

Master's thesis

Gesticulation in university lectures:

an L1 vs. L2 approach

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Abstract

The changing nature of university programmes in the Netherlands has caused a debate about teaching Dutch students in English. Is L2 English-taught education problematic or could it be good for intellectual development and career prospects? This thesis takes a preliminary look at this issue, focused on the communication style of a Dutch lecturer teaching the same course in both Dutch and English. Specifically, two lectures – one in L2 English and one in L1 Dutch – were analysed with regard to (pointing and beat) gestures produced by the lecturer. Prior studies have shown that people generally produce more gestures in their L2 and that gestures are of extreme importance for development and learning. The results of this thesis study confirm its main hypothesis: the lecturer gesticulated more frequently in L2 English than in L1 Dutch. Because there were no major differences in lecture content, it may thus be true that the lecturer compensates for a potential ‘lack’ of linguistic competence in her second language through the use of gestures. Consequently, English-taught university programmes need not necessarily be a problem for educational quality in the Netherlands. Future studies should examine this further.

1. Introduction

In the Netherlands, a debate has been going on about English-taught university programmes. On the one hand, it has been argued that it is a good idea to teach Dutch people in English, as it can improve the students' English and because some work fields are more international than others (e.g. NOS, 2018, July 6). Additionally, because Dutch and English are similar in various ways, it may be relatively easy for Dutch students to understand English-taught lecture content. On the other hand, however, some worry that the quality of English spoken by non-native English lecturers in The Netherlands is not always good enough at universities, thus harming the quality of education (e.g. Teuling, 2017, July 11; NOS, 2018, July 6). The question whether or not classes taught in English by Dutch lecturers have positive or negative effects on the quality of education has yet to be answered.

Teaching is a way of sharing information, and is therefore a form of communication. Communication is an important aspect of everyday life and can be found everywhere. Face-to-face communication, such as during university lectures, consists of both verbal and non-verbal cues (e.g. Iverson & Goldin-Meadow, 2005; Liddell, 2000). One type of non-verbal cues are gestures. These hand shapes and movements "convey information to a listener" (Krauss, Morrel-Samuels & Colasante, 1991, p. 743), both when they are used on their own, such as with the well-understood "thumbs up" gesture in western cultures (Cassell, 1998), as when they accompany speech (Bonaccio, O'Reilly, O'Sullivan & Chiochio, 2016). Hand gestures can be used by the speaker either to convey information explicitly or as a helping mechanism to find a word (Morell-Samuels & Krauss, 1992). Various linguists have listed different categories of gestures (e.g. Maricchiolo, Gnisci, Bonaiuto & Ficca, 2009; McNeill, 1992). Many differentiate between (a) emblems, which can communicate on their own, (b) ideational gestures, which are related to the verbal content, and (c) rhythmic or conversational gestures, which are connected to the structure of speech (e.g. Maricchiolo et al., 2009; Maricchiolo, Gnisci & Bonaiuto, 2012). These different categories are also often divided up into multiple gesture types, creating a multitude of detailed gesture categories, each with their own potential forms, purposes and uses (e.g. McNeill, 1992). In short, gesticulation, i.e. the production of gestures by speakers, is an important and inherent part of communication and has therefore been studied and described in many different contexts.

In educational contexts specifically, communication is extremely important as it plays a role in whether or not students understand course content. Lazaraton (2004) suggests that gestures are an important communicative factor in classrooms. Additionally, Gullberg (2008) summarizes previous studies, suggesting that both seeing and producing gestures can benefit learning. Specifically, gestures can be seen as vital for learning (Wagner Cook, Mitchell & Goldin-Meadow, 2008). Indeed, research has shown that instruction that is accompanied by gestures facilitates learning (Church, Ayman-Nolley & Mahootian, 2004; Perry, Berch & Singleton, 1995; Singer & Goldin-Meadow, 2005; Valenzeno, Alibali & Klatzky, 2003). In early development, for example, gesturing can aid in children's learning to count (Alibali & DiRusso, 1999). Additionally, a teacher's gestures can help students understand speech, specifically if the verbal message is ambiguous or difficult (Valenzeno et al., 2003): gestures may be used as an extra source of information and provide new perspectives (Corts & Pollio, 1999). McNeill (1985, p. 350) writes, for example, that a combination of speech and gesture can give "two simultaneous views of the same process", meaning that besides speech gestures form an additional window into the speaker's mind. In particular pointing gestures – which are a type of ideational gesture, often referred to as deictic gestures (e.g. Morrel-Samuels & Krauss, 1992), i.e. movements whereby the arm or hand moves towards a specific object or location when that specific object or location is referred to (Alibali, Kita & Young, 2000; Nickel & Stiefelhagen, 2003) – can help comprehension, as they can play a role in connecting abstract speech to the physical world (Roth, 2001; Valenzeno, Alibali & Klatzky, 2003).

Besides gestures being useful during instruction in educational contexts, they can also play a role in a different learning scenario, namely in second language learning. Research shows that the use of gestures – specifically, beat gestures, which are a type of conversational gesture – can influence second language pronunciation learning (Gluhareva & Prieto, 2017). Indeed, observing beat gestures can make a student's L2 accent sound more native-like. This again shows that gestures can aid learning, in this case with regard to (second) language development. Moreover, beat gestures emphasize the rhythm and prosody of speech (McNeill, 1992). Citing multiple studies, Gluhareva and Prieto (2017) suggest that rhythm is particularly important in the processing of verbal content. As they are related to the rhythm of speech, beat gestures may thus be an important part of teachers' interaction with students. Previous studies also show that the rhythm of speech of people speaking a foreign language, or second language, may be of particular importance for the listener's perception and

comprehension (e.g. Anderson-Hsieh, Johnson & Koehler, 1992). Additionally, research has shown that frequency of gesture production differs when someone talks in their mother tongue or when they speak a foreign language. Generally, gesture frequency seems to be higher when speakers use a language other than their native language (e.g. Sainsbury & Wood, 1977). This may be to compensate for potential linguistic shortcomings, for example.

With the recent debate about the quality of English-taught university programmes in The Netherlands, specifically in courses taught by Dutch lecturers, in mind, and the knowledge we have on the effect gestures can have on learning, questions about a potential relation between the two remain. The topic of gesture use in L1 Dutch and L2 English classrooms is understudied. Previous research has shown that speakers generally produce more gestures in their L2 than in their L1, but it is unknown whether this difference is also apparent between Dutch-taught lectures and English-taught lectures by Dutch lecturers. If this difference also holds in this context, one could argue that potential linguistic shortcomings in a lecturer's L2 may be compensated for with gestures, or that students may actually understand content better because of the potential helpful role gestures can play. However, before this can be studied, it is important to know whether there is a difference between L1 and L2 gesturing in the lecture setting in The Netherlands. Specifically, this study will focus on the use of beats and deictic gestures in lectures taught in L1 Dutch and L2 English. Because Dutch and English are similar rhythmically, and because beats are connected to the rhythm of speech in that they indicate it, it can be assumed that Dutch speakers of English will appropriately time their production of beat gestures. Additionally, because deictic gestures connect the verbal to the physical context, thus potentially making verbal content more understandable, it can be assumed that they will be used by lecturers in both Dutch and English language settings.

2. Literature review

This section describes previous studies that can be related to the current topic of gesticulation in educational contexts wherein a teacher communicates either in her L1 or her L2. It starts by explaining the notion of 'gestures', describing different categories and types of gestures, after which it moves to research on gesturing in educational settings. It ends with the hypotheses that form the basis of this study.

2.1. Gestures

Although non-verbal communication includes many different bodily movements, gestures are a prominent form of non-verbal communication (e.g. Iverson & Goldin-Meadow, 2005; Liddell, 2000). The term 'gestures' refers to situations when someone uses their body to express something (e.g. Hostetter & Alibali, 2008). According to McNeill (1992, p. 78), gestures can be defined as "all visible movements by the speaker", excluding self-touching movements and "object-manipulations". According to Graziano and Gullberg (2013), gestures are connected to speech in the sense that they form different ways of communicating related information. Research has shown that the use of non-verbal communication, specifically gestures, already develops early in life: children produce gestures even before they can speak (Iverson & Goldin-Meadow, 2005). Particularly important are hand gestures, i.e. hand movements, as they "convey information to a listener" (Krauss, Morrel-Samuels & Colasante, 1991, p. 743). Hand gestures can either be produced by the speaker to express an idea or they can function as a helping mechanism for the speaker to find a word (Morell-Samuels & Krauss, 1992; Sueyoshi & Hardison, 2005). Generally, listeners can interpret information from hand gestures, whether these gestures are used on their own or accompany verbal utterances (Bonaccio, O'Reilly, O'Sullivan & Chiochio, 2016).

In general, gestures are said to be made up of multiple phases (e.g. Kita, Van Gijn & Van der Hulst, 1998; Roth, 2001). The first phase is the preparation phase. The hands start in a resting position, from where they can be moved to gesture. The preparation phase is the movement of the hands away from the resting position and into gesture space (Roth, 2001). After preparation follows the arguably most important phase: the stroke. The stroke is the actual effortful movement that constitutes the meaning or function of the gesture, and the only element that always has to occur in order for a movement to be called a gesture (Kita, Van Gijn & Van der Hulst, 1998). After the stroke, the hands can return to the initial rest position, forming the recovery phase (Roth, 2001) or the retraction (Kita, Van Gijn & Van der Hulst, 1998), or they can stay in a position that then becomes the new rest position, from where the next gesture starts. Clearly, thus, the stroke forms the most essential and meaningful part of a gesture, and is, therefore, an important phase to identify.

2.2. Gesture categories

Various linguists have listed different categories of gestures (e.g. Maricchiolo, Gnisci, Bonaiuto & Ficca, 2009; McNeill, 1992). Most researchers, however, recognize and/or refer to the following categories: (a) emblems, or conventional gestures, (b) ideational gestures, and (c) conversational (rhythmic) gestures.

2.2.1. Emblems

Some hand gestures can be understood by themselves, without any accompanying verbal utterance. For example, the “thumbs up” gesture is generally understood as a positive comment on something in western cultures (Cassell, 1998). Additionally, in some cultures the gesture created by touching the tip of the thumb to that of the index finger of the same hand, thus creating a ring, can be understood as meaning that something is positive, too (Gullberg, 2006). Such gestures are culture-specific. They are often referred to as “emblems” (Gullberg, 2006). Emblems, sometimes also labelled ‘conventional’ (e.g. Chan & Iacono, 2001; Gullberg, 2006; Iverson & Goldin-Meadow, 2005) or ‘quotable’ (e.g. Kendon, 1986) gestures are different from other gesture types because they can often be understood on their own, without speech.

2.2.2. Ideational gestures

Another category of gestures that is often cited is the category of ideational gestures. Ideational gestures are those hand movements that are related to the verbal content of speech (McNeill, 1992). One type of ideational gesture is the iconic gesture, which “pictorially represents particular concepts” (Murphy, 2003, p. 33). If someone is telling a story, and in that story they were typing on a keyboard, for example, the re-enacting of a typing motion in the air can be seen as an iconic gesture. Another example of an ideational gesture is the so-called metaphoric gesture category (e.g. Chui, 2011; Cienki, 1998). Metaphoric gestures “turn abstract ideas and discourse structures into the visual and embodied” (Lhommet & Marsella, 2016, p. 788), therefore making abstract concepts more easily understandable. An example of a metaphoric gesture is when someone is talking about an important notion and they pretend to be carrying a large or heavy object to illustrate its importance (Lhommet & Marsella, 2016). Additionally, the pointing (‘deictic’) gesture is also included in the ideational category (Hadar,

Wenkert-Olenik, Krauss & Soroker, 1998). Deictic gestures are movements whereby a body part moves towards a specific object or location when that specific object or location is referred to in speech (Alibali, Kita & Young, 2000; Nickel & Stiefelhagen, 2003).

A deictic gesture can be produced by moving any body part to point to something. Thus, a speaker can nod in a direction to point to something, using their head, but they can also move their eyes, for example (Gullberg, 2004). In some contexts, even, pointing the lips in a certain direction is also a way of indicating or referring to something. Enfield (2001) labels this form of pointing 'lip-pointing' and writes that it can involve movement of other facial parts as well, including the chin and eyebrows. This shows that deictic gestures consist of many different possible ways of pointing, ranging from the use of just gaze, to a combination of facial movements and other body parts.

One could argue that the most straightforward way of pointing consists of using the hand(s). However, when it comes to deictic gestures produced by the hand(s) or arm(s), there are also multiple different embodiments. For instance, Kendon and Versante (2003) have written about pointing by extending the index finger, pointing with the thumb and pointing using the whole hand, whereby the hand is opened and, thus, not closed in a fist. Although these different embodiments may be related to different contexts, they all include the movement of the hand (and the lifting and/or moving of the arm) to point at objects or in specific directions, and thus all can be captured with the term "deictics". Deictics are expected to be produced by lecturers because of their potential usefulness in referring to slides used during the lecture, for example.

2.2.3. Conversational gestures

The last broad category of gestures are gestures that are connected to the structure of speech. This category of gestures is often referred to as rhythmic or conversational gestures. An example of a conversational gesture is the "beat", a small gesture that places emphasis on verbal content, and thus is linked to the rhythm of speech (McNeill, 1985). Beats are mostly known to be used specifically to emphasize things (McNeill, 1985). Beats are described in the literature on gestures as "formless handwaves" (Cassell, Vilhjálmsón & Bickmore, 2013, p. 173) and as "small baton like movements which do not change in form with the content of accompanying speech" (Cassell, 1998, p. 198). Cassell (1998) provides an example of what a beat can look like, writing that it can be created by a flicking movement of the hand(s) going

up or down. This form is also described by Cassell, Vilhjálmsón and Bickmore (2013) in their publication about a non-verbal expression toolkit. Clearly, then, beats can be seen as flicking movements of the speaker's hand(s). Beats are a type of interactive gesture, which are "improvised during conversation" (Bavelas et al., 1992, p. 470). It is thus a gesture type that can be used rather frequently and easily, whether on purpose and knowingly or not. Because of this and their emphasizing quality, beats are expected to be produced by lecturers as well.

2.3. Gestures in educational contexts

It has been suggested that gestures play an important role in classroom settings (e.g. Lazaraton, 2004). In fact, research has shown that both perceiving gestures and producing them can have positive effects on learning (for an overview, see Gullberg, 2008). Specifically, they can "play a causal role in learning" (Wagner Cook, Mitchell & Goldin-Meadow, 2008, p. 1047): they can be vital for the absorption of knowledge. Wagner Cook, Mitchell and Goldin-Meadow (2008) have speculated that this may be because gestures can provide learners with "an alternative, embodied way of representing new ideas" (p. 1047). Indeed, many studies have shown that gesturing can aid in instructional settings (e.g. Church, Ayman-Nolley & Mahootian, 2004; Perry, Berch & Singleton, 1995; Singer & Goldin-Meadow, 2005). For instance, Singer and Goldin-Meadow (2005) conducted an experiment in which children were instructed about mathematical problems. Some children were instructed without any gesture input, and others were divided over two gesture conditions: one in which the gestures matched the mathematical solution provided in speech, and one in which the gestures matched a different, but also correct, solution to the one provided in speech. The researchers found that mismatching gesture and speech worked significantly better than both matching gesture input and no gesture input at all. They thus suggest that gestures which provide additional information to speech can aid in instructional education.

Additionally, gesturing can have a positive effect on children's learning to count (Alibali & DiRusso, 1999). Alibali and DiRusso (1999) had 20 children count chips, and studied whether there were differences between a situation in which (a) the children were not allowed to gesture, (b) they gestured, and (c) an external entity – a puppet – visibly gestured when the children counted, but the children themselves did not gesture. They found that counting was more accurate in the latter two situations, showing that gestures, either perceived or

produced, can help counting. The researchers suggest that the reason for this difference is that gesturing can help children keep track of the counted items while also helping them to coordinate the items with their speech, i.e. the spoken numbers.

A study by Wagner Cook, Mitchell and Goldin-Meadow (2008) also suggests that gesturing can help children in learning. The researchers conducted an experiment in which they manipulated the gestures children produced while they were being instructed about a mathematical issue they had not yet encountered. The children were asked to solve mathematical problems after instruction, and were asked to either explain in speech, gesture or a combination of the two. The researchers found that repeating what the instructor had told them in speech did not seem to help the children “retain knowledge they had apparently learned”, unless they accompanied their verbal explanation with gestures (p. 1050). Children who had explained with gesture only also appeared to retain more knowledge than children in the speech only condition. Thus, it seems that gesturing can help children remember information better. Indeed, this may be because gestures can provide learners with an extra way of conveying and receiving information (Wagner Cook, Mitchell & Goldin-Meadow, 2008).

Based on previous studies, it seems that a teacher’s gestures could potentially help students understand speech. This is especially true if the verbal message is difficult or ambiguous (Valenzeno et al., 2003). Research has shown that complex speech will be accompanied by more gestures. For example, a study by Sainsbury and Wood (1977) focused on gesture frequency. Although the researchers initially focused on differences between French and English speakers in terms of frequency of gesture production, they also concluded that more gestures are produced when speech is complex, and that “descriptive speech elicits more gesture” compared to speech that is more focused on emotion (p. 63). Indeed, gestures may be used as an extra source of information when speech is difficult, thus providing potential new perspectives (Corts & Pollio, 1999; McNeill, 1985).

It is important to note that gestures can not only have a positive effect on children’s learning in classroom settings but that gesturing can also help teachers. From the teacher’s perspective, frequent gesturing can help information processing (Iverson & Goldin-Meadow, 2005). Indeed, by utilizing both verbal and non-verbal communication channels instead of speech only, less pressure is placed on working memory, as producing gestures is said to “put less strain on memory than producing a word” (Iverson & Goldin-Meadow, 2005, p. 370). Thus, it may require less energy to use words in combination with gestures than using only words

when being required to explain information. Consequently, when using gestures, more energy and space are left for thinking and instructing, thus relieving teachers of some potential complexity and making explanation easier for them.

Research has shown that specific categories of gestures may be of particular importance in teaching contexts, namely deictic and beat gestures.

2.3.1. Deictic gestures in education

Focusing specifically on deictic gestures in education, research has shown that deictic gestures can help comprehension of verbal content. For instance, Valenzeno et al. (2003) conducted an experiment in which children were taught about symmetry in shapes. Children were assigned to watch a video lesson either with verbal explanation in combination with deictic gestures or with verbal explanation only. After watching the video, the children were asked to match halves of shapes together to complete them, to assess whether the shapes were symmetrical or not and to explain the logic behind their assessment. The researchers found that children provided significantly more correct answers when they had watched the video lesson including gestures, suggesting that deictic gestures can indeed help in educational contexts. Valenzeno et al. (2003) suggest that the reason for this aiding function is that deictics can play a role in connecting abstract speech to the physical world.

2.3.2. Beat gestures in education

Research has shown that the use of another type of gestures may play a role in the learning of a second language. Specifically, beat gestures can affect second language pronunciation learning (Gluhareva & Prieto, 2017). Gluhareva and Prieto (2017) conducted an experiment in which Catalan students who were learning English were shown video material of an L2 instructor speaking native English in response to a situation that a non-native speaker may run into. The video material either showed the instructor speaking and not producing any beat gestures or the instructor producing beat gestures alongside his/her response to cues. Before watching the video, the students first responded to the cues themselves, and their speech was recorded. After watching the video, the students were asked to respond to the same cues again. Their accents were then rated by a group of native American English speakers. Overall, the researchers found that the students' accentedness was perceived to be less after they watched the training video. Specifically, the English of students who were assigned to the

condition in which beat gestures could be observed was rated as more native-like than the English of those who were assigned to the no-beat condition. Gluhareva and Prieto (2017, p. 623) suggest that beat gestures may “serve as an additional source of linguistic information for L2 speakers”. This study again shows that gestures, specifically beats, can aid in learning, in this case with regard to second language learning.

Moreover, as noted before, beat gestures can serve as an emphasizing tool: they can place emphasis on the rhythm and prosody of speech (McNeill, 1992). Citing multiple studies, Gluhareva and Prieto (2017) argue that rhythm is particularly important in the processing of verbal content. As beat gestures are related to the rhythm of speech, being a type of conversational gesture, they may thus be an important part of teacher-student interaction, as processing and comprehension of speech is essential for understanding lecture content and, thus, for education.

As the rhythm of speech can be seen as vital for its processing (Faber, 1986), beat gestures may therefore be vital to communication as well. Additionally, research has shown that the rhythm of speech, particularly speech by people speaking a language that is not their mother tongue, may be particularly important for the listener’s perception and comprehension (e.g. Anderson-Hsieh, Johnson & Koehler, 1992). Being related to the rhythm of speech, beat gestures may therefore also be of particular importance in second language perception, specifically in contexts in which listeners need to make sense of the speech, such as in L2 university lectures. However, for now, the question still remains whether and to what extent there may be differences between L1 and L2 university lectures in regard to the lecturer’s gesturing in the first place.

2.4. Differences between L1 and L2 gesturing

In general, it has been found that gesture production differs when someone talks in their mother tongue or when they speak a foreign language (Geld & Gugo, 2017; Sainsbury & Wood, 1977; Yoshioka, 2010; Gullberg, 2003). L2 gesture production has been shown to be more explicit in certain settings. For example, Yoshioka (2010) conducted an experiment in which L1 Dutch, L1 Japanese and L2 Japanese speakers retold a story they were told by a native speaker. The results show that L2 Japanese “were more overt and precise in marking re-introduced referents in both speech and gesture” compared to the mother tongue Japanese

speakers (p. 106). Additionally, studies on difference between L1 and L2 gesture production show that gesture frequency is higher when speakers use a language other than their native language (Geld & Gugo, 2017; Gullberg, 2010). For instance, Geld and Gugo (2017) studied L1 Croatian and L2 English speakers and their gesture production. They found that the less proficient speakers gestured three times more often when they spoke L2 English than the more proficient L2 speakers. These results suggest that the more proficient a speaker is in the language, the less they gesticulate. Geld and Gugo suggest that this may be because “L2 speakers use various communication strategies in order to compensate for possible lack of proficiency” (p. 127). In an older publication, Gullberg (1998) has also shown that L2 speakers gesture slightly (although not significantly) more than L1 speakers. From previous studies, then, it appears to be true that speakers produce more gestures when they speak their L2 than when they speak their native language. It is unclear whether this is also true in educational contexts, and specifically in relation to the current debate about English as a teaching language in the Netherlands.

2.5. L2 university programme debate in the Netherlands

As mentioned in the introduction, a debate has been going on in the Netherlands about English-taught university programmes. Compared to the rest of Europe, the Netherlands is the country that offers the most English-taught programmes (NOS, 2016, August 26). In 2016, 60% of all university programmes in the country was offered in English (Bouma, 2016, August 26). For Master programmes, that percentage was over 70% (ibid.). This also means that many university students in the Netherlands are being taught in English: over half of all Master students and at least one in five Bachelor students studied in English in The Netherlands in 2015 (ibid.). Some argue that it is a good idea to teach Dutch students in English, as it can improve the students’ English or because some work fields are more international and contact with and interaction in the English language can thus improve students’ chances in the job market (e.g. NOS, 2018, July 6).

The Dutch and English language are similar in multiple ways. Firstly, both are stress-timed languages (Gluhareva & Prieto, 2017), which generally can be seen as an advantage for Dutch students if teachers’ speech is in English, as we know that the role of rhythm is particularly important in speech processing (Faber, 1986). In addition, Dutch and English are

both Germanic languages, and have some similar lexical and grammatical aspects (Bardel & Falk, 2007). Moreover, high school students are required to take English classes in The Netherlands (e.g. Rijksoverheid, 2019). Because Dutch and English are thus similar in multiple ways, and because Dutch people are familiar with the English language, it may be relatively easy for Dutch students to understand English spoken lecture content.

Still, however, there is some worry regarding the quality of the English in lectures spoken by Dutch speakers of English: specifically, the worry is that the quality is not always good enough for university level, simply because most lecturers are indeed Dutch speakers of English as a second language. Consequently, the quality of education could suffer from being English-taught (e.g. NOS, 2018, July 6; Teuling, 2017, July 11). Still, universities choose to teach many programmes in English, among other reasons in order to attract more international students (Bouma, 2016, August 26). The question about whether or not English lectures taught by Dutch lecturers have positive or negative effects on the quality of education has yet to be answered. The first step to answering this question is to compare lectures by Dutch lecturers taught in English and in Dutch.

2.6. Hypotheses

With this debate about the quality of English-taught university programmes in The Netherlands (e.g. NOS, 2018, July 6; Teuling, 2017, July 11), specifically in courses taught by Dutch lecturers speaking their L2, and the effect gestures can have on learning (e.g. Gullberg, 2008; Singer & Goldin-Meadow, 2005) in mind, questions can be asked about the potential relation between gesticulation and educational quality.

Because previous research has shown that speakers generally produce more gestures in their L2 than in their L1 (Geld & Gugo, 2017; Sainsbury & Wood, 1977; Yoshioka, 2010), one can wonder whether this difference is also apparent between Dutch-taught lectures and English-taught lectures by Dutch lecturers. If this difference also holds in this context, one could argue, since gestures have been shown to help learning, that potential linguistic shortcomings in a lecturer's L2 may be compensated for with gestures, and that students may even actually understand content better because of the potential helpful role gestures can play. However, before this can be studied, it is important to know whether a difference between L1 and L2 gesturing is present in the lecture setting in The Netherlands at all.

Specifically, this study will focus on the use of deictics and beats in lectures taught in L1 Dutch and L2 English, as these have been shown to be of use for learning (Gluhareva & Prieto, 2017; Valenzeno et al., 2003). A Dutch lecturer's gesticulation in a lecture taught in Dutch and the same lecture taught in L2 English will be compared. As follows from the literature, the following hypothesis will be tested:

Hypothesis 1. The lecturer produces more gestures in L2 English compared to when speaking L1 Dutch.

As the literature points out two especially important gesture types in the educational context, the main hypothesis can be divided up into two sub hypotheses:

Hypothesis 1a. The lecturer produces more deictic gestures when speaking in L2 English compared to when speaking L1 Dutch.

Hypothesis 1b. The lecturer produces more beat gestures when speaking in L2 English compared to when speaking L1 Dutch.

3. Methodology

3.1. Design

The hypotheses were tested with a corpus analysis. Teaching language was the independent variable. There were two dependent variables: (1) deictic gestures and (2) beat gestures, which were both measured in number of occurrences per 100 words to obtain comparable data. The design is displayed in figure 1.

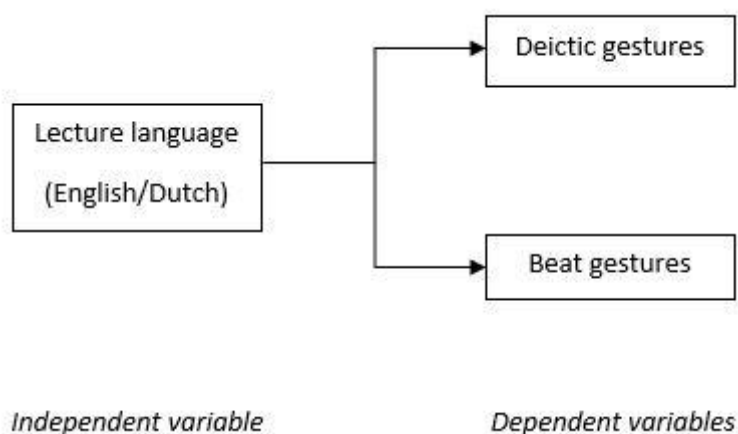


Figure 1. Analytical model

3.2. Materials

In the Fall of 2016, lectures of an introductory marketing communication course were videotaped. The course was given in both English and Dutch, and for both versions all lectures were recorded on camera. The Dutch lecture was given earlier in the week than the English-taught lecture. Each of the lectures consisted of two blocks of 45 minutes, with a 15-minute break in between. This corpus of recorded lectures was used for this study.

The course was taught by a 33 years old female university lecturer. The lecturer is a Dutch native, and thus a non-native speaker of English. She studied for and received her Cambridge CPE certificate, meaning that her English is at C2 level. Of all components, the speaking part was evaluated as her least good skill, although still sufficient.

For this study, the lectures of week 3 – the English-taught version and the Dutch-taught version – were analysed. Because it was week 3 of the course, it was assumed that the lecture content focused on literature and information regarding marketing communication, and that course practicalities were not part of the content. Additionally, it was well into the course, meaning that the lecturer by this point had had time to get used to the course and to teaching it in both English and Dutch. In week 3, the topic of the course was brands. Numerical details about the video material can be found in table 1.

Table 1. Numerical details about the video material

	Dutch lecture	English lecture
Total nr. of spoken words	8,580	7,865
Video length (hh:mm:ss)	01:34:15	01:51:24

3.3. Procedure

3.3.1. Transcription

To be able to say something about the placement of deictic and beat gestures in regard to the related speech, and to be able to calculate the frequency of gestures per 100 words, the lectures were transcribed orthographically using ELAN (ELAN, 2018). All words, including fillers such as ‘uh’ or ‘like’, were transcribed. The transcription was divided up into segments of ten seconds to make it easy to find the corresponding text for the part of the video.

3.3.2. Definitions

Deictic gestures

Although, as stated in the theoretical framework, the term ‘deictic gesture’ can be defined rather broadly as the movement of any body part to point at something, in this study the focus was on hand and arm gestures specifically, as these were clearly visible in the video data. Therefore, pointing gestures that make use of nodding or lip movement – or any other body parts except for the hands and arms – were not coded. For the coding of deictic gestures, the following questions were answered.

1. Is the movement an ideational gesture, i.e. connected to the content of speech?
2. Is there movement of the hand to point to a specific object?
3. Does the movement of the hand involve index-pointing, thumb-pointing or open hand-pointing?
4. Does the gesture end by moving back to rest position or moving on to a new movement?

If the answer to all four of these questions was ‘yes’, the movement was coded as a deictic gesture. To illustrate what a deictic gesture may look like, the difference between index-pointing and open hand-pointing can be seen in figure 2 and figure 3, which include stills from the video material.



Figure 2. Index-pointing



Figure 3. Open hand-pointing

Beat gestures

As the literature clearly describes beat gestures as formless flicking movements of the hands, this was also the definition used for coding. The following questions were answered during the coding process.

1. Is there movement of one or both hands?
2. Is the movement a conversational gesture, i.e. connected to the rhythm of speech in the sense that it emphasizes a certain word or syllable?
3. Does the movement involve flicking, that is, does it involve a short sudden movement?

If the answer to all questions was 'yes', the movement was coded as a beat gesture. To illustrate what a beat gesture may look like, examples from the video material can be found in figure 4.

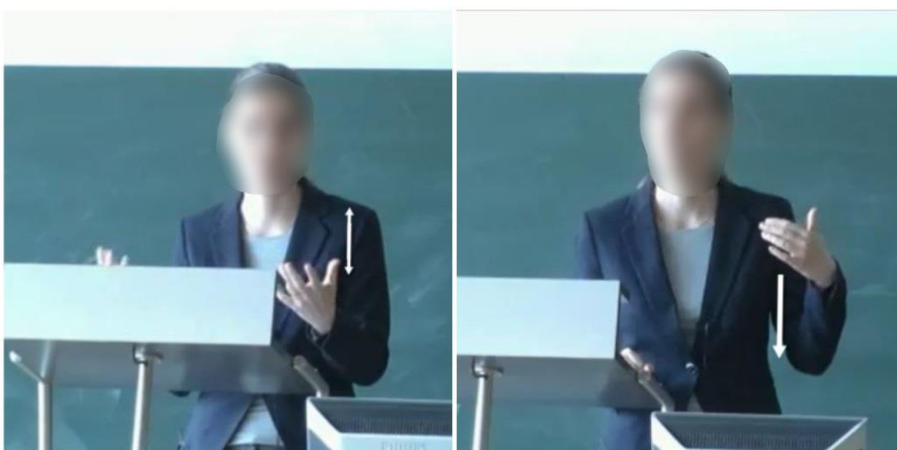


Figure 4. Beat gestures, with arrows illustrating the movement of the hands

3.3.3. Pre-coding

Before the coding was done, 5 minutes of a random lecture – different from the ones used as data – were viewed to see if the gesture definitions were sufficient or needed more specifications. Additionally, someone who was not aware of the details of this study was asked to watch the same 5 minutes to see if the definitions were not only understandable to the main coder but could easily be used by other people as well. No changes were made, as the definitions were deemed understandable and acceptable. Consequently, the data was coded using annotations in ELAN (ELAN, 2018; Sloetjes & Wittenburg, 2008).

3.3.4. Inter-coder reliability

After the coding was conducted, someone who was not aware of the details of this study was given the gesture definitions and questions used and was asked to code the gestures in 10 minutes of the Dutch lecture and in 10 minutes of the English lecture. For both lectures, the selections for reliability coding were made based on the continuity of lecture talk: within the selections there were no long breaks from talking and no exercises to be done by the students. Both selections took place in the middle part of the lecture to prevent the inclusion of welcome or closing talk.

After the second coder had finished coding the total of 20 minutes, the data was transferred to the Elan file with the first coder's data. Inter-rater reliability (IRR) was then evaluated using a two-way mixed, consistency, single-measures intraclass correlation coefficient (*ICC*, Hallgren, 2012) to assess the level of consistency between the two coders, and thus to assess the reliability of the used criteria. For both the identification of deictic gestures ($ICC = .960$) and the identification of beat gestures ($ICC = .837$), the ICCs were excellent, indicating that the level of agreement between the two coders on when a movement was coded as a deictic gesture or a beat gesture was high. It can therefore be assumed that the coding of the data was reliable.

3.4. Statistical Analyses

After the coding, the total number of both the deictic gestures and the beat gestures were compared for the two different lecture languages. For statistical analysis, the number of gestures identified per 100 spoken words was counted for each dependent variable for both

languages. Afterwards, two independent t-tests were conducted on this data to compare the means of both groups: one to test hypothesis 1a and one to test hypothesis 1b.

3.5. Qualitative analysis

Besides running statistical tests to see whether or not there were significant differences in gesture frequencies between the Dutch and English-taught lectures, some preliminary qualitative analyses were also conducted. For the qualitative analysis, the focus was on whether certain aspects stood out, specifically with regard to the form and shape of the gestures, as well as the potential relation with the verbal utterances. For instance, the shape of deictic gestures was analysed, i.e. whether deictic gestures in the lectures involved index-pointing, open palm-pointing, thumb-pointing, or all three. Additionally, details about deictic gestures' referents, for example, were taken into account.

4. Results

4.1. Quantitative analysis

Statistical details about the video material are provided in table 2.

Table 2. Descriptive statistics of video material, with means and standard deviations, the latter provided between brackets

	Dutch lecture	English lecture
Total number of deictics	153	199
Total number of beats	600	704
Deictics per 100 words	1.78 (0.18)	2.53 (0.20)
Beats per 100 words	6.99 (0.40)	8.93 (0.44)

4.1.1. Independent t-tests

Deictic gestures

Regarding the frequency of deictic gestures produced per 100 spoken words, an independent samples t-test showed a significant difference between English and Dutch as lecture language

($t(163) = 2.76, p = .006$). When the lecture was taught in English, the frequency of deictic gestures was higher ($M = 2.53, SD = 0.20$) than when the lecture was taught in Dutch ($M = 1.78, SD = 0.18$).

Beat gestures

With regard to the frequency of beat gestures produced per 100 spoken words, an independent samples t-test also showed a significant difference between English and Dutch ($t(163) = 3.26, p = .001$). The frequency of beat gestures was found to be higher when the lecture was taught in English ($M = 8.93, SD = 0.44$) than when the lecture was taught in Dutch ($M = 6.99, SD = 0.40$).

4.1.2. Simultaneous deictic and beat gestures

The video material included visible gestures that could be identified as both a deictic and a beat gesture: sometimes a deictic gesture consisted of quick movements up and down as well, and could thus also be coded as one or multiple beat gestures. In the English lecture, 54 of the 199 deictic gestures (27.14%) were also labelled as beats. In the Dutch lecture, 32 of the 153 deictic gestures (20.92%) were also labelled as beats.

4.2. Qualitative analysis

4.2.1. Deictic gestures

Table 3. The frequencies of different types of pointing for both lectures

	Dutch lecture	English lecture
Open hand	81 (52.94%)	142 (71.36%)
Index	71 (46.41%)	57 (28.64%)
Other (e.g. two fingers)	1 (0.65%)	0 (0%)

Different types of pointing

In both the English and the Dutch lectures, the lecturer made use of pointing gestures mostly to refer to the slides projected on the screen behind her. The lecturer made use of both index-pointing and open hand-pointing, but did not make use of any thumb-pointing. For both lectures, the frequencies of the different types of pointing can be found in table 3. Although

no specific relation can be determined between either type of pointing and the verbal content, as this is beyond the scope of this thesis, it was noticed that index-pointing was frequently used in combination with graphs and specific referral points on the slides. For instance, when referring to specific points on the slides by saying “vooral diegene die ik hier nou groen heb gemaakt”, which can be translated as “especially the ones that I’ve made green here”, the lecturer pointed to the slides projected behind her with a stretched index finger (00:03:25). A similar deictic gesture occurred when the lecturer uttered the phrase “in the case of the cinema” in the English lecture (00:16:35) while simultaneously pointing to a picture of the cinema projected on the slide behind her. However, not only index-pointing was used to refer to specific points on the slides: open hand-pointing was sometimes used for this purpose too, as when she said “het is niet altijd zo dat zes genoeg is” (= it’s not always true that six is enough), referring to a specific point in a graph with open hand in the Dutch lecture (00:16:22). In the English lecture there were some similar occurrences as well. For instance, when she said “if you’re watching your favourite soap” (00:35:35), the lecturer referred to a still of a soap opera projected behind her by raising her arm and pointing to it with open hand, her fingers all stretched.

On the other hand, although not solely for this purpose, open hand-pointing was frequently used for referring to the slides in general. For instance, when the lecturer referred to the slides in general by saying “om die sheets te gebruiken” (= to use the slides) six minutes and fifteen seconds into the Dutch lecture, she had all of her fingers stretched and thus used an open palm to point to the slides. Still, here too, the different types of pointing were used interchangeably as index-pointing was also used for referring to the slides in general. For instance, when she said “when you buy media” in the English lecture and pointed to the slides, but not a specific point on the slides, as the slide contained images of multiple different types of media, the lecturer used index-pointing as a way of referring to the board (00:35:08). In the Dutch lecture a similar thing happened when the lecturer said “dat zit ook heel erg in die uitdrukking” (= That is also very much part of that phrase), pointing to the slide behind her that solely projected a scheme that explained what a medium is (00:10:02).

The referents of deictic gestures

As briefly mentioned before, deictic gestures were frequently produced to refer to the slides in general or to specific points, as illustrated with the examples cited in the previous section.

This was not their only function, however. Deictics were also used to illustrate the path of a graph visible on the slides. In such cases, the deictic gesture started at a specific point and then moved along with the graph on the slide behind the lecturer. This happened, for example, in the English-taught lecture when the lecturer said “the straight line is the expenditure on communication” (00:43:40). While saying this, she pointed towards the slides with her index finger stretched out and then moved her index finger along the straight line in the graph projected on the screen to refer to the graph and its path. A similar gesture was made in the Dutch lecture when she referred to a straight line as well (00:34:52).

The lecturer also sometimes produced abstract pointing gestures. For example, in the Dutch lecture she said “dat heb ik in de andere groep ook gezegd” (= I’ve also mentioned that in the other group) while simultaneously stretching her index finger and pointing to something in the air in front of her. From her speech, it is clear that the air in front of her represented ‘the other group’ in her mind at that moment.

The relation between deictic gestures and produced verbal utterances

As for the relation between speech and deictic gestures, pointing was often combined with clear reference markings in the produced verbal content, such as ‘here’, or its Dutch equivalent in the Dutch version. For instance, when she said “wat ik hier nou precies mee wilde benadrukken” (= what I wanted to emphasize here), she raised her hand and open-hand pointed towards the slides (00:02:23). A similar pointing movement towards the slides was made when she uttered “hier is belangrijk” (= what’s important here, 01:24:11). In the English lecture, too, the verbal use of ‘here’ was one of the ways deictic gestures were related to the content of speech. When the lecturer said “some people here”, for instance, referring to a location in the room, she pointed to that location in the room with open hand (00:10:32). Approximately twenty-five minutes later, she produced a similar deictic gesture in combination with the utterance “here you can see the advertisement” (00:37:48). Similarly, near the end of the lecture she said “so here you can see” and pointed to the slides behind her (01:34:05).

Deictic gestures are also used frequently in combination with reference words such as ‘these’. For example, in the English lecture, the lecturer uttered the phrase “these steps are actually the most important” (00:06:58). While she uttered these words, she open hand-pointed towards the slides behind her, which projected said steps. The word ‘this’ also

occurred in combination with a deictic gesture, as when the lecturer said “so this is what’s used a lot” and pointed to the slides with opened hand (01:47:50). Similarly, in the Dutch lecture she pointed towards the slides with a stretched index finger while saying “deze stappen van McGuire” (= these steps by McGuire, 00:02:54). Later on in the lecture, she said “dat heeft invloed, dat je dit net hebt gezien” (= The fact that you just saw this has an effect) while simultaneously pointing to the slides with opened hand (00:27:41). Many other similar instances can be found in both lectures. Clearly, then, in both lectures reference words such as ‘these’ and ‘this’ are often combined with deictic gestures. This is not entirely surprising, as words such as these do not make any sense without clarifying their referent(s), and deictic gestures are especially suited to do so.

4.2.2. Beat gestures

During some periods in the video material, the lecturer did not produce any beat gestures. In the English lecture, for example, she did not produce any beat gestures for 40 seconds in a row (00:08:40 – 00:09:20). A similar thing happened in the Dutch lecture (00:23:48 – 00:24:30). This may be because the lecturer was holding the table at which her notes were placed or her notes themselves. At other times, however, she produced numerous beat gestures throughout her talk. Indeed, sometimes she even produced multiple beat gestures in one sentence. Approximately 23 minutes into the Dutch lecture, for example, she uttered the sentence “dan, ja, dan communiceert dat al een bepaalde boodschap dat dat een app is in plaats van een commercial of een advertentie in een tijdschrift”, which, roughly translated, means something along the lines of “using an app instead of a commercial or a magazine advertisement already communicates a message” (00:23:27 – 00:23:37). While producing this verbal content, she almost continuously moved her hands in the rhythm of her speech. In these 10 seconds of speech, during only one full sentence, the lecturer produced 7 beat gestures. In the English lecture, the lecturer also produced sentences during which she used multiple beat gestures. For example, early on in the lecture, she said “before all of this can happen, we need the people, your consumers, your recipients to get a message” (00:08:29 – 00:08:38). Taking approximately 9 seconds to utter this sentence, she produced six beat gestures to emphasize parts of it. Clearly, these examples illustrate that there were large differences between parts of the lectures regarding the amount of beat gestures produced and used to emphasize syllables, words or phrases: sometimes no quick hand movements

were produced for longer periods of time, and sometimes multiple beat gestures were made within just one sentence.

Beat gestures were produced by the lecturer when emphasis was placed on words or phrases. This was done through prosody, and sometimes the emphasis was thus strengthened with gesticulations. For instance, in the English lecture when the lecturer said “So this is what’s used a lot”, she prosodically emphasized the word ‘this’. While uttering this word, she also produced a beat, thus repeating the emphasis gesturally.

5. Conclusion and discussion

Before the data set was analysed, it was hypothesized that the lecturer would produce more gestures in L2 English compared to when she spoke L1 Dutch. This main hypothesis was split into two sub hypotheses, focused on deictic gestures and beat gestures. Hypothesis 1a was confirmed by the data: the lecturer indeed produced more deictic gestures when she spoke in L2 English than when she spoke L1 Dutch. Additionally, hypothesis 1b was confirmed, as the lecturer produced more beat gestures in English compared to when she gave the lecture in Dutch. Thus, the overall hypothesis - the lecturer produces more gestures in L2 English compared to when speaking L1 Dutch - is confirmed. Results of previous studies on L1 versus L2 gesturing, which generally have shown that speakers produce more gestures in their L2 than in their L1 (e.g. Geld & Gugo, 2017; Sainsbury & Wood, 1977; Yoshioka, 2010), thus seem to be generalizable to the context of L1 Dutch versus L2 English lectures. This means that there are indeed differences in non-verbal communication between when a lecture is given in Dutch and when the same lecture is given in English. Based on the literature on the effects of gestures in teaching (e.g. Gullberg, 2008; Singer & Goldin-Meadow, 2005), this, in turn, may lead to differences in comprehension or recall and recognition. However, for now this remains a question that can only be definitively answered with further research.

Still, it is clear that there are indeed differences between L1 Dutch and L2 English when it comes to gesturing. Specifically, in light of the current debate, it is important to note that these results may mean that lecturers who teach in L2 English may be compensating the potential gap between the quality of their L1 Dutch and their L2 English with gestures. This is especially true in the context of the study by Geld and Gugo (2017), which suggested that proficient speakers gesture less than people who are less fluent in a language. Following this

logic, in this case, the lecturer may thus not be as fluent in her L2 English as she is in her mother tongue, Dutch, and may be compensating for this difference through her gesticulation, whether consciously or not. This, in turn, may lead to similar levels of comprehension amongst the students who are taught in English and those who are taught in Dutch. Because the content of the speech is similar in both situations, the combination with more gestures in the English version may even be better for learning, as gestures can play a significant role here (e.g. Gullberg, 2008; Singer & Goldin-Meadow, 2005). For now, however, this remains speculation, and it would be interesting to look into with further studies. For example, an experiment with multiple conditions, including audio-only and seeing video too, could be done to find out whether students indeed retain more knowledge when they see the gestures. This could then be repeated for another language so that differences could be studied.

The qualitative analyses give us some preliminary idea of what deictic and beat gestures look like in lectures. For deictic gestures, the lecturer used index-pointing and open hand-pointing. Referents included the slides in general, specific points on the slides, graph shapes on the slides, people in the room and abstract objects. Regarding the link to verbal content, deictic gestures often occurred in combination with referencing words or phrases that would make no sense without pointing to something, such as 'here' and words like 'these' or 'this', and their Dutch equivalents.

For beat gestures, the video material shines a light on how different their frequencies can be. In some parts of the data, many beat gestures were produced within seconds, whereas a minute later, they were not produced at all for a bit of time. This may be related to object-handling: the lecturer sometimes held the table she was stood behind or her notes, thus inhibiting her from making beat gestures, or any gestures at all, for that matter. It thus seems that the production of beat gestures may not only be dependent on the rhythm of speech but also on the physical context. Furthermore, it should be noted that interactive gestures may also have been coded as beat gestures, as the two are very similar in the way they look (e.g. Bavelas et al., 1992). Interactive gestures are gestures used when the speaker is searching for the appropriate words. According to Bavelas et al. (1992), beat gestures are a type of interactive gesture, but the category of interactive gesticulation is not limited to beats only. The possibility of interactives being coded as beats should not be a problem in this study, however, as the social interactivity-stimulating gestures could have also been produced on places where they not only stimulated interactivity or the 'social system', as Bavelas et al.

(1992) call it: indeed, instead of solely functioning as interactive or ‘searching-for-words’ gestures, they could also function as emphasizing tools at the same time, even if that may not necessarily have been their intended function. In this way, they can still function as beats as well. Individual differences also cannot be excluded based on this study, because these conclusions are based solely on lectures given by one lecturer. However, the fact that both lectures were about the same topic and given by the same individual also makes the data set unique in that the lectures can be compared.

5.1. Limitations

Although significant differences were found between the two lectures, it should be noted that there are some limitations to this study.

5.1.1. Context

Firstly, the contexts of both lectures were not entirely equal, as they took place in different classrooms. Consequently, the video recordings were slightly different: the English lecture was filmed from afar, whereas the video of the Dutch lecture was zoomed in more. This difference also may have had consequences for the coding, as it was slightly easier to identify small movements in the Dutch lecture because of their visibility through zoom-in.

On top of the locations and their consequences for video frames, the lectures also differed in that they were not given at exactly the same time. Of course, this could not have been possible either, given that they were both taught by the same individual. However, the fact that the English lecture was given later in the week compared to the Dutch lecture carries potential consequences for the results. Indeed, technically one could say that the differences found could be a result of the different points in time instead of the different languages. Although it is not assumed that potential differences in speech or behaviour are large due to the different days in the week, this factor cannot be eliminated for certain. Future studies could improve this by comparing lectures given on the same day but at slightly different times to limit the amount of time between the two lectures and, thus, to limit the possible things that could have occurred in the mean time that could have an effect on the lecturer’s behaviour.

5.1.2. Generalizability

Moreover, questions can be asked about the generalizability of the results. As the conclusions are based on one English and one Dutch lecture, they may not be generalizable to all similar lectures. Although it can be assumed that the coding was reliable, as the inter-rater reliability based on the operationalizations was excellent, the number of lectures used for this study was still rather small. However, it should be noted that both lectures provided approximately 90 minutes of analysable material each: in the English lecture, 7,865 words, 199 deictic gestures and 704 beats were produced, and the Dutch lecture provided 8,580 words, 153 deictic gestures and 600 beats to analyse. Therefore, even though the number of lectures used may have been small, there was still plenty of data to analyse. Still, future work could enhance reliability by using an even bigger data set, for instance by analysing multiple similar lectures for both languages.

In addition, both lectures studied were given by the same lecturer. As a result, as noted before, individual differences cannot be excluded as a factor. Future studies could enhance the reliability even further by not only incorporating multiple lectures, but also lectures by taught by different individuals. In such studies, differences between individual lecturers could also be studied to see if this has consequences for the difference in frequency between L1 Dutch and L2 English. For now, however, the fact that both lectures were given by the same lecturer actually provided the possibility to compare Dutch and English rather reliably, as it can be assumed that the lecturer was the same in many different ways. For instance, it can be assumed that her personality did not differ drastically when speaking English or Dutch. Had the two lectures been given by different people, they would not have been as useful for comparison. Thus, including multiple different lecturers in future studies would only be useful if there were comparable sets of L1 and L2 lectures in the data set as well.

5.2. Further research

Before this thesis, no studies had specifically focused on the potential differences in beat gestures and deictic gestures between L1 Dutch and L2 English lectures. The results show that previous findings regarding the frequency of gestures and the differences between L1 and L2 are also applicable in this context. Unfortunately, it was beyond the scope of this thesis to examine the potential differences in lecture content comprehension in relation to the

differences in frequency of gesticulation. Thus, future studies could use the present findings as a starting point. For instance, an experiment could be done to check potential differences in the perceived clarity of information conveyed and the retaining of this information between L1 Dutch and L2 English lectures. Similarly, it could be interesting to see if there are any perception differences as well, as non-verbal communication styles and their likeability may differ per person.

In addition, other than a preliminary qualitative look at the relation between deictic gestures and reference words used at the same time, no further linguistic analysis was done in this study. To examine the relation between deictic and beat gestures and speech produced, this would be an interesting addition for future work. It would especially be interesting to see if the specific gesture types are indeed produced in combination with specific phrases. If so, explanations could potentially be found for the difference in gesture frequency between L1 Dutch and L2 English.

Moreover, it may be interesting to have a look at different linguistic and/or cultural contexts and see if similar results occur and, thus, if these results are generalizable to other contexts. The difference in frequency of deictics and beats produced by a lecturer may just be apparent between L1 Dutch and L2 English, but may not be evident between languages that are further apart from each other, such as English and Spanish. After all, Dutch and English are rather similar in terms of rhythm, grammar and the fact that both are Germanic languages (Bardel & Falk, 2007; Gluhareva & Prieto, 2017). In comparisons between languages that are less similar, differences may be prescribed to their difference in terms of rhythm instead of to linguistic competency. Indeed, in cases where languages differ in rhythm, an even bigger difference with regard to beat gestures could be found, as beats are related to the rhythm of speech (McNeill, 1992). For now, it is important to note that the results are not generalizable to other linguistic contexts. However, they do not necessarily need to be in order for them to be interesting and an addition to current work, as the linguistic teaching debate may not be a big debate everywhere, but is especially active in the Netherlands, where much education is in English already (e.g. NOS, 2016, August 26).

For now, it is clear that there are gestural differences between university lectures taught in L1 Dutch and L2 English. These differences could be of importance for educational quality and could therefore be of meaning in the debate about teaching language in the Netherlands. However, nothing conclusive can be said about educational quality differences

yet on the basis of this thesis alone. Further studies in the form of experiments need to be conducted to be able to definitively say whether university lectures taught in L2 English in the Netherlands are indeed a good idea or not.

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