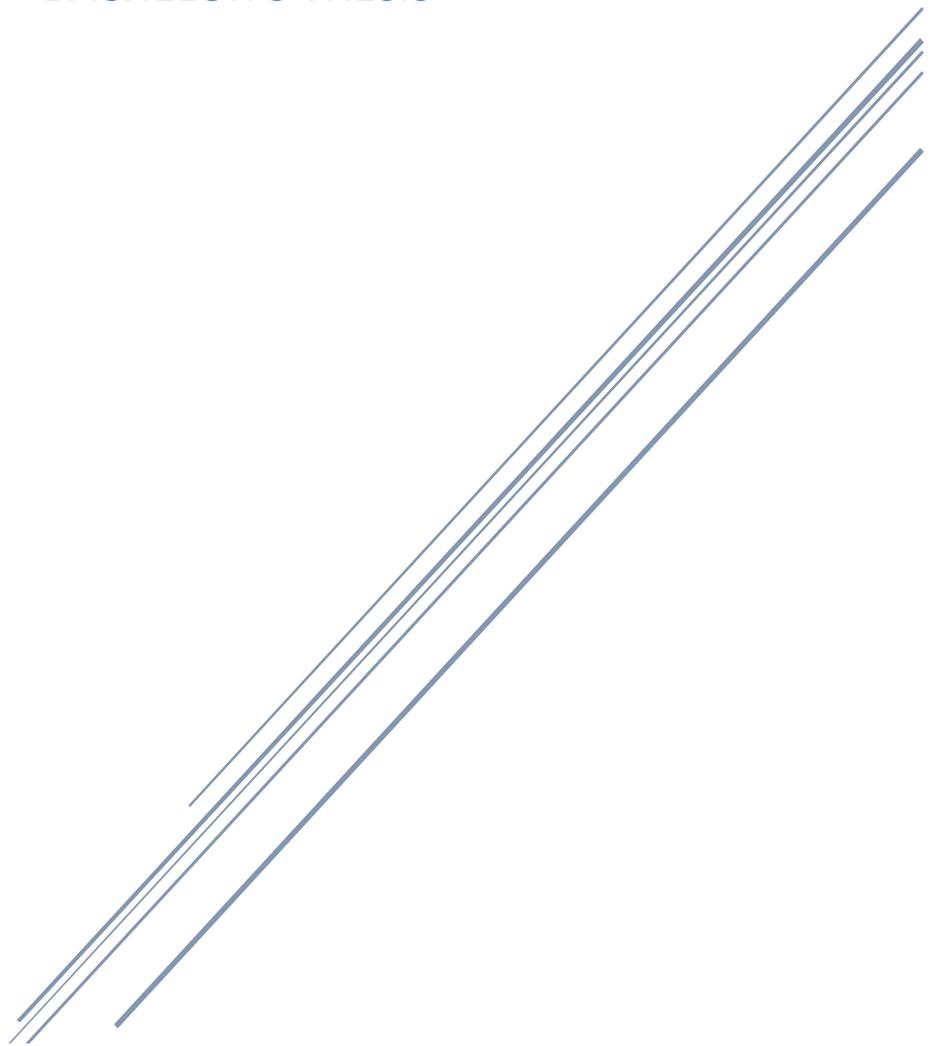


THE INFLUENCE OF ICONIC AND BEAT GESTURES ON SECOND LANGUAGE ACQUISITION

BACHELOR'S THESIS



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Introduction

Where do we start when learning a second language? Do we begin with the grammar, single words, or maybe even by trying to understand the content of entire sentences? This is certainly a central question to be addressed at the beginning of every second language acquisition process. It might be that this question has been raised more frequently in the past years due to globalization. Giddens describes globalization as “the intensification of world-wide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa” (2015, p. 64). Not only businesses operating internationally, but also individuals are being increasingly confronted with foreign cultures, habits, and obviously languages.

Therefore, it might be especially relevant to find an answer to the aforementioned question: Where do we start when learning a second language? And how could this language learning process be facilitated? It could be argued that simply trying to memorize the vocabulary of a foreign language could already facilitate language acquisition. Consequently, words might be easier to comprehend in a certain context, which could accelerate an understanding of grammar in a foreign language.

However, next to verbal communication, non-verbal communication might play a crucial role in language acquisition. Non-verbal communication consists of facial expressions, speech tone, pitch, the speed of speech, and gestures, among others. It might be that due to a non-verbal cue, words of a foreign language could be memorized more easily. Indeed, research has shown that using certain gestures can help in second language acquisition (for an overview, see Gullberg, 2006). This is not surprising, given that speech and gesture are closely related (McNeill, 1992), which is apparent in for example studies investigating how gestures influence language acquisition (see, for example, Goodrich & Hudson, 2009, or Valenzeno, Alibali, & Klatzky, 2003). However, there has been no research that has focused on the comparison between the effects of different types of gestures on second language acquisition. Therefore, the present study wishes to fill this research gap and examines which type of gestures poses to be the most influential facilitator of word memorization in second language acquisition.

Theoretical Framework

Due to globalization, the world has become more accessible for everyone. The restaurant around the corner offers culinary delicacies from Asia, the package sent from a friend overseas arrives the day after tomorrow, and flights to any possible destination have never been cheaper.

Next to this accessibility, globalization comes with the need to speak several languages. Not only while travelling is it beneficial to speak a language shared by the local population (e.g. English, as a global language), but especially during intercultural business processes, speaking multiple languages is crucial. Globalization forces international businesses to implement foreign languages in order to communicate with business partners. Therefore, globalization stimulates the urge of learning new languages.

As early researchers have already observed (see, Bever, 1981; Hurford, 1991; or Lenneberg, 1971), learning a new language might be more complicated than one may think it is – especially for adults. It is claimed that languages are learned best before the ‘critical period’ of life, which starts approximately after seven years old and ends with puberty. Therefore, these findings indicate that it might be an obstacle for people who have not learned a second language before their ‘critical period’ to communicate with people from other linguistic backgrounds. Considering the need of acquiring a new language these days has led to the question how second language learning can be facilitated for adults.

Asher and Price (1967) compared adults to children in their critical period while learning a new language. The results revealed that when adults used action responses while learning a new language, as the children did, their performance was equally as good. Action responses in this study were defined as movements, such as sitting down, walking, or jumping to support the meaning of utterances in a foreign language. Hence, the authors in this study used non-verbal communication to enhance language learning.

Allen points out that “nonverbals in the FL [foreign language] classroom can facilitate comprehension by activating concepts already stored as mental representations in the students’ memories” (1999, p. 472). She segments non-verbal communication into two separate divisions. The first type of non-verbal communication cues being phonemic clauses, such as intonation, pitch, pause, or rhythm. These phonemic clauses are used by the speaker to emphasize certain parts of an utterance. The second way of using non-verbal communication, according to Allen (1999), can be achieved by using illustrators. Ekman (1980) defines illustrators as “movements which are intimately tied to the content and/ or

flow of speech” (as cited in Allen, 1999, p.471). They serve to recall thoughts, memories or images that are relevant to the utterance.

Another, more common word for illustrators are gestures. Gullberg describes gestures as “symbolic movements related to ongoing talk and to the expressive effort or intention” (2006, p. 104). These two definitions both emphasize a close relationship between non-verbal communication cues and speech. It is often assumed that gestures exclusively support speech, such as when describing objects (Hostetter, 2011). However, gestures are not only deployed to self-direct, but also to function interactionally. Hence, speakers use gestures to keep the turn, give away turns, mark agreement, or direct attention (Gullberg, 2006). Furthermore, Krauss and Hadar suggest that “people often gesture when they are having difficulty retrieving illusive words from memory” (1999, p. 2).

Gullberg (2006) points out that gestures, compared to other non-verbal communication cues, look the least language-like, but yet are most related to speech. It is claimed that gestures and speech are performed at the same time; they are semantically as well as temporally related. This connection has led researchers to propose several theories about the relationship between speech and gestures. The ‘lexical retrieval hypothesis’ by Krauss and Hadar (1999), for example, states that gestures can facilitate speech through a concept in memory, therefore linking the connection between features of gesture and lexicals. On the other hand, Kita and Ozyurek (2003) proposed the ‘Interface Hypothesis’, which claims that gestures are the result of an interface representation of speech and thought. Despite the different and even opposing assumptions of the relationship between speech and gestures, it is inevitable to assume the existence of a relationship (Gullberg, 2006).

Different classifications of gestures have been made. However, the most commonly used classification in the field of gesture research was introduced by McNeill (1992). McNeill (1992) describes four types of gestures, namely iconics, metaphorics, deictics, and beats. *Iconics* are closely related to the semantic meaning of a word. Using iconic gestures means illustrating a physical object with your own hands. *Metaphorics* are closely related to iconics. However, they only represent abstract concepts, such as *knowledge*, and are therefore far more abstract than iconics. *Deictic* gestures are movements which are mostly executed with the pointing finger to point into a direction, to things, people, or the like. Lastly, *beat* gestures are recognized by their prototypical movement – a fast, mostly small, up and down movement of the fingers, or the entire hand.

The strong relation between speech and gesture has led several researchers to examine whether gestures may also facilitate learning, in general, but in particular learning a novel

language. By focusing on deictic gestures, Valenzo, Alibali and Klatzky (2003) investigated the effect of gestures on children's learning. Children with a mean age of 4.6 years were exposed to video lessons teaching about the concept of symmetry. Subjects were assigned to either a gesture-supported video or a video without the support of gestures. Even though the study did not focus on language learning in particular, the results do support a relation between gestures and learning. It proved that children performed better when the gesture-supported video was shown. In line with this, a study conducted by Tellier (2008) examined the influence of gestures on word memorization in second language learning of French children aged between four and five. Results have shown that children exposed to iconic gestures while being taught new words performed better than children who were not exposed to any kinds of gestures while learning a new language. Hence, it can be argued that gestures indeed facilitate second language acquisition for children. However, as mentioned earlier, it might be assumed that there is a difference in second language acquisition between adults and children acquiring a new language before their 'critical period'. In order to investigate a possible facilitatory effect of gestures on second language acquisition for adults, previous research on gestures and language learning for adults will be discussed.

Kelly, Barr, Church and Lynch (1999) investigated students to see whether there was a difference in their recall ability when exposed to daily social interactions in their native language accompanied by gestures or not. It appeared that students who were exposed to a speaker using iconic gestures performed better during a recall test compared to students who listened to the same instructor not using gestures. Based on these results, it can be confirmed that gestures not only support children's learning process, but also that of adults. Nonetheless, it remains unclear why gestures support language learning. In order to rule out that gestures have sole attention-seeking function, research has focused on examining the effect of congruent and incongruent gestures.

By conducting a recall test, Kelly, McDevitt, and Esch (2009) succeeded to find evidence for gestures being more than just an attention-seeker function. During a recall test, participants were asked to write down the English translation of a Japanese word pronounced by the instructor. Exposing participants to either congruent gestures (iconic gestures semantically in line with words) or incongruent gestures (iconic gestures not semantically in line with words) enabled the authors to dismiss the assumption that gestures only facilitate language learning due to their attention-seeking function. It was found that the recall of Japanese words was better for subjects exposed to congruent gestures compared to subjects exposed to incongruent gestures. Therefore, it was concluded by the authors that gestures

enhance language acquisition due to their “simultaneous semantic overlap of speech and gesture” (Kelly et al, 2009).

In a related study by Macedonia, Müller, and Friederici (2010), subjects were taught 92 novel words of an artificial corpus designed specifically for research purposes. By comparing word learning with congruent iconic gestures and word learning with incongruent, randomized gestures, the results add to the findings by Kelly et al. (2009). Again, it was confirmed that subjects exposed to congruent, iconic gestures performed better than subjects exposed to random gestures incongruent with the words being learned.

Much research in the field of gestures has been focused on iconic gestures and confirms that (iconic) gestures indeed facilitate second language acquisition. A possible reason for investigating mostly iconic gestures might be that “these gestures often contribute to an utterance’s intended meaning” (Kelly et al., 1999, p. 586). However, several researchers have directed their interest in the field of beat gestures as well. A study by Gluhareva and Prieto (2017) focused on beat gestures as a potential benefit for L2 (second language) pronunciation. Participants were exposed to either a pronunciation training accompanied by beat gestures or a pronunciation training without the existence of any gestures. The evaluation of five native speakers showed that accent was perceived as less native-like for participants not exposed to any gestures as compared to participants who were exposed to beat gestures during the experiment. Even though this paper focused on pronunciation and not on word learning, it nonetheless contributes to what is known about the link between beat gestures and learning. It revealed that using beat gestures can enhance pronunciation when learning a second language.

Research regarding beat gestures and language learning has focused mainly on children’s first language acquisition (see Austin & Sweller, 2014 or Igualada, Esteve-Gibert & Prieto, 2017); little is known about the relation between beat gestures and adults’ language acquisition. Aiming to fill this gap, Kushch et al. (2018) tested the effects of prosodic (in this case, focal pitch) and visual (in this case, beat gestures) prominence on second language word learning. Findings revealed that beat gestures presented with prosodic prominence led to the highest results in recall- and recognition tasks compared to beat gestures presented without prosodic prominence. The authors declared that “a visual prominence without the support of prosodic prominence represents quite an unnatural cross-modal combination” (Kushch et al., 2018, p. 994). Therefore, it may be concluded that focal pitch is an inevitable component of beat gestures.

With respect to the theoretical background it can be concluded that non-verbal behaviours, and gestures specifically, can play a significant role in second language acquisition. Indeed, several studies have provided evidence that second language learners are sensitive to iconic gestures in particular. Even though not much research has focused on beat gestures, the few studies that have been conducted indicate a facilitating effect of beat gestures on second language acquisition. In order to provide further evidence to existing studies, the first hypothesis of the present study aims to ascertain the existence of the facilitating effect of gestures on second language acquisition:

Hypothesis 1: Gestures facilitate the memorization of words in a second language compared to no gestures.

Even though it can be concluded from previous research that both iconic and beat gestures can have an influence on different aspects of second language acquisition, no research has yet attempted to compare the influence of various gestures on second language acquisition. Since second language acquisition has become more important in this globalized world, the results of this study might bring language teaching to perfection. Being aware of the most influential gesture facilitating language learning can assist language teachers as well as language learners. As discussed earlier, there is a similarity of iconic gestures to speech; they contribute to the intended meaning of an utterance (Kelly et al., 1999). Contrarily, beat gestures do not seem to contribute to the content of an utterance due to the fact that the movements lack syntactical meaning. Thus, the following will be hypothesised:

Hypothesis 2: Iconic gestures facilitate the memorization of words in second language compared to beat gestures.

Word memorization, as an essential part of learning a new language, was chosen as an accurate tool of measurement for this study for two reasons. First, acquiring novel words in a second language can be seen as the first step of mastering a new language. Further, it is crucial to acquire words in a new language before being able to apply and make sense of novel grammar structures. Second, since the translation of a word can only be correct or incorrect, it will be fairly easy to evaluate the findings.

Methodology

The methodology of the present experiment is based on the methodology by Kelly et al. (2009).

Materials

The stimulus material for the present study consisted of videos in which Tamil was taught, a language spoken in parts of Sri Lanka and India. The independent variable was gesture, and consisted of three levels: no gesture condition, beat gesture condition and iconic gesture conditions. The stimulus material consisted of three videos. Each video showed the same instructor; only the gesture production was different for each condition. In the videos, the instructor pronounced two sequences of 10 Tamil words preceded by Dutch translations. The sequences of each word and its translation was repeated twice. For example, the instructor pronounced the following: “Bril betekent Kaṇṇāṭi. Bril betekent Kaṇṇāṭi.” (“Glasses means Kaṇṇāṭi.”). For the gesture conditions only, a gesture produced by the instructor supported the Tamil word. Hence, in the beat gesture condition, the Dutch word was followed by its Tamil translation supported by a beat gesture. Beat gestures were always performed during the stressed syllable of each word by the instructor moving the side of her hand to the palm of her other hand. Below, a screenshot is displayed in which the instructor performs a beat gesture while pronouncing the Tamil word “vīṭu” (see figure 1). In the iconic gesture condition, the Dutch word was followed by a Tamil translation supported by an iconic gesture. Since each word required a different iconic gesture, each movement of the iconic gestures was discussed before implementing it the experiment. A screenshot displaying the instructor pronouncing the Tamil word “vīṭu” can be found below (see figure 2). In all three conditions, no gesture was produced while the Dutch word was pronounced. In table 1, an overview of the Dutch words and their Tamil translation which were included in the video instructions is provided.



Figure 1: Instructor performing beat gesture

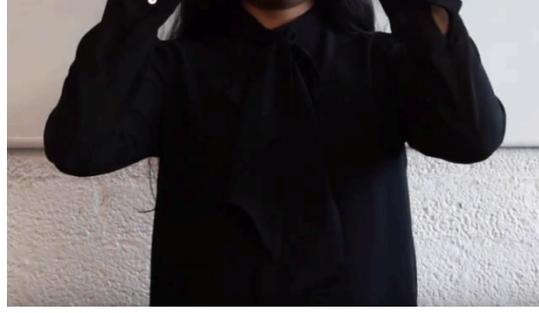


Figure 2: Instructor performing iconic gesture

Table 1: Overview of Dutch words with their Tamil and English translation

Words (in Dutch)	Tamil translations	English translations
Bril	Kaṇṇāṭi	Glasses
Boek	Puttakam	Book
Konijn	Muyal	Rabbit
Bal	Pantu	Ball
Driehoek	Mukkōṇam	Triangle
Huis	Vīṭu	House
Schaar	Kattarikkōl	Scissors
Hart	Itayam	Heart

Olifant	Yāṇai	Elephant
Krullen	Curuḷ	Curls
Vogel	Paṛavai	Bird
Hoed	Toppi	Hat
Gitaar	Kittār	Guitar
Kom	Kiṇṇam	Bowl
Fluit	Pullāṅkuḷal	Flute
Berg	Malai	Mountain
Regen	Maḷai	Rain
Plat	Piḷāt	Flat
Helling	Cāyvu	Slope
Snor	Mīcai	Moustache

Subjects

A total of 91 Dutch native students took part in the experiment (age: $M = 20.71$, $SD = 1.69$; gender range: 41 male, 50 female). As discussed earlier, it has been claimed that language learning is easiest before the start of puberty (see, Bever, 1981; Hurford, 1991; or Lenneberg, 1971). Therefore, an age range between 20 and 30 was required for the experiment in order to avoid participants being still in their ‘critical period’ as this could negatively affect the results. With approximately 88% of the participants doing their bachelor’s, only the minority

of the participants were doing their masters. 2% of the respondents failed to indicate their current level of education. In order to assure that previous knowledge of the language could not affect the results, none of the participants had any prior knowledge of Tamil.

To assess the similarity of participant characteristics in all gesture conditions, the following analyses were conducted. A one-way analysis of variance showed no significant effect of Gesture Condition on age ($F(2,88) < 1$).

A Chi-square test showed no significant relation between gesture condition and gender ($X^2(2) = .068, p = .967$) and no significant relation between gender condition and educational level ($X^2(2) = 2.29, p = .318$). Therefore, it can be concluded that the characteristics of age, gender and educational level were distributed equally in all gesture condition groups.

Design

A between-subjects design was used with the independent variable gesture consisting of three levels: a no-gesture condition, an iconic gesture condition and a beat gesture condition. All 91 participants were randomly distributed across all three conditions.

Instruments

The dependent variable of the study was the number of words which were memorized correctly by the participants. To test this, a word-recall-task was conducted by the participants, which was based on Kelly et al. (2009). Even though Kelly et al. (2009) also conducted a word-recognition-task, it was consciously decided to omit it in the present study. The recognition of words simply implies that a word is recognized as something that has been seen or heard before. Instead, recalling a word implies the memorization of words. Given the focus on L2 lexical acquisition, the word-recall task only was of main relevance to this study. In a video following the Tamil input, the same instructor appeared for the Word-Recall-Task (from now on referred to as WRT). The instructor repeated each Tamil word, but this time without the accompanying Dutch translations. To exclude external factors, such as word order memorization, the word order as compared to the order in which the words were taught was randomized. After each word was pronounced by the instructor, the participant had 15 seconds to write down the Dutch translation on a sheet of paper lying in front of him/her. To enable the participants these 15 seconds, a pause after each word was included when editing the videos beforehand. During the WRT the instructor was visible in the video, but no gestures were used. Before handing the answer sheet to the experimenter, participants were

also required to provide some demographic information. The words given on the answer sheet were coded as to whether they were correct or incorrect translations of the Tamil words. Since the experiment did not examine the ability of spelling, words which were spelled incorrectly but still gave the correct translation to the Tamil counter word, were measured as correct.

Procedure

Each participant was tested individually. After recruiting a participant at Radboud University by simply asking if they were willing to join the experiment in return of incentives (Chocolate bars or Haribo) the participant was guided to a room reserved for the purpose of the experiment. The participant sat down in front of a computer screen. Before starting the experiment, the participant was required to read the instruction (see appendix A), which were provided on a sheet of paper in front of him/her, carefully. Subsequently, demographic information was required to be completed on a separate sheet of paper, the answer sheet (see appendix B). Apart from the aim of the study dealing with acquiring a second language, no further information was given, which means that no information about gestures being the centre of interest was revealed. After each participant had read the instruction and filled out the answer sheet, he/she was required to lift his/her hand in order for the instructors to take away the instruction paper. By doing so, the distraction and temptation to check the instructions during the experiment was avoided. Subsequently, the participant put on headphones, which were owned by the university and therefore the same for each participant. Each participant was randomly assigned to one of the three gesture conditions. Every video, regardless of the gesture condition, started with a sequence of 10 Tamil words preceded by their Dutch translation pronounced by the instructor. After viewing 10 Dutch words and their Tamil translations the first part of the WRT was conducted. During the WRT, participants had to fill in their answers on the answer sheet in front of them. After completing the WRT of the first sequence, the second sequence began. The second part of the experiment again consisted of a sequence of 10 Dutch words and their Tamil translation and was followed by the second part of the WRT. During the WRT no gestures were performed for any of the conditions; in all groups the procedure was the exact same. The entire experiment did not take longer than 15 minutes. After the second part of the WRT, an indication of the experiment being completed appeared on the screen. Participants were again required to lift their hand in order indicate that they completed the task. The answer sheet was taken by the experimenter; participants were offered treats and were free to leave the room. In case

participants asked about the aim of the study after conducting the experiment, they were given the opportunity to provide the experimenter with an email address to be informed about the purpose after the entire experiment had been finished.

Statistical treatment

The data was gathered using SPSS (version 24), a statistic and analysis software. In order to assess the differences between all three conditions, a one-way ANOVA test was conducted.

Results

The differences between all three gesture conditions were analysed: No gesture condition (NGC), beat gesture condition (BGC), and iconic gesture condition (IGC). In table 1 below, the mean number of correct answers and standard deviations of each condition are presented.

Table 1: Mean and standard deviation (in brackets) of correct answers (min = 0, max = 20) given in NGC, BGC & IGC

Gesture Condition	M (SD)
No Gesture Condition	9.74 (2.86)
Beat Gesture Condition	9.29 (2.64)
Iconic Gesture Condition	11.37 (3.19)

A one-way analysis of variances showed a significant effect of gesture condition on number of correct answers ($F(2, 88) = 4.52, p = .014$). Participants in the iconic gesture condition ($M = 11.37, SD = 3.19$) answered more questions correctly compared to participants in the beat gesture condition ($p = .015$, Bonferroni-correction; $M = 9.29, SD = 2.64$). However, there was no difference of the number of correct answers between participants in the no gesture condition ($M = 9.74, SD = 2.86$) and participants in the beat gesture condition ($p = 1.00$ Bonferroni-correction) and iconic gesture condition ($p = .095$, Bonferroni-correction).

Discussion and Conclusion

Due to globalization, mastering multiple languages has become more crucial than ever in order to successfully communicate at an intercultural level. Therefore, investigating methods in order to facilitate language learning can be very beneficial, especially for companies engaging in international business.

The purpose of the present study has been to compare the influence iconic and beat gestures can have in terms of second language learning. In particular, it was hypothesized that gestures have the ability to facilitate the memorization of words in a second language compared to no gestures at all. Further, it was tested whether iconic gestures facilitate the memorization of words in a second language compared to beat gestures. In order to assess the differences of each gesture condition, participants were asked to watch a video of an instructor pronouncing Tamil words and their Dutch translation, accompanied by either iconic gestures, beat gestures or no gestures.

Results revealed that there is indeed a significant effect of the type of gesture used for language learning; it showed a significant difference between the performance of participants in the beat gesture condition compared to the performance of participants in the iconic gesture condition. In other words, participants who saw the video supported by iconic gestures recalled more words than participants who watched the video supported by beat gestures. These results are in line with hypothesis 2. However, the results did not show a significant difference between the performance of participants in the gesture conditions and the performance of participants in the no gesture condition. Hence, no evidence was found supporting hypothesis 1. Thus, even though the results confirm that iconic gestures enhance language learning more than beat gestures, there is no evidence confirming the usage of gestures facilitates language learning more than an absence of gestures.

The findings of the present study oppose some findings of previous studies examining the influence gestures have on second language learning. Tellier (2008), testing the influence of iconic gestures on second language acquisition with French children, found that children exposed to iconic gestures performed better than children exposed to no gestures. Similar results were detected by Kelly et al. (1999) and Kelly et al. (2009). Students exposed to language accompanied by gestures were able to recall words better than students exposed to language performed without the presence of gestures. Contrarily to the present study, these results prove an effect of gestures on language acquisition. In particular, the differences

between the results by Kelly et al. (1999, 2009) and the present study are interesting due to the similarity of participants being adults rather than children as studied by Tellier (2008).

Nonetheless, the mean scores of the present study do in fact differ, even though a difference between the no gesture condition and the gesture conditions could not be proved statistically. Participants in the iconic gesture condition scored a mean slightly above 10, whereas participants in the no gesture condition only scored a mean below 10. Thus, it can be argued that even though no statistically significant difference could be found, there is still proof that participants in the no gesture condition scored lower than participants in the iconic gesture condition.

However, looking at the mean score of participants in the beat gesture condition, it is surprising to observe that the mean score of the beat gesture condition is lower than the mean score of the no gesture condition. These findings oppose other studies which exclusively found a support of beat gestures facilitating language acquisition (see Kushch et al. 2018, Austin & Sweller 2014, or Igualada Esteve-Gibert & Prieto, 2017). Nonetheless, these differences in findings may be explained by the words that were chosen to be included in the experiment. The pronunciation of some Tamil words appeared to be similar to their Dutch translation. The pronunciation of the Dutch word “gitar” (guitar) in Tamil is nearly the same. Hence, Tamil words with a similar pronunciation in Dutch were likely to be recognized more easily by participants and therefore translated more correctly compared to other words. Therefore, it may be possible that participants easily recalled “gitar” regardless the gesture condition. This could explain the surprisingly high score of the no gesture condition.

Furthermore, it might be possible that the camera setting of the experiment influenced the findings as well. In order to ensure that no hand movements influenced the outcome of the no gesture condition, it was decided to position the camera closer to the instructor in order to avoid recording any unconscious hand movements. However, White (1995) states that facial expressions trigger preattentive processing. The author defines preattentive processing as automatic and may therefore happen unconsciously. Thus, it could be argued that the closer position of the camera to the instructor in the no gesture condition compared to the other conditions reinforced attention. As a conclusion, participants in the no gesture condition may have paid more attention to the task and therefore scored higher than anticipated.

After all, a possible and fairly simple explanation for the scores of the no gesture condition being higher than the beat gesture condition might be that beat gestures distract participants. It is possible that their constant movement creates confusion and distracts the listener from the actual task.

Since the present study does show a difference between beat and iconic gestures in terms of second language acquisition, the fact that beat gestures may cause distraction can also be a possible explanation for this particular finding. Iconic gestures are semantically related to speech (Kelly et al., 1999). Thus, they might provide more support while learning a second language compared to beat gestures.

Not only a possible distraction might explain the lower mean score of the beat gesture condition compared to the mean score of the iconic gesture condition, but also their lack of intended meaning. For instance, when the instructor forms an imaginary hat with her hands on the top of her head while saying the Tamil word “Toppi” (English: hat), the observer can immediately link the iconic gesture to the meaning of the word “Toppi”. Contrarily, a quick up and down movement of a beat gesture while pronouncing “Toppi” does not reveal anything about the intended meaning of the pronounced word. Therefore, the present study proves that the combination of gestures related to the intended meaning of the pronounced word do indeed facilitate second language acquisition.

The possible explanations for the findings acknowledge some limitations of the present study. The camera setting in the no gesture condition differed to the camera setting in the iconic and beat gesture condition, and the pronunciation of some Dutch words which were chosen to be included in the experiment appeared to be semantically similar to their Tamil translation. Hence, a replication of the present study aiming to eliminate its limitations may give further insight in the facilitating effect of iconic and beat gestures on second language acquisition.

The results of the present experiment give further insight in the field of gestures and second language acquisition. Since no study has been conducted before to examine the differences between iconic and beat gestures, this study reveals novel findings. Especially in the field of education, the outcome of the present study can be beneficial. Lecturers, who want to facilitate second language learning for their students, now know that the support of gestures is not necessarily useful. However, if gestures are used, iconic gestures facilitate second language learning more than beat gestures.

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Appendices

Appendix A

Instruction sheet (Instructie pagina)

Welkom bij ons thesis experiment.

Wij zijn 6 studenten van de Bacheloropleiding International Business Communication (IBC). We zijn geïnteresseerd in de mate waarin mensen woorden leren van een nieuwe taal.

Hier volgen de instructies voor het experiment, lees deze alstublieft goed door.

- Begin met het invullen van de persoonlijke gegevens op het invulformulier op het papier dat voor u ligt.
- U ziet zometeen een video. In het eerste deel van de video worden u 10 woorden aangeleerd uit Tamil (een taal die gesproken wordt in Sri Lanka en India). Na deze 10 woorden, volgt een Word Memorization Test (WMT). In deze test, krijgt u meerdere Tamil-woorden te horen. Na elk woord krijgt u 15 seconden een zwart scherm te zien. Gebruik deze tijd om de Nederlandse vertaling van het Tamil-woord op te schrijven op het invulformulier dat voor u ligt. Hierna zal de video verder gaan, waarin u 10 andere woorden leert. Ook hierna, zal weer eenzelfde test gehouden worden.
- Dit experiment wordt individueel uitgevoerd. Concentreer u op uw eigen scherm.
- Schrijf alleen tijdens de Word Memorization Test.
- Pauzeer de video niet.
- Wanneer u 'Einde' ziet staan, steekt u dan alstublieft uw hand op en wacht op verdere instructies van de onderzoekers.
- **Let goed op! Het is geen makkelijke test, dus luister aandachtig naar de woorden.**

Steek uw hand op als u de instructies heeft gelezen. Wij komen vervolgens de instructies ophalen. Heeft u vragen, dan is dit het moment om ze te stellen.

Nadat de instructies zijn opgehaald, mag u uw koptelefoon opzetten en op 'Enter' drukken om te beginnen met het experiment. Veel succes en plezier!

Appendix B
Answer Sheet (Invulformulier)



Invulformulier

Deelnemer nummer:
Leeftijd:
Geslacht:
Onderwijsniveau:
Studie/baan:
Welke talen spreekt u?:
.....
.....

Vul hieronder uw antwoord in:

- 1:
- 2:
- 3:
- 4:
- 5:
- 6:
- 7:
- 8:
- 9:
- 10:
- 11:
- 12:
- 13:
- 14:
- 15:
- 16:
- 17:
- 18:
- 19:
- 20: