically, the author in his scoring would give one point to each correct answer and the subtraction of half a point for every incorrect one in order to avoid participants circling all the words and still obtain a perfect score in form recognition. Additionally, he claimed that perhaps Godfroid's et al. (2017) scoring system was more accurate as they did not subtract any points to their subjects' incorrect answer. With Godfroid's et al. (2017) scoring system the distinction between form and meaning is more evident, and as it was also proved in this study, form recognition is easier than meaning recollection.

5.3. Concrete and Abstract

The results of the study indicated that concrete words are faster to learn as it is easier to associate a meaning to a concrete mental image. This supports previous findings that have demonstrated that concreteness of a word requires less cognitive associations as there are more concrete concepts available in our mental and lexical representations (Mestres-Misse, Munte, & Rodriguez-Fornells, 2013). This seems to be compatible with previous research that claimed that for abstract words to be easily picked up "exposure to multiple sentence contexts plays an important role in the development of representations for abstract concepts" (Breedin, Saffran & Coslett, 1994, p. 650). Abstract words assume various associations and meanings rendering their acquisition a harder process (Paivio et al., 1968; Schwanenflugel and Shoben, 1983). Hence, Greek participants demonstrated anew that concrete words are easier to be recalled as they need less encounters in order to be inferred and supported by the context.

As it has already been stated in the results of the pilot, subjects of both conditions were rather puzzled when they had to infer the meaning of the pseudowords which referred to "giving the chills". Nevertheless, if we peruse the concept of "chills" we can say that the word can assume not only abstract but also concrete representations. When considered as an abstract word it is immediately associated to the emotion one can feel when being influenced by a situation. On the other hand, we can also associate it to the physical reaction of

the body when we become ardent in certain circumstances. In this experimental context, Greek EFL learners conceivably due to limited time did not have the opportunity to process the sentence and promptly understand in which word class the target words were affiliated with. As a result of this ambivalence, we can conclude that words that assume more than one association can be rather challenging for foreign or second language learners.

Taking into account Paivio's (1986) Dual Coding Theory, it can be claimed that due to the benefits of concrete words and their coding in verbal label and mental representations, and the support of semantic features (Plaut and Shallice, 1993) one's cognitive performance can be influenced and that is reflected in the word identification and semantic processing (Crutch & Warrington, 2004). Therefore, participants' performance in this study can be seen as further evidence supporting earlier investigations.

6. Limitations of my study:

This research is subject to several limitations and some methodological improvements could assist in obtaining additional informative insights. As the majority of the studies, this study exposed participants to an experimental setup and not to a naturalistic environment. In a typical naturalistic context people tend to listen to a song multiple times before they actually start learning a song by heart. In an experimental setup subjects are aware of the situation they find themselves into and expect that they will be tested or observed in some aspects. It is likely that such contexts make participants feel subconsciously or consciously obliged to pay attention to the stimuli.

An additional aspect of the study that can be identified as a limitation is the amount of the in-practice questionnaires. Specifically, participants had to fill in only two in-practice questionnaires during their exposure to the stimuli, one after the first exposure and one after their second exposure. This can be seen as a limitation as in order to claim that there is an actual fluctuation in motivation, enjoyment and attitude throughout time the study should have included more questionnaires. However, the initiative of including only two in-practice questionnaires is justified by the idea that participants could have dropped out of the experiment due to its workload with multiple questionnaires. Furthermore, the in-practice questionnaires that measured participants' affect throughout the experiment were distributed in a relatively short period of time, and therefore this can be interpreted as an essential factor that led to no large fluctuations. Although, it is important to mention that during the instructions the researcher informed the participants that for the second in-practice questionnaire they are expected to provide answers based on their second exposure to the audiovisual musical input. Additionally, the questionnaire on participants' interests in hip-hop and rap music can to some extent provide their overall view and stance towards the music genre in spite of the fact that it does not show a fluctuation of motivation.

One last limitation of the study entails the lack of self-report of participants' attention in the delayed post-test one week after. Given that results showed higher scores in participants of both conditions, the researcher

should have included the attention rate in order to investigate whether participants were more concentrated during the stimuli.

7. Conclusion:

The present study was a replication of Rossen's (2019) thesis aiming to investigate whether rap music assists and facilitates Greek EFL young adult learners of an intermediate level to incidentally learn vocabulary. In addition to the previous study, this experimental research included measurements of affect to test the relationship between behavior and performance. The first research question was related to the demonstration of the effect or rhyme in form recognition and meaning recollection of novel vocabulary in an incidental learning task. The second research question addressed the extent to which learners can pick up new words after limited exposure to the musical stimuli. Last, the third research question aimed to investigate the correlation between affect and performance.

Based on our findings, it can be deduced that participants had a learning effect in both form recognition and meaning recollection. Motivation, attitude and enjoyment towards the stimulus appear to be significant factors that appeal learners' attention, and highly likely create an incidental vocabulary learning environment. According to Deci and Ryan (1999) instrinsic motivation is likely to be the core of the educational process. Thereby, activating learners' inner drive can potentially results to a learning effect. Evidently, the degree of Greek learners' attention depended on their affect towards what they are being exposed to, and this predicted their performance in the two vocabulary tests. Interestingly, for this study rhymes did not function as a mnemonic device but intrinsic motivation contributed to the incidental vocabulary learning process.

With music being one of the most common sources that learners make use of as language learning input outside of the classroom (Kuppens, 2010), and hip-hop/ rap music dominating Greek music charts for the last years for a wide range of age groups, it can be suggested that a musical context, with audiovisual input enhancing the stimulus can lead to incidental vocabulary gains. It goes without saying, that it is not unlikely for our evidence to have been directly influenced due to the online processing demands. When listening to music in our own space we tend to replay a song, and provided that we pay some attention to the lyrics it is only then that we start picking up words and try to infer meaning out of them. This does not imply that music could not have positive results in a foreign or second language classroom but researchers and educators ought to design pedagogical material that would promote noticing in learning. Music and audiovisual enhancement could tackle the necessary degree of intentionality that one requires to incidentally learn a novel target item. Thus, one can say that music could also accelerate the learning process and improve memorization (Malekian, 2016).

Krashen's (1985) Affective filter hypothesis claimed that in order for learners to start engaging to learning they ought to weaken their affective filter. For this to happen, the learners should have a positive stance towards and throughout the process and feel motivated. Through their teaching, educators cannot alter their

students' psychological state but they certainly can create an environment in which learners feel comfortable and are deprived from negative thoughts and attitudes. Taking into account all the above mentioned evidence, there is no reason why it cannot be assumed that behavior has an essential impact on learners' performance, and given the fact that for adults the process of learning another language besides their L1 appears to require more cognitive effort, a rich yet friendly learning environment can facilitate their learning path.

8. Future suggestions:

Follow-up studies might extend the contribution of audiovisual musical input in ESL/EFL classrooms for young adults. Longitudinal studies having as centrum learners' interests and preferences could investigate how these can foster learners' incidental vocabulary learning by integrating material that enhances both motivation and learning gains. Through a longitudinal study, research could demonstrate the extent of the learning effect throughout time. As we have already mentioned, L2/EFL learners in order to acquire novel words they are required to systematically recycle target items so that those are stored in the long-term memory. Thus, a longitudinal study could create a more naturalistic environment and would provide more valid findings. Supposing that future studies would like to maintain an experimental setup for the obtainment of faster evidence, a possible suggestion could be further introspection and interviews aiming to understand how affect has an impact on learners' learning effect. Qualitative research can perhaps respect the natural flowing of one's development in L2/EFL learning without creating a sense of systematic testing to learners. The design and integration of either authentic or original material with pedagogical purposes could help learners enrich their input, trigger their motivation and enhance incidental vocabulary learning. As a matter of fact, future research could attempt to expose learners to more songs supported by multimodal input and potentially integrate existing hip-hop/rap songs. One final remark that could endorse the evidence of this study would be the integration of a fill-in the gap exercise in the meaning recollection test before the multiple choice exercise. In this way, researchers will be able to obtain a better understanding of whether participants recall the context in which the word was found and compare the responses that subjects would give in the multiple choice section. Provided that participants fill in the correct target item in the correct sentence – verse in this case- it can be confirmed through the multiple choice responses whether they actually inferred the meaning of the word or whether the response was a product of correct guessing.

Overall, a fusion of empirical and experimental research can contribute to both theoretical and practical evidence that affect can influence noticing and attention, and consequently also performance.

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Appendices:

Appendix 1: Experimental group song lyrics

Hook:

// Got my friends that hype me up and we got 200 on the dashboard

runaway from the dark cloud, trying to be a good sweet landlord

I want to see you smile little boo, but you play locked, please tell me what's your password?

cause I just want to put the mask off and travel a lot of cities with my passport //

Verse 1 :

want to hop on? hop on the first sit
no bad vibe, we up on it
as soon as I give them a smile, it goes blaw
ha! no opponent

trying to get easy life with the hard way, and all I do is work work work
I don't simply want it, I want it a.s.a.p, like I was Ferg Ferg Ferg

I'm true and it seems with truth to the feels
I listen to music and get me the ***trib***
I found my way, I'll stop meltin my mind locked up in my crib

I used to get hurt but now I'm cold
Cause time is precious, expensive ***prees***
I got my friends, we'll get a vibe
We love the earth, we'll smoke some trees

I promised myself I ain't gon pull me down no more, by thinking of you
It's about time for me to tell you, that you a defo adieu

*The **tribs** that you gave me, truth is I don't feel them no more*
You went nuts right? I'm not the same guy that you knew before

*Ain't no past, ain't no future , I'm living the **dinest ,***
I ain't no rapper jamming like others talking about Athens finest

Don't get it twisted boo, you know me so then I bet that you know how I do
I come up with an idea, then spit out in the studio groove

I got a notepad on which I jot the desires I got
But now the papers got full because I got what I needed thank God!

*My words are my **prees,** so when I rap I put those memories down*
And everybody should know that I'm no longer your goddamn clown

*My **dinest** is in my hands, so that means I'm my future teller*
This is just my way to grown up and become my own self's rebel

All of your friends and pretentious close ones
You made them think that you were just "no one's"
Now I hear you throw shade on my name
As if our love was a silly game

Every move, every thought, every inch of yours
All curved so deeply
I could all sense them even with closed doors
And I mean it really

You want me sad but I'm not going to let that happen
Salute to the boy who got bars, too many punches, start clappin

*I remember when I called your **trishen***
Asked for a sec to listen.
Turning tables now ha?
*Calling my **trishen,** just for fishing?*

Not this time, not tomorrow babe never again
I choose myself, I choose my music and I choose my pen

Now it's done, c'est la vie baby
I'm gaining ground, I'm all hyped cause you're not my lady.

Hook:

// got my friends that hype me up and we got 200 on the dashboard
runaway from the dark cloud, trying to be a good sweet landlord
I want to see you smile little boo, but you play locked, please tell me what's your password?
cause I just want to put the mask off and travel a lot of cities with my passport //

Verse 2 :

I did what I could
I think that honestly I treated you good
I forgave your mistakes even though
your mistakes were too hard for a man to be cool

it was ok, aight but I want you to know I hate lies
I think that you got that, never feared to look at you straight in your ***snaighs***

"I saw it deep in her ***snaighs"*** *that's what I used to tell*
But now babe it's hard for me even your name to spell

you figured it out that I don't go
with the fake , with the lies, it's a no go

full of pain and scars, with a broken gake
hiding the agony with a smile so fake

crossing your gake feeling that I was the one to blame
but girl you can't deceive me, all you wanted was just a shitty fame

I lived in simplicity, madly in ***flait***
Falling for that old ''can't replace you" speech
til our ***flait*** *got with with toxic hate*

Hook:

// got my friends that hype me up and we got 200 on the dashboard
running away from the dark cloud, trying to be a good sweet landlord
I want to see you smile little boo, but you play locked, please tell me what's your password?
cause I just want to put the mask off and travel lot of cities with my passport //

one last thing til I shush
I thank my boys who are the ones that I ***prown***

Cause being with you, truth is that I forgot wow
Now I remember that even lovers get drown

*You betrayed the **prown** I had in you*
But I still think of you and of what you do

Appendix 2: Control Group song

Hook:

// got my friends that hype me up and we got 200 on the dashboard
runaway from the dark cloud, trying to be a good sweet landlord
I want to see you smile little boo, but you play locked, please tell me what's your password?
cause I just want to put the mask off and travel a lot of cities with my passport //

Verse 1 :

want to hop on? hop on the first sit
no bad vibe, we up on it
as soon as I give them a smile, it goes blaw
ha! no opponent

trying to get easy life with the hard way, and all I do is work work work
I don't simply want it, I want it a.s.a.p, like I was Ferg Ferg Ferg

I'm true and it seems with truth to the feels
*I listen to music and get me the **cust***
I found my way
I'll stop meltin my mind locked up in my crib

I used to get hurt but now I'm cold
*Cause time is precious, expensive like **nongs***
I got my friends, we'll get a vibe
We love the earth, we'll smoke some trees

I promised myself I ain't gon pull me down no more, by thinking of you
It's about time for me to tell you, that you a defo adieu

*The **custs** that you gave me, truth is I don't feel them no more*
You went nuts right? I'm not the same guy that you knew before

*Ain't no past, ain't no future , I'm living the **nechan***
I ain't no rapper jamming like others talking about Athens finest

Don't get it twisted boo, you know me so then I bet that you know how I do
I come up with an idea, then spit out in the studio groove

I got a notepad on which I jot the desires I got

But now the papers got full because I got what I needed thank God!

*My words are my **nongs,** so when I rap I put those memories down*
And everybody should know that I'm no longer your goddamn clown

*My **nechan** is in my hands, so that means I'm my future teller*
This is just my way to grown up and become my own self's rebel

All of your friends and pretentious close ones
You made them think that you were just "no one's"
Now I hear you throw shade on my name
As if our love was a silly game

Every move, every thought, every inch of yours
All curved so deeply
I could all sense them even with closed doors
And I mean it really

You want me sad but I'm not going to let that happen
Salute to the boy who got bars, too many punches, start clappin

*I remember when I called your **antust***
Asked for a sec to listen.
Turning tables now ha?
*Calling my **antust,** just for fishing?*

Not this time, not tomorrow babe never again
I choose myself, I choose my music and I choose my pen

Now it's done, c'est la vie baby
I'm gaining ground, I'm all hyped cause you're not my lady.

Hook:

// got my friends that hype me up and we got 200 on the dashboard
runaway from the dark cloud, trying to be a good sweet landlord
I want to see you smile little boo, but you play locked, please tell me what's your password?
cause I just want to put the mask off and travel a lot of cities with my passport //

Verse 2 :

I did what I could
I think that honestly I treated you good
I forgave your mistakes even though
your mistakes were too hard for a man to be cool

it was ok, aight but I want you to know I hate lies
I think that you got that, never feared to look at you straight in your ***nipes***

"I saw it deep in her ***nipes"*** *that's what I used to tell*
But now babe it's hard for me even your name to spell

you figured it out that I don't go
with the fake , with the lies, it's a no go

full of pain and scars, with a broken ***blosh***
hiding the agony with a smile so fake

crossing your ***blosh,*** *feeling that I was the one to blame*
but girl you can't deceive me, all you wanted a shitty fame

I lived in simplicity, madly in ***smace***
Falling for that old ''can't replace you" speech

til our ***smace*** *filled up with toxic hate*

shish

Hook:

// got my friends that hype me up and we got 200 on the dashboard
running away from the dark cloud, trying to be a good sweet landlord
I want to see you smile little boo, but you play locked, please tell me what's your password?
cause I just want to put the mask off and travel lot of cities with my passport //

one last thing til I shush
I thank my boys who are the ones that I ***haid***

Cause being with you, truth is that I forgot wow
Now I remember even lovers get drown

You betrayed the ***haid*** *I had in you*
But still I think of you and of what you do

Appendix 3: Pseudo-words

Pseudowords- control condition:

1. Anstust (concrete)= cellphone
2. Nipes (abstract)= eyes
3. Custs (concrete)= giving someone the chills
4. Nechan (abstract)= present
5. Nongs (concrete)= gold
6. Smace (abstract)= love
7. Haid (abstract)= trust

8. Blosh (concrete)= heart

Pseudoword- experimental condition:

1. Trishen(concrete)= cellphone
2. Snaighs(abstract)= eyes
3. Tribs(concrete)= giving someone the chills
4. Dinest (abstract)= present
5. Prees (concrete)= gold
6. Flait (abstract)= love
7. Prown (abstract)= trust
8. Gake (concrete)= heart

Appendix 4

The following Appendices correspond to the translation of the questionnaires from Greek to English. Questionnaires were identical for both conditions. The scale for the in-practice questionnaires was recoded in SPSS.

In-practice 1: Experimental and Control questionnaire.

In-practice questionnaire 1

This questionnaire kept track of participants' of both conditions motivation, enjoyment and attitude

Provide a subjective answer. M.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describe my feelings	It does not describe my feelings whatsoever
The story behind the song makes me want to keep listening to it	◯	◯	◯	◯	◯
The rhythm makes me want to keep listening to the song	◯	◯	◯	◯	◯
The rapper's flow makes me want to keep listening to the song	◯	◯	◯	◯	◯
I understand almost all the lyrics and that makes me want to keep listening to the song	◯	◯	◯	◯	◯
This song thrills me to the point I want to learn it by heart	◯	◯	◯	◯	◯

Provide a subjective answer. E.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describes my feelings	It does not describe my feelings whatsoever
I enjoy the rhythm of the song	◯	◯	◯	◯	◯
I enjoy the lyrics	◯	◯	◯	◯	◯
I enjoy the choice of words	◯	◯	◯	◯	◯
I feel that the song has a story to tell and that touches me	◯	◯	◯	◯	◯
It's a song I could listen to again in the future	◯	◯	◯	◯	◯

Provide a subjective answer. A.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describes my feelings	It does not describe my feelings whatsoever	Στήλη 2
I think the song is inappropriate (swearing etc.)	◯	◯	◯	◯	◯	◯
The track is not as close to the rap I listen to.	◯	◯	◯	◯	◯	◯
The lyrics along with the rhythm do not fit very well.	◯	◯	◯	◯	◯	◯
The song is quite long and this tires me.	◯	◯	◯	◯	◯	◯
I believe that the song does not convey me a meaning	◯	◯	◯	◯	◯	◯

Appendix 5 *: In-practice questionnaire 2: both conditions identical questions*

In-practice questionnaire 2

This questionnaire kept track of participants' of both conditions motivation, enjoyment and attitude

Provide a subjective answer. M.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describe my feelings	It does not describe my feelings whatsoever
The story behind the song made me to keep listening to it	◯	◯	◯	◯	◯
The rhythm made me to keep listening to the song	◯	◯	◯	◯	◯
The rapper's flow made me to keep listening to the song	◯	◯	◯	◯	◯
Understanding the lyrics made me to keep listening to the song	◯	◯	◯	◯	◯
This song thrills me to the point I want to learn it by heart	◯	◯	◯	◯	◯

Provide a subjective answer. E.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describes my feelings	It does not describe my feelings whatsoever
I enjoyed the rhythm of the song	◯	◯	◯	◯	◯
I enjoyed the lyrics	◯	◯	◯	◯	◯
I enjoyed the fact that the rapper uses many words in every verse	◯	◯	◯	◯	◯
I felt that the song had a story to tell and that touched me	◯	◯	◯	◯	◯
It's a song I could listen to again in the future	◯	◯	◯	◯	◯

Provide a subjective answer. A.

	It clearly describes my feelings	It somewhat describes my feelings	Neutral	It barely describes my feelings	It does not describe my feelings whatsoever	Στήλη 2
I think the song can have a positive impact	◯	◯	◯	◯	◯	◯
The track is not as close to the rap I listen to.	◯	◯	◯	◯	◯	◯
The lyrics along with the rhythm need more work	◯	◯	◯	◯	◯	◯
The song does not represent my present emotional state	◯	◯	◯	◯	◯	◯
I believe that the lyrics were the most prominent	◯	◯	◯	◯	◯	◯

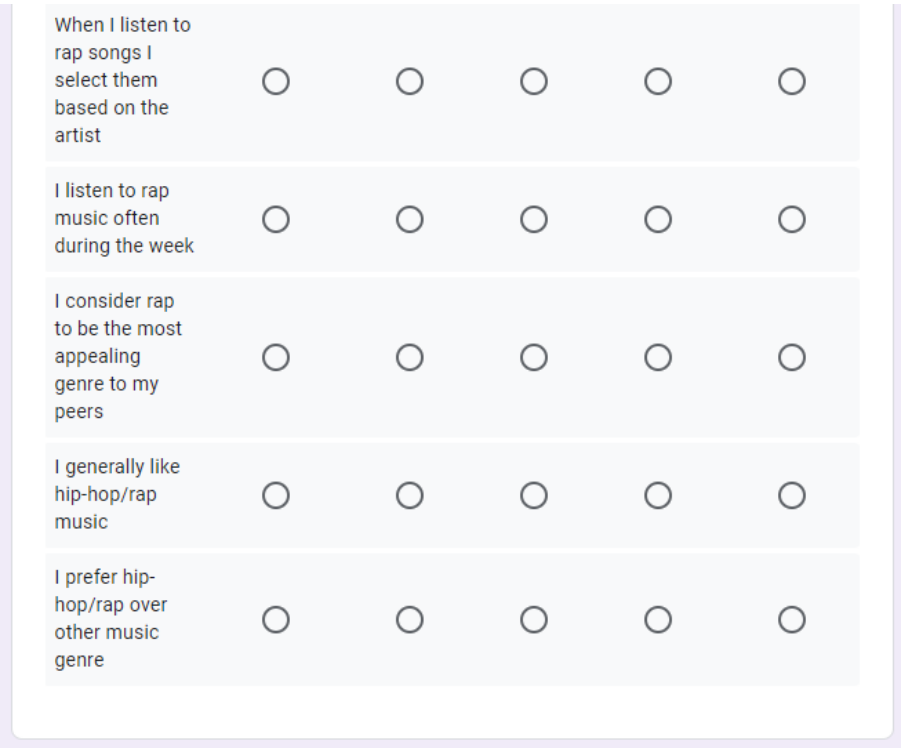
Appendix 6: *Table Interest in Hip-Hop/Rap music questionnaire*

Interest in Hip-Hop/Rap music

The following questionnaire is the translation of the Greek questionnaire that was distributed to both conditions. This questionnaire assisted in understanding whether Greek EFL young adults with an intermediate English level like rap as a music genre.

Ερώτηση χωρίς τίτλο

	I completely disagree	I somewhat disagree	Neutral	I somewhat agree	I completely agree
I believe that rap music is the most representative music genre for an artist to be able to express views and life experiences through music	○	○	○	○	○
I think that rap songs can be easily learned by heart.	○	○	○	○	○
When I listen to rap songs I emphasize on the lyrics	○	○	○	○	○
When I listen to rap music I emphasize on the beat	○	○	○	○	○
I like listening to this specific music genre even when it is not in my native language.	○	○	○	○	○



Appendix 7: *Comprehension test: EC+ CC*

1) To whom does the artist dedicate the song?

- To his parents
- To the woman he once loved
- To his little brother
- To an old friend with whom they have no longer contact

2) How does the artist feel based on his words in the song?

- Hurt and depressed
- Hurt but not at all surprised by his separation
- Hurt but with a positive attitude for the future
- He feels very happy

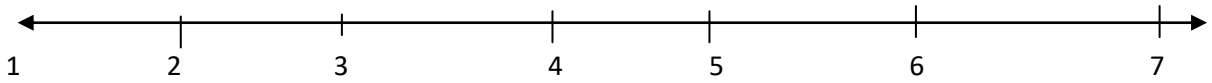
3) How did the person that the artist is referring to treat the artist?

- this person gave all his love to the artist
- this person gave the artist only hatred
- this person was verbally abusing the artist
- this person told many lies which hurt the artist

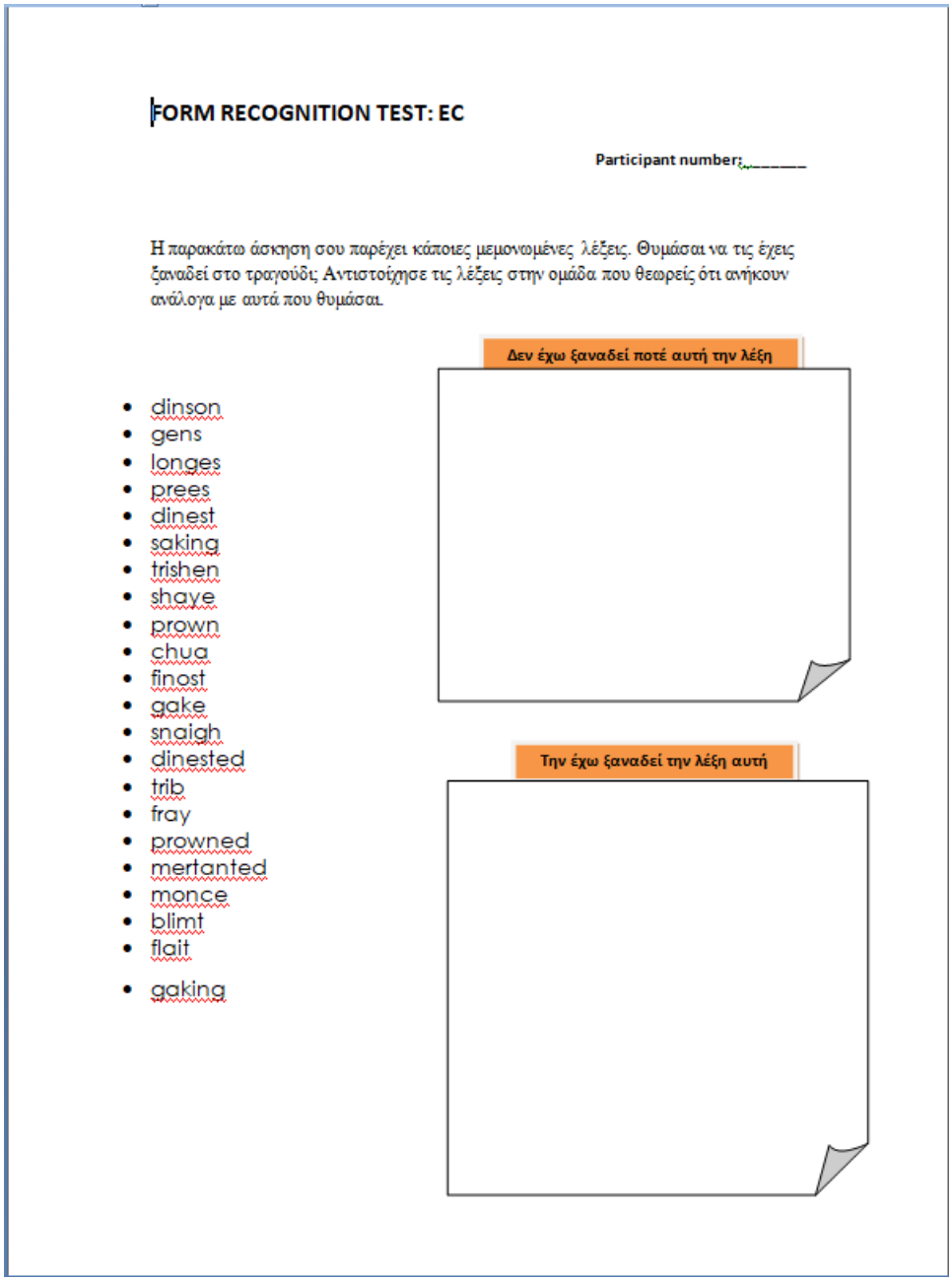
4) What / who is the artist grateful for?

- For his family
- For his music
- For his friends
- For his friends and his music

5) How concentrated were you when listening to the words? Self-rate



Appendix 8: *Form recognition test for Experimental Group: immediate post-test & delayed post-test*



FORM RECOGNITION TEST: EC

Participant number:_____

Η παρακάτω άσκηση σου παρέχει κάποιες μεμονωμένες λέξεις. Θυμάσαι να τις έχεις ξαναδεί στο τραγούδι; Αντιστοίχησε τις λέξεις στην ομάδα που θεωρείς ότι ανήκουν ανάλογα με αυτά που θυμάσαι.

- dinson
- gens
- longes
- prees
- dinest
- saking
- trishen
- shaye
- prown
- chua
- finost
- gake
- snaigh
- dinested
- trib
- fray
- prowned
- mertanted
- monce
- blimt
- flait
- gaking

Δεν έχω ξαναδεί ποτέ αυτή την λέξη

Την έχω ξαναδεί την λέξη αυτή

Appendix 9: *Form recognition test for Control Group: immediate post-test & delayed post-test*

FORM RECOGNITION TEST: CC

Participant number:_____

Η παρακάτω άσκηση σου παρέχει κάποιες μεμονωμένες λέξεις. Θυμάσαι να τις έχεις ξαναδεί στο τραγούδι; Αντιστοίχησε τις λέξεις στην ομάδα που θεωρείς ότι ανήκουν ανάλογα με αυτό που θυμάσαι.

1. nechan
2. gens
3. longes
4. nongs
5. dunsted
6. haiding
7. antust
8. shaye
9. haid
10. chua
11. blosh
12. nipe
13. nechanned
14. mincing
15. cust
16. permanned
17. fray
18. dinson
19. monce
20. blint
21. smace

Δεν έχω ξαναδεί ποτέ αυτή την λέξη	Την έχω ξαναδεί την λέξη αυτή

Appendix 10: *Meaning recollection test for Experimental Group: immediate post-test & delayed post-test*

Meaning recollection EC

Participant number: _____

Do you remember what these words meant in the song? Circle the correct answer.

TRISHEN

1) Type of food
2) Cellphone
3) An email
4) A speaker

SNAIGHS

1) eyes
2) a lamp
3) clothes
4) a car

TRIB

1) giving someone a reason
2) getting on someone's nerves
3) giving someone the chills
4) letting go someone

DINEST

1) a sofa
2) a herb
3) chaos
4) present

PREES

1) a bottle of water
2) gold
3) glasses
4) a chair

FLAIT

1) love
2) a teacup
3) pressure
4) a table

PROWN

1) to like
2) to pray
3) to trust
4) to cook

GAKE

1) vase
2) window
3) heart
4) mind

Appendix 11: *Meaning recollection test for Control Group: immediate post-test & delayed post-test*

Meaning recollection CC

Participant number: _____

Do you remember what these words meant in the song? Circle the correct answer.

ANTUST

1) Type of food
2) Cellphone
3) An email
4) A speaker

NIPES

1) eyes
2) a lamp
3) clothes
4) a car

CUST

1) giving someone a reason
2) getting on someone's nerves
3) giving someone the chills
4) letting go someone

NECHAN

1) a sofa
2) a herb
3) chaos
4) present

NONGS

1) a bottle of water
2) gold
3) glasses
4) a chair

SMACE

1) love
2) a teacup
3) pressure
4) a table

HAID

1) to like
2) to pray
3) to trust
4) to cook

BLOSH

1) a vase
2) a window
3) heart
4) mind

Appendix 12 : *LEAP QUESTIONNAIRE control group*

LEAP QUESTIONNAIRE: Control Condition

LAGUAGE EXPERIENCE AND COMPETENCE QUESTIONNAIRE

Participant number:_____

Age:
Sex:

1) **Report all the languages you speak starting from your mother tongue.**

1	2	3	4	5

2) **Report all the languages you have mastered starting from your mother tongue in the order you have learned them.**

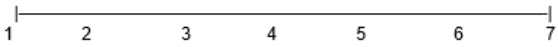
1	2	3	4	5

3) **Report the years you are learning English**

4) **Mention how often you have contact with each of the reported languages in question 2 and how much on average you make use of them over the past period. The total must be 100%.**

Language					
Percentage					

5) **My proficiency level in English and my language skills are estimated to be: (writing, reading & listening)**



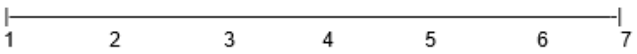
basic **intermediate** **proficient**

6) **Circle the degree of education**
   1) High School graduate
   2) University

7) **Have you ever had to deal with one of the following difficulties:**
   1) problem with hearing
   2) problems with vision
   3)learning difficulties
   4) none of the above.
   If so, please provide a brief explanation.

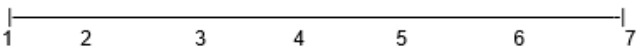
   _____

8) **On average for how many hours do study English per week?**



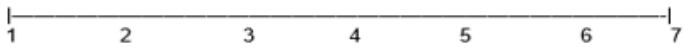
I don't study at all **(neutral)** **(a lot of time)**

9) **I think that studying English is a waste of time:**



I completely disagree **I completely agree**

10) **How often are you exposed to the English language?**



Never **Every day**

11) **On what degree do this pair of words rhyme?**

1(they do not rhyme at all)
7(absolute rhyming)

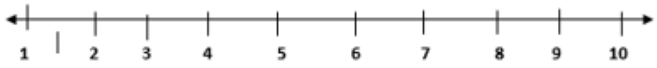
Antust- ambition:__
Straight- smace:____
Nongs- Niece:___
Crib- Cust:____
Impress- Nechan:_____

Drowning- Haiding:____
Day- Nipe:____
Blashing- Craving:___

12) In your opinion which was the purpose of this experiment?

_____
_____
_____
_____

13) Evaluate the song on a scale from 1 to 10.



Appendix 13: *LEAP QUESTIONNAIRE EXPERIMENTAL CONDITION*

LEAP QUESTIONNAIRE: Experimental Condition

LAGUAGE EXPERIENCE AND COMPETENCE QUESTIONNAIRE

Participant number:_____

Age:
Sex:

1) **Report all the languages you speak starting from your mother tongue.**

1	2	3	4	5

2) **Report all the languages you have mastered starting from your mother tongue in the order you have learned them.**

1	2	3	4	5

3) **Report the years you are learning English**

4) **Mention how often you have contact with each of the reported languages in question 2 and how much on average you make use of them over the past period. The total must be 100%.**

Language					
Percentage					

5) **My proficiency level in English and my language skills are estimated to be: (writing, reading & listening)**

1 2 3 4 5 6 7

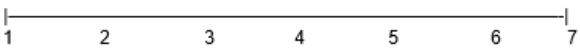
basic **intermediate** **proficient**

6) **Circle the degree of education**
   1) High School graduate
   2) University

7) **Have you ever had to deal with one of the following difficulties:**
   1) problem with hearing
   2) problems with vision
   3)learning difficulties
   4) none of the above.
   If so, please provide a brief explanation.

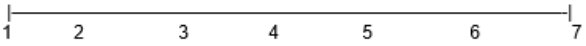
   _____

8) **On average for how many hours do study English per week?**



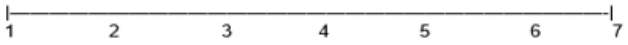
I don't study at all **(neutral)** **(a lot of time)**

9) **I think that studying English is a waste of time:**



I completely disagree **I completely agree**

10) **How often are you exposed to the English language?**



Never **Every day**

11) **On what degree do this pair of words rhyme?**

1(they do not rhyme at all)
7(absolute rhyming)

Trishen- Ambition:_____
Straight- Flait:_____
Prees- Niece:_____
Crib- Trib:_____
Impress- Dinest:____

Drowning- Prowning:_____
Day- Sneigh:_____
Gaking- Craving:_____

12) In your opinion which was the purpose of this experiment?

_____
_____
_____
_____

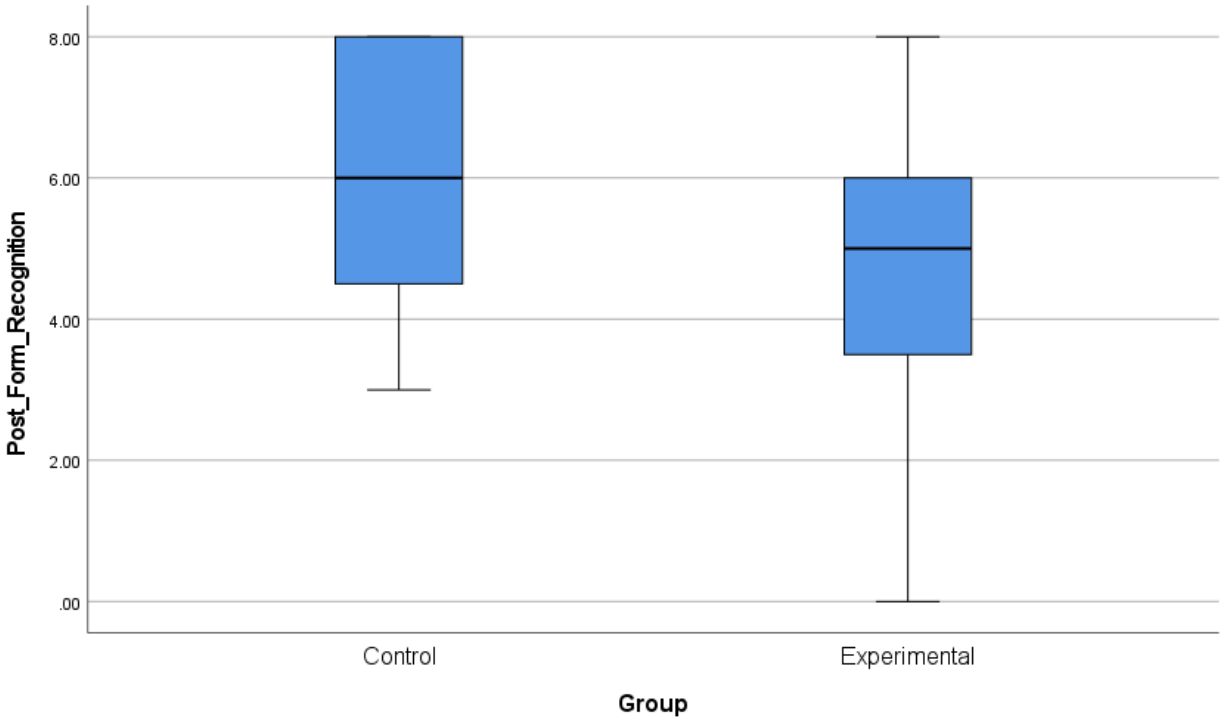
13) Evaluate the song on a scale from 1 to 10.

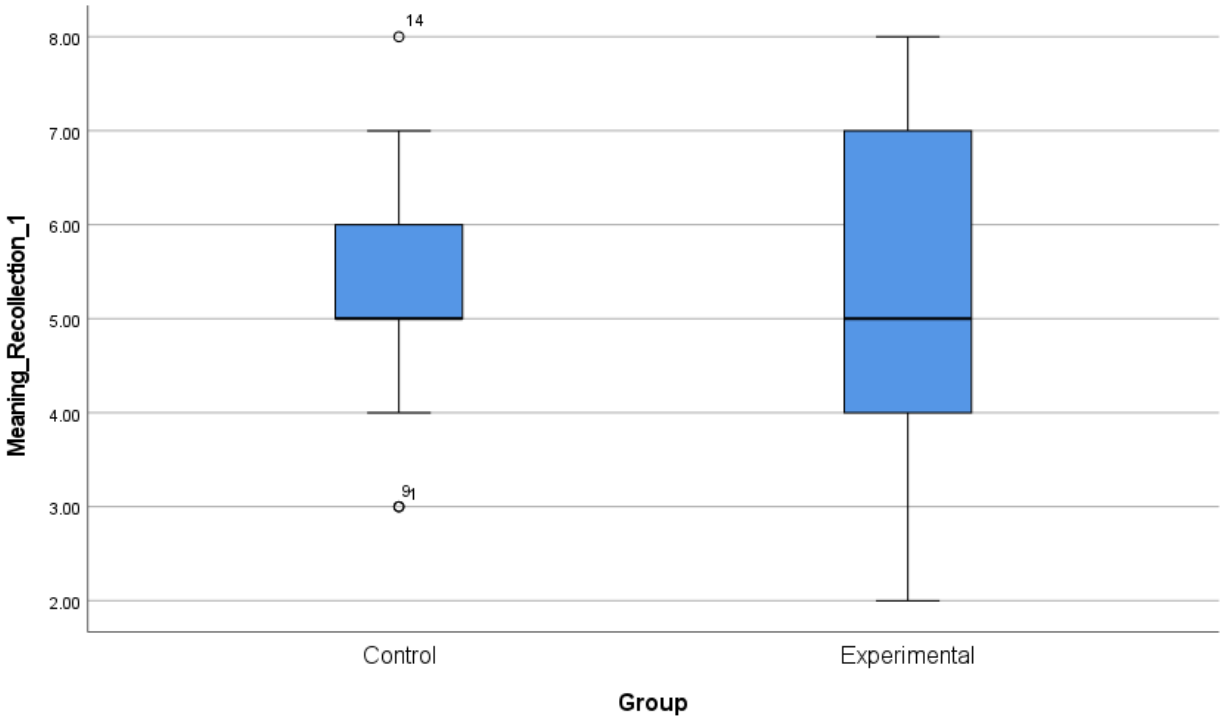
1 2 3 4 5 6 7 8 9 10

Appendix 14: *Zip file audiovisual input Experimental condition (EC) and Control Condition (CC)*

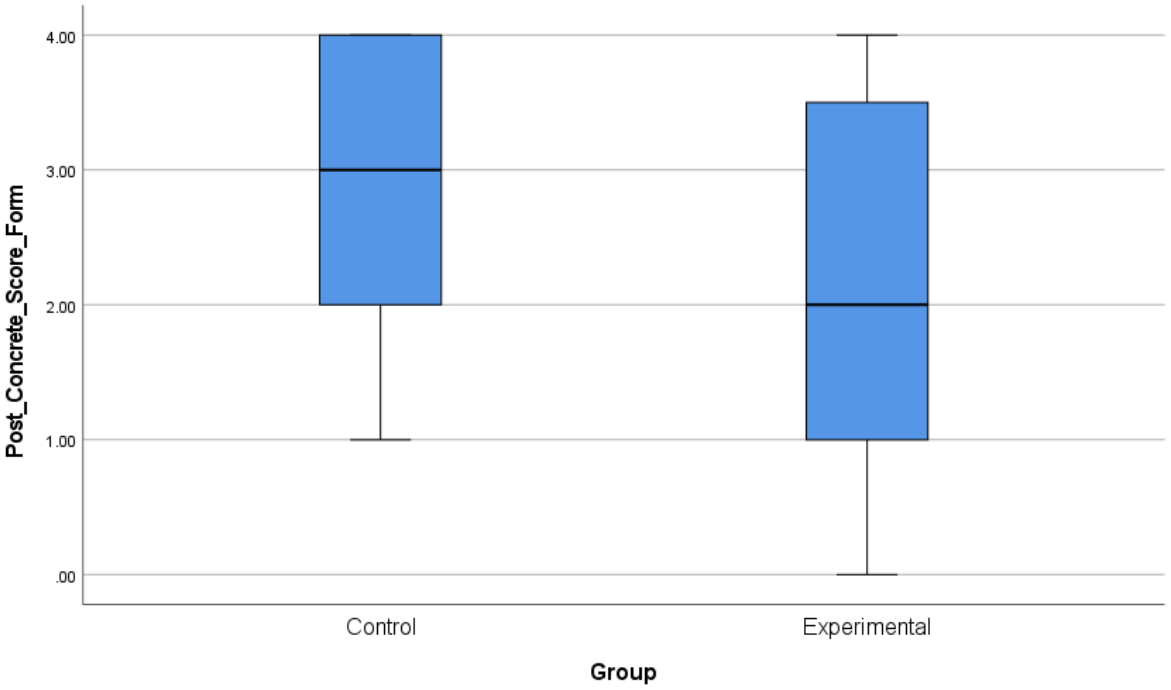
https://drive.google.com/file/d/1SswzcnCwP7k4CH0kEWCiPacXh65f6bzw/view?usp=sharing

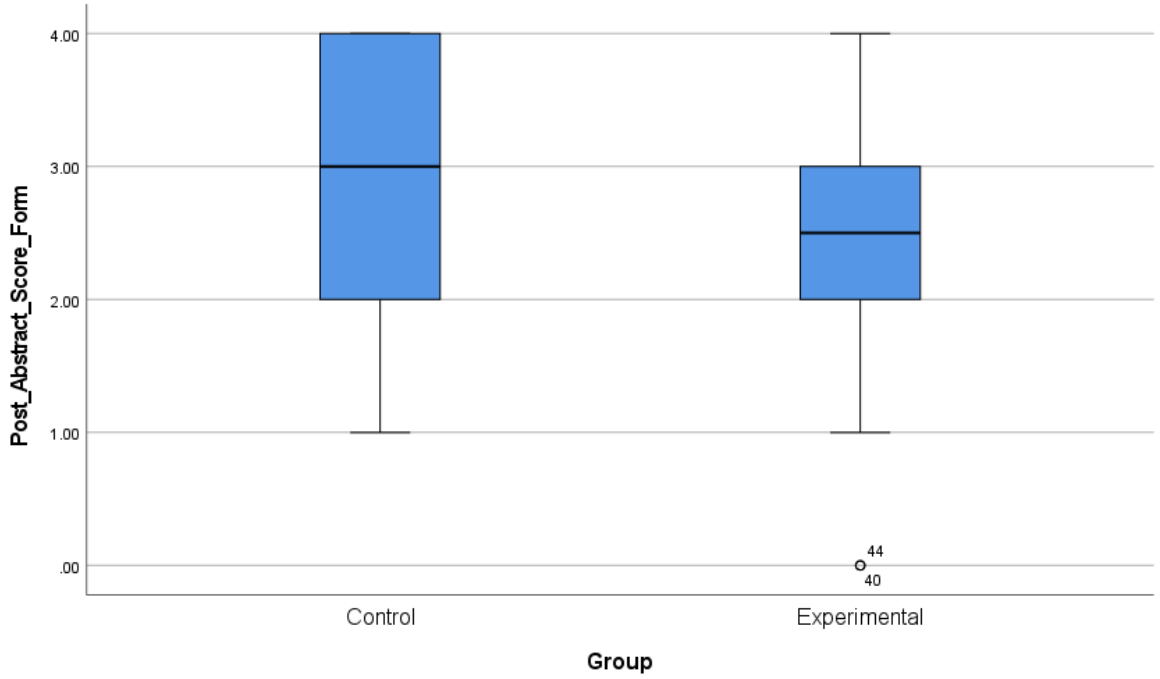
Appendix 15: *Histograms of Form Recognition and Meaning Recollection in immediate post-tests*



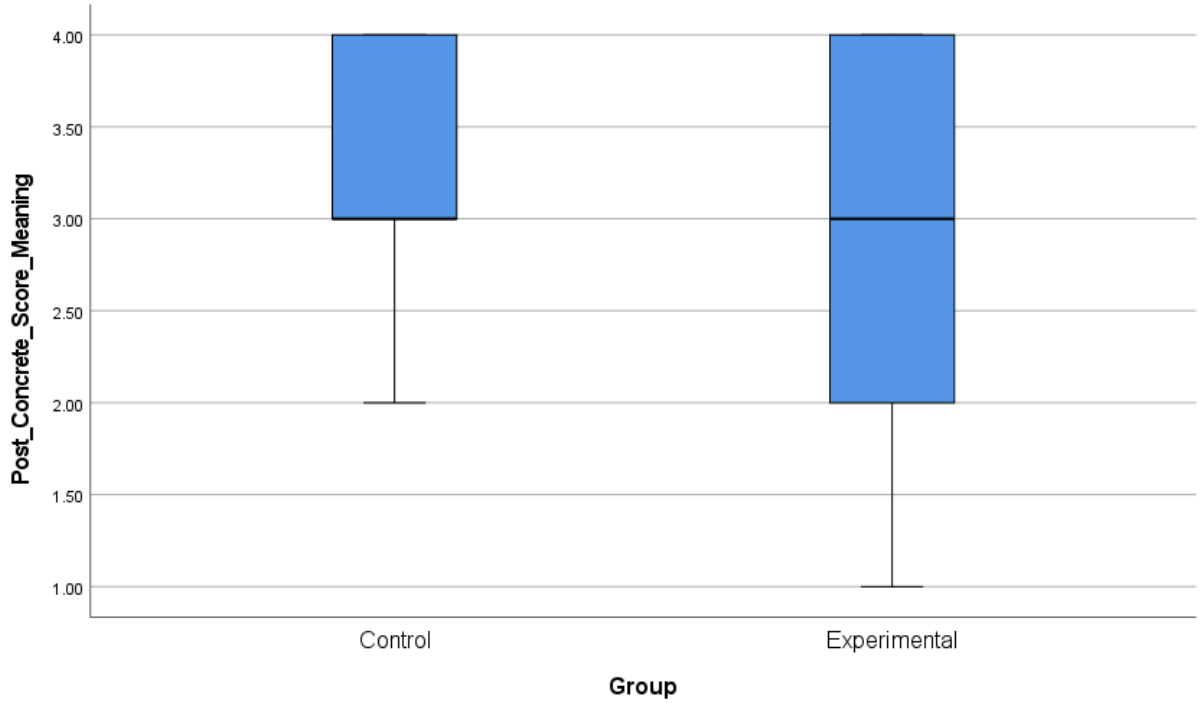


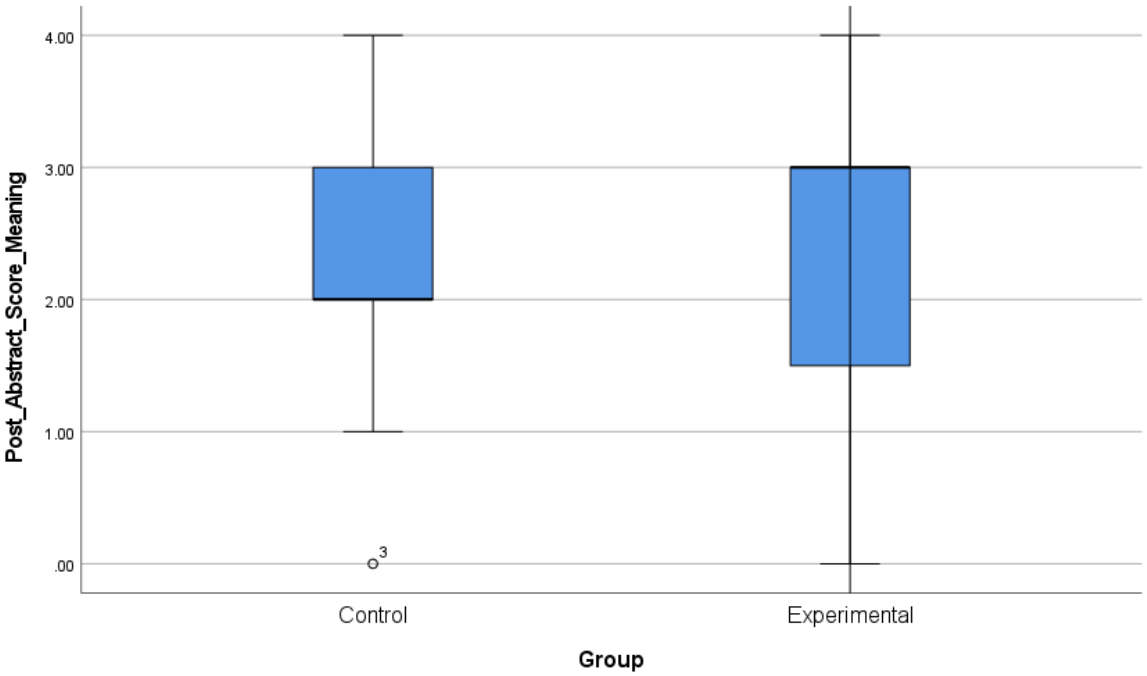
***Appendix 16**: Histograms delayed post-tests Concrete and Abstract in Form Recognition*





***Appendix 17**: Histograms delayed post-tests Concrete and Abstract in Meaning Recollection*




Post_Abstract_Score_Meaning
4.00
3.00
2.00
1.00
.00
3
Control
Experimental
Group