

Gesture use for word comprehension in an L2

A research about viewing and producing gestures to facilitate word comprehension in a foreign language

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Abstract

Being able to speak multiple languages is becoming more important as the world gets more global every day. A factor that might make it easier to learn a second language is the use of gestures. Therefore, this study investigated the use of gestures while learning Slovak words to Dutch native speakers. Moreover, the use of different word types was investigated, focussing on the comprehension of nouns and verbs when learning with gestures. The participants in the study were divided in three groups. One group learned the words while viewing gestures, the second group learned the words while viewing and also producing gestures, and the third group saw no gestures at all. All participants learned two word types, namely both nouns and verbs. The results showed that the use of gestures did not help the participants to learn the words. Unexpectedly, the group producing the gestures comprehended the words worse than the other two groups, and the group viewing the gestures had a similar performance as the group seeing no gestures. Moreover, no overall difference was found between the comprehension of nouns and verbs between the groups, but the group viewing the gestures did comprehend the verbs better than the nouns. It is important to conduct further research on L2 learning with the use of gestures, as the outcomes of this research do not align with previous research. Especially concerning the production of gestures and the difference between word types, much is still unclear.

Keywords: gestures, viewing and producing, L2 word learning, iconicity, nouns, verbs

Introduction

Language is a complicated matter. It provides a great way to communicate with other people, but miscommunication can also easily occur. In a world, which gets more global every day, this can happen more frequently as people often have to communicate in more than one language. Miscommunication can occur because interlocutors might misunderstand each other when speaking in a foreign language, since unfamiliar words or expressions are used (Nickolayev et al., 2015). Due to globalization, it is important to be able to communicate with people who are from other parts of the world. As a result, the necessity to be able to communicate in multiple languages gets higher (Nickolayev et al., 2015). Companies, for example, are seeking more and more for employees who can communicate in multiple languages, in order to cross national borders and be able to make their market, and therefore their profit, as big as possible. In the case of multilingual business, English is frequently the main language. However, this is often not the first language of the employees (Kankaanranta et al., 2015). Knowledge of English, and also of more languages, is then often necessary in order to conduct multinational business (Angouri, 2014). Therefore, being able to speak multiple languages gives a person advantages on the labour market. Additionally, being multilingual can be beneficial in other circumstances, such as non-profit organizations and governments, but also in daily life (Nickolayev et al., 2015). This is because due to immigration and the globalizing world, daily life also contains more multilingual aspects. Speaking more than one language can help one to navigate in such a changing world.

Nonetheless, learning a second language (L2) is not always an easy task. A language contains a lot of different aspects, such as word learning, grammar learning, and listening comprehension. Word learning is often thought to be a difficult aspect of L2 learning, and even called the most difficult part (Kelly, McDevitt & Esch, 2009). Kelly et al. (2009) state that this could be the case because the meaning of a word often has nothing to do with the way it is spelled. In other words, the spelling is arbitrary to its meaning, making it hard to remember the word. Another aspect, which makes words difficult to learn, is for example the existence of false cognates in an L2 (Frantzen, 1998). A false cognate is a word in the L2 which seems similar to the word in the first language (L1) in terms of spelling or pronunciation, but which has a different meaning. For example, 'wie' in Dutch and 'oui' in French for Dutch-French bilinguals. Their meanings are different, namely 'who' and 'yes', but the pronunciation is almost the same. In the case of such false cognates, it is quite complicated to learn the correct meaning of the word in the L2, as it is often confused with the meaning of the L1 word

(Frantzen, 1998). These two examples, of the arbitrariness of words and false cognates, demonstrate why words can be difficult to learn, and especially words in an L2.

Something that might facilitate L2 word learning is gesture use, which is a form of non-verbal communication (Gullberg, 2006). In terms of L2 learning, the gestures that are most relevant are those communicating a message (Morett, 2014). Gestures can for example compensate speech or complement it. That way, they could help to speak a language more fluently and make sure there is less cognitive pressure on a person. Here, cognitive pressure defines the effort it takes to process thoughts and to retrieve them from memory (Gullberg, 2006). There is such cognitive pressure on a person learning an L2, because many new words and grammar have to be learned. Previous studies showed that if people have to carry out cognitive tasks that are more difficult, they use more gestures than when tasks are not difficult (McNeill & Duncan, 2000). This suggests that using gestures takes away cognitive pressure and could, therefore, enhance learning.

Besides taking away cognitive pressure, gestures could also be helpful in learning an L2, because speech and gesture are interconnected systems (McNeill, Cassell & Mccullough, 1999). Therefore, when words are learned with an accompanying gesture, this could help to better understand its meaning, and therefore with remembering the word and its meaning. Gestures could then help with learning words in an L2. According to McNeill et al. (1999), gestures are very important in language, as people do not only pay attention to words, but also to the information that is communicated through gestures. These authors showed that people take into account information that is told in speech, as well as information that is communicated through gesture. Moreover, people use both forms to retell this information, regardless of the form in which they received it. This means that the information that is received is represented in one single unity in the brain which can be accessed and supplemented by both speech and gesture (McNeill et al., 1999). Also, speech and gesture often communicate the same message simultaneously (Gullberg, 2006). This shows that the two systems are deeply integrated in one another and are both important for language comprehension. Therefore, gestures could be helpful when learning an L2.

That gestures could be useful in terms of L2 word learning is also true according to Gullberg (2006). She states that gestures could help with the retrieval of words, or with better understanding the meaning of a word. It could therefore be a big advantage to use gestures while learning an L2. Tellier (2008) agrees with this statement, as she declares that learning an L2 with the use of gestures helps the acquisition of this language. In a study conducted by Tellier, it was shown that using gestures while learning words to children in an L2 led to better

memorization of those words than when the words were only seen. This is especially the case at the first stages of language learning, and for word learning. If this is true, the difficulty of word learning in an L2 could be tackled by means of gesture use.

But then, gesture is a very broad concept. In order to make a distinction, gestures can be classified in different types (Kendon, 2004). For L2 learning, the focus lays on gestures which co-occur with speech, as the interest lies in gesture and its connection to spoken language. The general distinction that is made between gestures which co-occur with speech is between metaphoric, deictic, beat, and iconic gestures. Metaphoric gestures are used when an abstract concept is portrayed, such as space. Deictic, or pointing, gestures have to do with making clear the physical space or location of someone talking, or to direct attention to a certain object. Beat gestures give no context but only rhythm to speech, while iconic gestures, lastly, portray a characteristic of or context to speech (McNeill et al., 1999). In the case of L2 learning, iconic gestures are most interesting, as those communicate an actual meaning of the word. This type of gesture gives a representation of the meaning of the word (Kelly et al., 2009). Iconic gestures could then be helpful, for example because the meaning of a word is arbitrary to its spelling. An iconic gesture could potentially take away the difficulty of learning this word, because in the case of using such a gesture, there is actual meaning to be seen. This could make it easier to remember the meaning of the word.

That iconic gestures are most useful in terms of L2 word learning is indeed found by Macedonia et al. (2011), amongst others. The authors state that foreign words can be better memorised when they are learned with accompanying iconic gestures, instead of with the other types of gestures which may co-occur with speech. Another study investigating iconic gestures and L2 word learning was conducted by Kelly et al. (2009). These authors found that people remember more unknown L2 words when those words were taught using iconic gestures, than when no gesture was used. Moreover, there was also a group that was taught the same words while using non-matching gestures. This means that the iconic gesture did not show a characteristic or context of the word. The results showed that this last group remembered the meaning of the words worse than the group seeing the matching gestures, which means that not just any iconic gesture can be used in L2 word learning. Although gestures capture attention and this might also enhance word learning (Tellier, 2008), this study by Kelly et al. shows that this is only the case if the iconic gesture matches the word meaning. In the case of L2 word learning, it therefore seems to be useful to use matching gestures with high iconicity, which means that in the gesture one can clearly see a characteristic or context of the word (Angermeier et al., 2008). With low iconic gestures, such a characteristic or context of the word is less clear,

meaning it would still be difficult to see its meaning. Using high iconic gestures, on the other hand, ensures that the meaning of the word can be easily seen in the gesture, which could enhance L2 word learning.

Furthermore, an additional component in gesture use and L2 word learning is producing gestures, as there is a difference between only viewing gestures or also producing them. In a study conducted by Cherdieu et al. (2017), two groups of participants saw a video of an explanation of the anatomy of the forearm, while using gestures. Only one of these two groups also had to produce the gestures they saw in the video, while the other group did not. In most previous research with producing gestures, one group saw and produced gestures, while the other group did not see or produce any gesture. This study by Cherdieu et al. is interesting, therefore, as it is fully focussed on the difference between only viewing gestures, or viewing and producing gestures while learning. It was found by Cherdieu et al. (2017) that the group that viewed and produced the gestures recalled the information in the video better than the group who only viewed the gestures. Nonetheless, this research by Cherdieu et al. was not focussed on language learning.

A study which did focus on L2 learning and on the distinction between viewing and producing gestures, was conducted by Morett (2014). Two groups of participants were taught 20 unfamiliar Hungarian words either with or without gesture. The production of gestures by the participants was also analysed. The results showed that, in terms of recall, the same amount of words was remembered by participants who saw or did not see gestures. However, when the gestures were not only seen but also produced, the number of words that was remembered was significantly higher. The study of Morett (2014) shows that only viewing gestures while learning L2 words might be insufficient, but also producing them could lead to better memorization of newly learned L2 words. Nevertheless, it is unclear on which type of gesture the study of Morett was specifically focussed. It could, therefore, have been focussed on another type of gesture than an iconic gesture. As iconicity and production of gestures are two possible facilitating factors in L2 word learning, it would be interesting to further investigate them as much is still unclear.

Hence, the literature shows that it is important to further study the influence of high iconic gestures on L2 word learning, and especially the influence of not only viewing but also producing these gestures. The central research question therefore is:

‘To what extent do high iconic gestures facilitate L2 word comprehension?’.

In order to also investigate this question in the context of production, the following sub question is formed:

‘What is the influence of producing these gestures on L2 word comprehension?’.

The hypothesis is that viewing high iconic gestures facilitates L2 word comprehension significantly better than not viewing high iconic gestures, and that producing these gestures facilitates L2 word comprehension significantly better than only viewing the gestures.

Furthermore, it is quite unclear which type of L2 words is facilitated best by gesture use. There is quite some research that shows that, in general, nouns are easier to learn than verbs, for example in Hupp and Cingras (2016). According to these authors, nouns are easier to learn than verbs because they can more easily be seen as a visual object than verbs. García-Gómez and Macizo (2019) investigated whether this was still the case when gestures were used when learning these word types. In their study, different groups were taught words in an L2, either with or without gestures, and afterwards their word comprehension was measured. The researchers found that gestures facilitate both noun and verb comprehension, but, when no gestures were present, nouns were better comprehended than verbs. However, when including congruent gestures to these words, the nouns and verbs were comprehended equally well. According to García-Gómez and Macizo (2019), the use of gestures could have caused that both the nouns and the verbs could be easily visualized, which could have led to a similar word comprehension for these two word types. As there is not a lot of research on this aspect yet, it is interesting to take it into account while studying L2 word comprehension with the use of high iconic gestures. As a result, the second sub question of the present study is:

‘What is the influence of gesture use for word type on L2 word comprehension?’.

The hypothesis is that viewing high iconic gestures facilitates both the comprehension of verbs and nouns significantly better than not viewing gestures. Moreover, it is expected that also producing these gestures facilitates both L2 verb and noun comprehension significantly better than only viewing the gestures. Besides that, it is expected that when no gestures are present, the comprehension of nouns is better than the comprehension of verbs. However, when gestures are present, it is expected that there is no difference between the comprehension of nouns and verbs.

Method

Materials

In order to study the research questions, an experiment was conducted. The stimulus materials for this study were videos in which words in the Slovak language were taught to Dutch native speakers. The first independent variable was ‘Gesture condition’, which consisted of three levels: gesture viewing, gesture viewing plus production, and no gestures (control group). This means that in one video the Slovak words were taught while the participants saw matching high iconic gestures to these words (group one), in one video the participants saw these high iconic gestures and also had to produce them (group two), and in one video the words were taught without gestures (control group). With respect to group one and two, they saw the same video, but with a different instruction. In all videos, a Dutch native speaker and a Slovak native speaker pronounced the words that had to be learned. The words were mentioned in a random order and both speakers were filmed from head to mid-body. In all videos, the Dutch word was mentioned first, followed by the Slovak translation. This translation was given twice. For the groups that saw a gesture, group one and two, the gesture was given all three times the word was mentioned (one time in Dutch and twice in Slovak).

The second independent variable was ‘Word type’, consisting of two levels: nouns and verbs. The words being taught to the participants were both nouns and verbs.

The words that were taught in the videos originated from data of a not yet published study (Ormel et al., in preparation). In the study, 23 deaf proficient signers had to rate 416 Dutch words on how high their iconicity is on a scale from one to seven, where one meant the word was not very iconic, and seven meant the word was very iconic. Of these data, seven verbs and seven nouns with a high degree of iconicity were chosen. The seven verbs were ‘schieten’, ‘praten’, ‘schaatsen’, ‘mengen’, ‘liften’, ‘hardlopen’, and ‘komen’. The average rating of iconicity for these verbs was 5.71. The nouns were ‘bloem’, ‘wereld’, ‘gordijn’, ‘varken’, ‘fout’, ‘appel’, and ‘vliegtuig’. The average rating of iconicity for the nouns was 6.43. An independent samples t-test showed that there was no significant difference between the iconicity ratings of the verbs and nouns ($t(12) = 2.04, p = .064$). This means that the iconicity ratings of both word types were comparable. The exact ratings can be found in table 1.

Table 1. Median and standard deviations (between brackets) for the iconicity ratings of the verbs and nouns (1 = very low iconicity, 7 = very high iconicity)

Verbs	(<i>N</i> = 23)	Nouns	(<i>N</i> = 23)
	<i>M</i> (<i>SD</i>)		<i>M</i> (<i>SD</i>)
Schieten	6 (.95)	Bloem	6 (1.38)
Praten	4 (1.76)	Wereld	6 (1.39)
Schaatsen	6 (.95)	Gordijn	6 (1.57)
Mengen	6 (1.11)	Varken	6 (1.25)
Liften	6 (0.76)	Fout	7 (1.74)
Hardlopen	6 (1.02)	Appel	7 (1.16)
Komen	6 (1.16)	Vliegtuig	7 (.73)
Total	5.71 (.76)	Total	6.43 (.53)

In order to make sure all verbs and nouns could be used, concreteness and frequency were checked. Concreteness portrays the extent to which a word is perceived as a tangible object (Brysbaert et al., 2014). Higher concreteness, therefore, means the word is perceived as more tangible. According to Brysbaert et al., words with high concreteness are more easily remembered than words with low concreteness, because they can be visualized more easily. Concreteness was checked in a database of Brysbaert et al. (2014), in which 30071 words were rated on a scale from one to five, where one meant the word was very abstract, and five meant the word was very concrete. In addition to the degree of concreteness, frequency was also controlled. Frequency refers to how often a word appears in a language. Keuleers et al. (2010) assume that words that appear more are more well known. Frequency was checked in a corpus of Keuleers et al. (2010), in which 43.8 million words were rated on how often they appeared in SUBTLEX-N, which is a database of how often Dutch words appear in film and television subtitles.

For the seven verbs with the highest iconicity, the concreteness was high for all verbs, as well as the frequency. Similarly, the nouns also scored high on concreteness and frequency. An independent samples t-test showed no significant difference between the concreteness of the verbs and nouns ($t(12) = .60, p = .566$). In terms of frequency, the words were also comparable. An independent samples t-test showed that there was no significant difference between the

frequency of the verbs and nouns ($t(12) = .45, p = .658$). This is important, as it means that found differences between groups were not caused by differences in frequency or concreteness of the verbs and nouns. It should be taken into account, however, that the word ‘liften’ is treated as a verb in this study, but it was categorized as a noun by Brysbaert et al. (2014). Moreover, the word ‘fout’ is treated as a noun in this study, but was categorized as an adjective by Brysbaert et al. (2014). As the frequency of these words was high regardless of this fact, they could still be used. The exact numbers can be found in table 2.

Table 2. Means and standard deviations (between brackets) of concreteness (1 = very abstract, 5 = very concrete) and frequency rating (on 43.8 million words) of the verbs and nouns

Verbs	Concreteness ($N = 15$) $M (SD)$	Frequency Rating	Nouns	Concreteness ($N = 15$) $M (SD)$	Frequency Rating
Schieten	4.47 (.52)	630	Bloem	4.67 (.49)	3789
Praten	3.87 (1.13)	192	Wereld	3.33 (1.45)	283
Schaatsen	4.47 (.83)	7437	Gordijn	4.67 (1.05)	8575
Mengen	3.80 (1.01)	8453	Varken	4.80 (.56)	2377
Liften	3.67 (1.11)	6312	Fout	2.20 (.68)	554
Hardlopen	3.80 (1.20)	12769	Appel	4.67 (.90)	4667
Komen	3.33 (1.05)	115	Vliegtuig	4.80 (.77)	871

Consequently, the seven verbs and nouns, both with a high degree of iconicity, as well as a high degree of concreteness and frequency were chosen from the data set to use in this study. The next step was to check whether the sign equivalents for the words were difficult to produce (Global Signbank Radboud Universiteit, 2020), as the instructors had to be able to produce the sign in the correct manner. Moreover, this was important to check as group two also had to produce the gesture. Signs were used because they are often high in their degree of iconicity, and because there are clear rules on how to act them out (Frishberg, 1975). It was found that none of the signs were complex to act out, meaning they could be used in the research. Next, all words were translated by a native Slovak speaker into the Slovak language. These translations can be found in table 3 and 4. The English translation is also given.

Table 3. Translations of the verbs

Dutch	Slovak	English
Schieten	Strielat'	Shooting
Praten	Rozprávat'	Talking
Schaatsen	Korčulovat'	Ice skating
Mengen	Zmiešať	Mixing
Liften	Stopovat'	Hitch hiking
Hardlopen	Bežať	Running
Komen	Prísť	Coming

Table 4. Translations of the nouns

Dutch	Slovak	English
Bloem	Kvetina	Flower
Wereld	Svet	World
Gordijn	Záclona	Curtain
Varken	Prasa	Pig
Fout	Chyba	Mistake
Appel	Jablko	Apple
Vliegtuig	Lietadlo	Airplane

Furthermore, the researchers checked whether the words were cognates for Dutch, English or German. That would mean the Slovakian word would look similar to the translation in Dutch, English or German. This could cause difficulties, as words might be easier to remember if it is a cognate (Frantzen, 1998). These three languages were checked because a lot of native Dutch people also have some knowledge of English or German (Van Onna & Jansen, 2006). It was found that none of the fourteen Slovak words were cognates of Dutch, English or German. Furthermore, the average word length of the verbs and nouns was comparable, namely seven letters per word for the verbs and six letters per word for the nouns. An independent samples t-test showed a non-significant difference between the word length of the verbs and nouns ($t(12)$

= 1.15, $p = .274$). This is important given that if, for example, the verbs are significantly shorter or longer than the nouns, this could be a way to remember those better or worse than the nouns. If the nouns and verbs have a comparable word length, this cannot be a factor in helping the participants to remember the words. In conclusion, this meant all words could be used in the videos.

Subjects

The participants were Dutch speakers with no prior knowledge of the Slovak language. They were recruited through sending an online link which took them to the experiment. Even though four of the participants were not born in the Netherlands, because their first language was Dutch they could still participate in the experiment. A total of 66 people participated in the experiment. They had a mean age of 21.88 years, with a standard deviation of 1.78 years. The youngest participant was 19 years old, while the oldest one was 25, which resulted in a range of 6 years. Of the participants, 25 were male and 41 were female. Moreover, most of the participants, namely 29, had an educational level of a university Bachelor, while most of the other participants had a university Master or a Bachelor in applied sciences. As different participants took part in the different versions of the experiment, it was important to see whether there were differences between the participants in the different groups. There were 23 participants in group one (gesture viewing), 22 in group two (gesture viewing and producing), and 21 in group three (no gestures). A one-way analysis of variance did not show a significant effect of age between the three groups ($F(2, 63) < 1, p = .877$). This means that the age of the participants in the different groups was comparable. The exact numbers can be found in table 5.

Table 5. Means and standard deviations (between brackets) of the age of the participants in the different groups

Group	<i>N</i>	<i>M (SD)</i>
Viewing	23	21.96 (1.69)
Producing	22	21.95 (1.89)
No gestures	21	21.71 (1.76)
Total	66	21.81 (1.78)

Furthermore, a chi-square test showed that there was no significant difference between gender and group ($\chi^2(2) = 1.41, p = .494$). This means that the distribution of the gender of the participants in the different groups was comparable. The exact numbers can be found in table 6.

Table 6. Gender of the participants in the different groups

Group	<i>N</i>	Male	Female
Viewing	23	7	16
Producing	22	8	14
No gestures	21	10	11
Total	66	25	41

Lastly, a chi-square test showed that there was no significant difference between educational level and group ($\chi^2(10) = 14.40, p = .156$). This means that the distribution of the educational level of the participants in the different groups was comparable. The exact numbers can be found in table 7.

Table 7. Educational level of the participants in the different groups

Group	<i>N</i>	University Master	University Bachelor	Master applied sciences	Bachelor applied sciences	Intermediate vocational education	Pre- university education
Viewing	23	8	8	0	6	1	0
Producing	22	5	7	0	6	1	3
No gestures	21	2	14	1	2	1	1
Total	66	15	29	1	14	3	4

Regarding their knowledge of other languages, most of the participants spoke English, German, French, or Spanish, aside from Dutch. There were also a few cases of people who spoke other languages. The exact numbers can be found in table 8.

Table 8. Participants' knowledge of other languages than Dutch

Language	<i>N</i> of participants that know the language
English	62
German	41
French	23
Spanish	10
Chinese	2
Italian	1
Portuguese	1
Swedish	1

Regarding the fluency of the participants in their L2 and L3, a one-way analysis of variance did not show a significant effect of L2 fluency between the groups ($F(2, 63) = 1.93, p = .154$). Moreover, a one-way analysis of variance did also not show a significant effect of L3 fluency between the groups ($F(2, 63) = < 1, p = .535$). This means that the participants' fluency of other languages than Dutch was comparable in the different groups. The exact numbers can be found in table 9.

Table 9. Means and standard deviations (between brackets) of L2 and L3 fluency of the participants in the different groups (1 = not fluent, 10 = fluent)

Group	<i>N</i>	L2 fluency	L3 fluency
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Viewing	23	7.49 (1.35)	4.17 (2.68)
Producing	22	7.13 (3.08)	4.15 (3.19)
No gestures	21	8.29 (.79)	5.04 (2.96)
Total	66	7.63 (2.03)	4.44 (2.93)

Furthermore, the participants used different languages for different activities. In terms of reading, most participants used Dutch or English, and some used German. Regarding to watching television, listening to music or the radio, and using e-mail and internet, there was a similar pattern. However, for these activities they also used some other languages. The exact numbers can be found in table 10.

Table 10. Activities for each language (the participants could fill in multiple languages for each activity)

Language	Reading	Watching television	Listening to music or the radio	E-mail and internet
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
Dutch	55	52	53	58
English	54	58	53	51
German	3	3	6	1
Spanish	0	8	8	1
French	0	2	5	0
Japanese	0	1	1	0
Korean	0	2	0	0
Turkish	0	0	1	0
Chinese	0	0	1	0

The participants were also asked how much they liked to learn new languages and how easy they found it. Moreover, they were asked how often they used multiple languages during a period. A one-way analysis of variance did not show a significant effect of language eagerness between the groups ($F(2, 63) < 1, p = .479$). This means that the eagerness of learning languages was similar for the participants in the different groups. Moreover, a one-way analysis of variance did not show a significant effect of the difficulty to learn languages between the groups ($F(2, 63) < 1, p = .411$), which means that the participants in the different groups found it equally difficult to learn new languages. The last one-way analysis of variance did also not show a significant effect of the use of multiple languages between the groups ($F(2, 63) =$

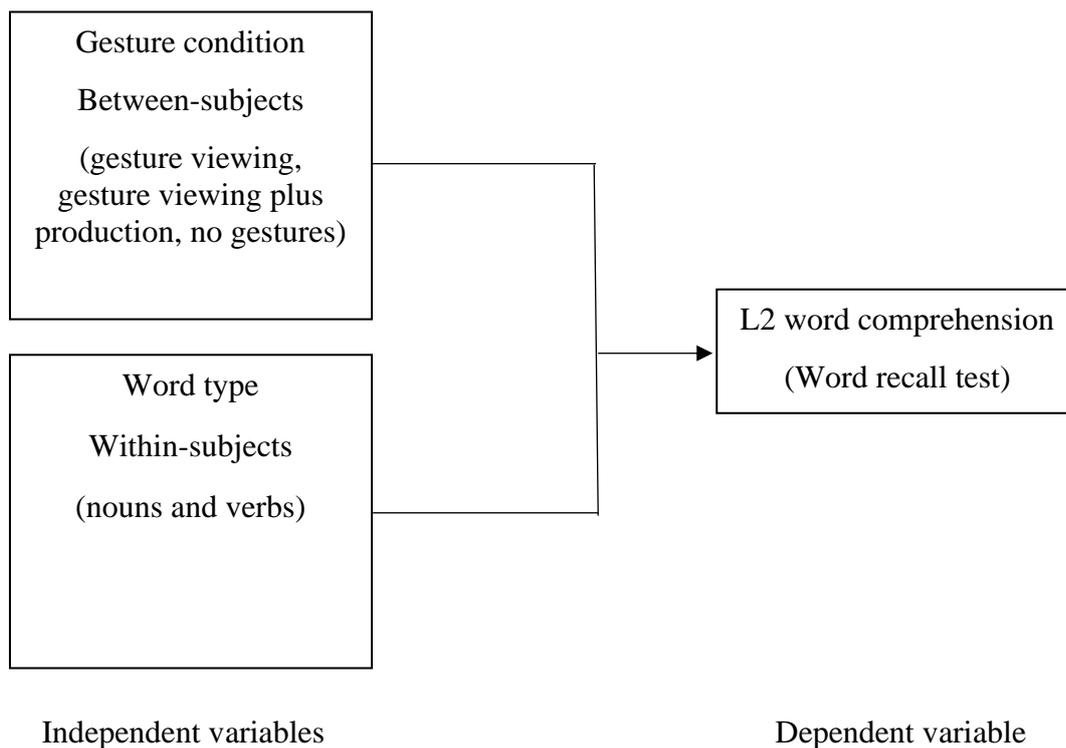
$< 1, p = .381$). This means that the use of multiple languages was comparable for the participants in the different groups. The exact numbers can be found in table 11.

Table 11. Means and standard deviations (between brackets) of eagerness to learn languages, difficulty to learn languages, and use of multiple languages (1 = not eager/very difficult/almost never, 10 = very eager/very easy/very often)

Group	<i>N</i>	Eagerness <i>M (SD)</i>	Difficulty <i>M (SD)</i>	Use of multiple languages <i>M (SD)</i>
Viewing	23	5.87 (2.09)	5.09 (1.98)	6.52 (2.48)
Producing	22	6.41 (1.94)	5.77 (1.93)	7.14 (2.51)
No gestures	21	5.62 (2.48)	5.05 (2.13)	7.48 (1.81)
Total	66	5.97 (2.17)	5.30 (2.01)	7.03 (2.30)

Design

The first independent variable, gesture condition, was a between-subjects factor, as there were three groups of participants and each participant saw only one type of video. The second independent variable, word type, was a within-subjects factor, because the participants saw both nouns and verbs. Therefore, the design was a 3 x 2 repeated-subjects design, as both a between-subjects and within-subjects factor was used, and the factors had either three ('Gesture condition') or two ('Word type') levels. The relationship between the variables can be seen in the analytical model below.



Instruments

The dependent variable was L2 word comprehension. This was measured by the number of words correctly memorized by the participants, and was treated as a ratio measurement level. A word-recall-task was conducted to test the participants. This consisted of a testing video, in which a Slovak native speaker said each word twice, followed by a 15 second break. In this break, the participants had to write down the correct Dutch translation. Afterwards, the amount of correctly memorized words could be analysed. All videos, for both the teaching and testing phase, were made with Hitfilm Express, with a template of 1080p Full HD. Moreover, the frame rate was 25 fps and the file type mp4. The video width and height was 1920 x 1080 pixels. In table 13 in the appendix the instructions and execution of the videos can be found.

Procedure

The experiment was conducted through an online research platform, named Qualtrics. Dutch young adults between the age of 20 and 25 were recruited by sending them a link to the experiment. They were not told the specific aim of the experiment, as not to influence the results. Through the online platform, the participants were randomly divided to the three groups. The participants either saw the video with gestures but without producing them (group one), the video with gestures while also producing them (group two), or the video without gestures

(group three). For the group that also had to produce the gestures, they had to do this at the same time as when the gesture was shown. The training video was shown twice, and the Dutch words that were being taught were shown above the video both times. After seeing the first training video, all participants had to fill in a short questionnaire about their demographics. This was also done to give them a break and distract their attention of remembering the words. Then the participants had to watch the same training video again. Afterwards, they had to fill in a small questionnaire about their knowledge of languages. After filling this in, the testing video was started, in which the participants had to write down the Dutch translations to the Slovak words. The Dutch words that were learned in the training videos were again shown above the video. The participants first had to write the words down on paper, and then on the online program. This was done to make sure their focus was on the video while making the test. The words in the testing video were in a different order than the order in which the words were learned, as to control for participants remembering the word order instead of the translations. This way, the L2 word comprehension of the participants could be measured. Because the training was on video, the circumstances of learning the words were the same for all participants. On average, the experiment took each participant around 20 minutes. Screenshots of the videos, and the questionnaire that was used can be found in table 14 and 15 in the appendix.

Statistical treatment

For the analysis, a repeated measures ANOVA was done, as there were two independent variables on nominal level (gesture condition and word type), a between-subjects and within-subjects factor, and one dependent variable on ratio level (word comprehension). Moreover, two one-way ANOVAs were done to test for differences between the gesture condition for the verbs and nouns separately.

Results

The results of the experiment were processed in SPSS. A repeated measures analysis for comprehension of the words with word type as within-subject factor (nouns and verbs) and gesture condition (viewing, producing, or no gestures) as between-subject factor showed no significant main effect of word type ($F(1, 63) = 1.69, p = .198$). However, it did show a significant main effect of gesture condition ($F(2, 63) = 3.69, p = .030$). A post hoc test (LSD corrected) showed that the participants in group one (viewing) ($M = 4.87, SD = 3.28$) and group three (no gestures) ($M = 4.86, SD = 2.48$) comprehended the words better than the participants in group two (producing) ($M = 2.82, SD = 2.94$) ($p = .019$ for groups one and two and $p = .025$ for groups three and two). There was no difference in comprehension of the words between groups one and three ($p = .095$).

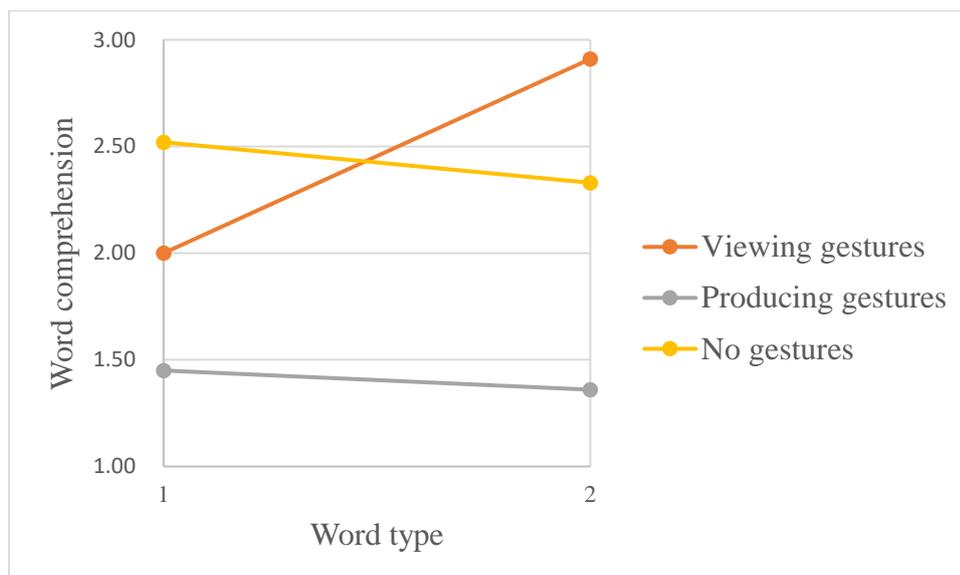
Moreover, there was a significant interaction effect between word type and gesture condition ($F(2, 63) = 4.83, p = .011$). To explain this interaction effect, an additional repeated measures analysis was conducted for each separate group. For group one, a repeated measures analysis with word type as within-subject factor showed a significant main effect for word type ($F(1, 22) = 13.25, p = .001$). The participants in group one comprehended the verbs ($M = 2.91, SD = 1.83$) significantly better than the nouns ($M = 2.00, SD = 1.62$). As for group two and three, a repeated measures analysis for comprehension with word type as within-subject factor showed that there was no significant main effect for word type for group two ($F(1, 21) < 1, p = .747$), nor for group three ($F(1, 20) < 1, p = .550$). This means that for those groups there was no difference between the comprehension of verbs and nouns.

Furthermore, a one-way analysis between conditions was conducted for the verbs, and afterwards for the nouns. The first analysis showed that there was a significant effect for verbs between the groups ($F(2, 63) = 5.04, p = .009$). A post hoc test (Bonferroni corrected) showed that the participants in group one ($M = 2.91, SD = 1.83$) comprehended the verbs better than the participants in group two ($M = 1.36, SD = 1.65$) ($p = .008$). There was no difference in the comprehension of the verbs between the participants in group one and three ($p = .747$), nor between group two and three ($p = .176$). The one-way analysis for nouns between the groups showed no significant effect ($F(2, 63) = 2.57, p = .085$). The results can be seen in table 12. A visual representation of the results can be seen in figure 1.

Table 12. Means and standard deviations (between brackets) of word comprehension per group (on 14 words)

Group	N	Nouns	Verbs	Total
		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Viewing	23	2.00 (1.62)	2.91 (1.83)	4.87 (3.28)
Producing	22	1.45 (1.57)	1.36 (1.65)	2.82 (2.94)
No gestures	21	2.52 (1.44)	2.33 (1.43)	4.86 (2.48)
Total	66	1.98 (1.58)	2.21 (1.75)	4.18 (3.04)

Figure 1. Word comprehension (on 14 words) per group (1 = nouns, 2 = verbs)



Discussion and Conclusion

To answer the general research question, the results have shown that high iconic gestures do not facilitate L2 word comprehension. Moreover, the influence of producing these gestures on L2 word comprehension was negative. Therefore, the hypotheses are not confirmed.

Nonetheless, the main effect of gesture condition was no longer significant when excluding the participants' L2 and L3 fluency¹. This means that when including foreign language skills into the analyses, the viewing gestures group and the no gestures group no longer comprehended the words better than the group who produced the gestures. It is odd that this difference occurs, because the foreign language skills of the participants showed no difference, as the L2 and L3 fluency of the participants in the different groups was similar (see table 9). Although there is no significant difference between the L2 and L3 fluency of the participants in the different groups, table 9 does show that the no gestures group seems to have slightly higher foreign languages skills, and the producing gestures group seems to have slightly lower foreign language skills. It could be that this small, but insignificant, difference influences the results, leading to the producing group performing equally well as the other two groups when including L2 and L3 fluency as covariates. Moreover, it could also be that, because of the slightly higher L2 and L3 fluency of the no gestures group, they performed better in general. It might, therefore, be the case that gestures do not play an important part in L2 word learning if the general language proficiency of a person is high. This shows that L2 and L3 fluency has to be taken into account in future research, as it seems to influence the results. Further research has to be conducted as to why exactly this difference occurs, and what the consequences are for foreign language learning.

In terms of the influence of gesture use for word type on L2 word comprehension, the results showed that, in general, there is no difference between the comprehension of nouns and verbs between the groups, which was unexpected. Moreover, it was expected that, in general, nouns would be better comprehended when gestures are not present, but that there would not be a difference between the comprehension of nouns and verbs when gestures are present. The results, on the other hand, showed that this was not the case, as the group seeing no gestures

¹ When doing the repeated measures analysis for comprehension of the words with word type as within-subject factor and gesture condition as between-subject factor, but with L2 and L3 fluency as covariates, there is no longer a significant main effect of gesture condition ($F(2, 61) = 2.98, p = .058$).

did not comprehend the nouns better than the verbs. For the group producing the gestures, there was also no difference between the comprehension of the nouns and verbs, which was expected. Nonetheless, there was a difference in comprehension for the participants viewing the gestures. This group comprehended the verbs significantly better than the nouns, which does not align with the hypothesis.

Furthermore, an additional test showed that the participants who viewed the gestures comprehended the verbs better than the participants who also produced them. For the comprehension of the nouns, on the other hand, there was no difference in comprehension between the groups. Nevertheless, the significance level for this last test was beneath ten percent. It is therefore interesting to look further into the exact verb and noun comprehension of the participants. As can be seen in figure 1 in the results, the viewing gesture group seems to comprehend the verbs best. The nouns, on the other hand, seem to be best comprehended by the group who saw no gestures, while the producing group seems to comprehend both the verbs and the nouns the worst. Although these findings are not significant, this makes it seem like viewing gestures only helps with the comprehension of verbs, while producing them seems to not help with either one of the word types. It could be that these results do become significant when bigger groups are investigated in the future, which is therefore necessary.

Moreover, it is remarkable that nouns were not significantly better remembered than verbs when gestures were not present, as earlier research showed that this should be the case (García-Gómez & Macizo, 2019). This would be caused by the fact that nouns are easier to visualize than verbs, as people can think of more concrete objects when they think of nouns than when they think of verbs (Hupp & Cingras, 2016). However, the words used in this study were all very concrete (see table 2). As high concreteness meant that a word could be perceived as very tangible, and that therefore it could be more easily visualized (Brysbaert et al., 2014), the high concreteness of both word types could have caused that both nouns and verbs were easy to visualize. Because of this, it could be the case that the difference between the visualization of nouns and verbs has disappeared in the present study. This could be the reason that, when no gestures were present, there was no difference between the comprehension of nouns and verbs. In that case, this could also explain the unexpected result that the viewing gestures group did not comprehend the words better than the no gestures group, as the gestures may not have helped with making the words easier to visualize, because they already could be easily visualized.

Nonetheless, the group who only viewed the gestures comprehended the verbs better than the nouns. If it was the case that both word types could be easily visualized because of

high concreteness, this should mean that including gestures would not change this visualization. The fact that verbs are better comprehended when gestures are viewed is therefore unexpected, and it is unclear why this is the case. It is therefore necessary to further investigate the learning of these different word types. Moreover, future research might show that there are different results for words with different degrees of concreteness.

Furthermore, as for the group producing the gestures performing worse than the other two groups, they may have been very focussed on performing the gestures in the right way, and less on the words that were spoken. It could therefore be the case that these participants were distracted by producing the gestures. This could have led to them being less able to focus on the word learning, and therefore remembering the words worse than the other two groups. Despite this possibility, it has to be further investigated why the present experiment gives such different outcomes than earlier research in terms of the comprehension of nouns and verbs while using and producing gestures.

Another factor, which could have led to the unexpected results, is that the group who also produced the gestures only had to do this in the teaching phase, but not in the testing phase. Huff et al. (2018) researched learning with the use of gestures in these different phases, and according to them it is better to use gestures in both the learning and the testing phase, and not in only one of these phases. Their experiment showed that congruency in learning, meaning both the learning and testing phase are either with or without producing gestures, is better than in-congruency, meaning gestures are produced in only one of these phases. In the case of in-congruency, the effect of producing gestures while learning does not help, according to these authors. Then, learning without gestures in both phases, which is congruent, would be better than using gestures in only one phase. This could have caused the results of the present experiment, where the group who saw no gestures comprehended the words better than the group that had to produce the gestures only in the teaching phase. However, this does not explain why the group that only saw the gestures also performed better than the group producing the gestures, as the viewing group saw no gestures in the testing phase, making their learning incongruent as well. Nevertheless, this could be the case because congruency in learning is especially important for producing gestures, but less for viewing them (Huff et al., 2018).

Furthermore, there was only one test in the present experiment, which was almost immediately after the training phase. In the experiment of Cherdieu et al. (2017), where one group viewed gestures and one group viewed and produced gestures while learning, there were two testing moments. One test was conducted immediately after the training, while the second one was done a few days after the training. The results showed that the group who also produced

the gestures performed better only in the test a few days after the training, but not in the test immediately after. This would suggest that learning while viewing and also producing gestures only has an effect on long-term learning, but not on short-term. This could have caused the result that the producing group in the present experiment did not perform better than the other groups, as there was only one testing moment, almost immediately after the training.

As for the limitations of this study, the circumstances under which the experiment had to be done were not optimal. Due to Covid-19, the entire experiment had to be conducted online. This made it difficult to control the participants, as the researchers could not be present when conducting the experiment. For example, it could not be checked whether the producing group actually produced the gestures or not, and if they did, whether they did this in the right manner. Moreover, there was no control on whether the participants paid attention to the videos, or if they were doing something else while the video was playing. Also, it is unsure whether the participants took sufficient breaks between the videos.

Besides that, a few of the participants indicated that they could not hear the speakers well at all times. Especially for the testing video, some participants had trouble with hearing the words the Slovak speaker said. This means that the sound of the videos was not optimal, which could have led to worse results than when the sound would have been better. It could be the case that some of the participants actually knew more words than they filled in, but because they could not hear the speaker well, they could not fill in these answers. Also, the poor sound quality may have led to worse results in general, over all the groups.

Furthermore, the speakers changed slightly in their appearance in all videos, because some words had to be re-filmed after the haircut of the speakers changed. Even though there was an attempt to make the speakers look as similar as possible, by making sure their clothing and the background was similar, the haircut difference did exist. This could have distracted participants, causing them to be less focussed on the words. Because of this, the word comprehension may have been worse than if this difference would not have existed. For future research, it is important that the appearance of the speakers teaching the words is completely similar for all words.

Moreover, the test in this study was focussed on the memorization of the words, but it is debatable whether that can actually be called learning or comprehending the words. Also, the Dutch words that had to be filled in on the test were presented above the word-recall test. This could have created the chance that participants gambled on filling in a word when they did not know the meaning. It could therefore be that some words that were filled in correctly were not actually comprehended.

Additionally, people are, in general, more likely to produce or not produce gestures (Wesp, Hesse & Keutmann, 2001). It could be that this is a factor that also plays a role in learning with the use of gestures, for example because people who use more gestures in general, are more open towards this type of learning. However, this aspect has not been taken into account in this experiment. Besides that, it could be that people who do frequently use gestures in their daily life, only do this when they talk about certain topics or in certain word classes. This has also not been taken into account, and therefore these factors that also have to be further investigated.

Regarding the participants, most of the people that participated did a university bachelor. It could be the case that because of this, the participants found it easier, or even more fun, to learn in general, as they were fairly high educated. The results could therefore be different if participants from a more varied educational level would be included. Moreover, the average age of the participants was quite young, and it is easier for younger people to learn a new language (Snow & Hoefnagel- Hühle, 1978). Therefore, the results could also turn out differently if people from an even younger, or older age would be included. It would be interesting to further investigate these different ages in terms of using gestures when learning, and finding out whether the outcomes change.

In conclusion, this study has focussed on the use of gestures while learning words in an L2. It has gone further on research already present in this field, while also including the factors of not only viewing but also producing gestures, and learning different word types. It is important to further investigate the outcomes of this study, as the results do not align with previous research. Moreover, discovering means to make L2 learning easier is relevant, as learning multiple languages becomes more and more important in a globalizing world.

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Appendix

Table 13. Instructions (translated from Dutch to English) and execution of the videos

Video 1 (Gesture Viewing)	Video 2 (Gesture viewing plus production)	Video 3 (No gestures; control group)
Duration teaching/testing phase: 00:03:02 / 00:04:49	Duration teaching/testing phase: 00:03:02 / 00:04:49	Duration teaching/testing phase: 00:02:39 / 00:04:49
<i>Pre-Experiment Instruction</i>	<i>Pre-Experiment Instruction</i>	<i>Pre-Experiment Instruction</i>
<p>‘In the following video, you will be taught 14 Slovakian words. You’ll see two instructors: one Dutch and one Slovakian instructor. First, the Dutch instructor will pronounce the Dutch word, followed by a Slovak translation by the Slovak instructor. One word and its translation will be repeated twice before going to the next word. When the teaching part is over, the test will begin. Good luck!’</p>	<p>‘In the following video, you will be taught 14 Slovakian words. You’ll see two instructors: one Dutch and one Slovakian instructor. First, the Dutch instructor will pronounce the Dutch word, followed by a Slovak translation by the Slovak instructor. One word and its translation will be repeated twice before going to the next word. The instructors will be using gestures. Please try to repeat those gestures as well as you can while listening to the words. When the teaching part is over, the test will begin. Good luck!’</p>	<p>‘In the following video, you will be taught 14 Slovakian words. You’ll see two instructors: one Dutch and one Slovakian instructor. First, the Dutch instructor will pronounce the Dutch word, followed by a Slovak translation by the Slovak instructor. One word and its translation will be repeated twice before going to the next word. When the teaching part is over, the test will begin. Good luck!’</p>

Teaching

- Dutch instructor on the left
- Slovakian instructor on the right
- One instructor is on freeze when the other one talks
- Instructors uses gestures while pronouncing the words

Teaching

- Dutch instructor on the left
- Slovakian instructor on the right
- One instructor is on freeze when the other one talks
- Instructors uses gestures while pronouncing the words

Teaching

- Dutch instructor on the left
- Slovakian instructor on the right
- One instructor is on freeze when the other one talks
- Instructors does NOT use gestures while pronouncing the words

Pre-Test Instruction

‘In the next video you will see the Slovakian instructor pronouncing the Slovakian words twice, after which you will have 15 seconds to write down the Dutch translation on your answer sheet. The words will not be in the same order as in the teaching part. When the test is over, please raise your hand. Good luck!’

Pre-Test Instruction

‘In the next video you will see the Slovakian instructor pronouncing the Slovakian words twice, after which you will have 15 seconds to write down the Dutch translation on your answer sheet. The words will not be in the same order as in the teaching part. When the test is over, please raise your hand. Good luck!’

Pre-Test Instruction

‘In the next video you will see the Slovakian instructor pronouncing the Slovakian words twice, after which you will have 15 seconds to write down the Dutch translation on your answer sheet. The words will not be in the same order as in the teaching part. When the test is over, please raise your hand. Good luck!’

Test

- Slovakian instructor
pronounces each Slovakian
word twice followed by a 15
second break

Test

- Slovakian instructor
pronounces each Slovakian
word twice followed by a 15
second break

Test

- Slovakian instructor
pronounces each Slovakian
word twice followed by a 15
second break

Table 14. Screenshots of the videos

Type of video

Viewing and producing
gestures video



No gestures video

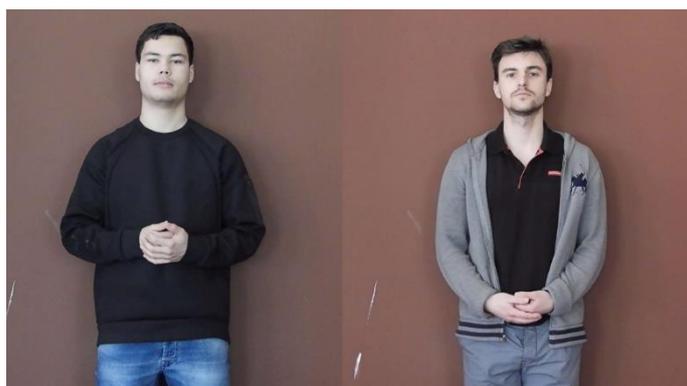


Table 15 The questionnaire

Q1_intro

Beste deelnemer,

Bedankt voor uw bereidheid om deel te nemen aan dit onderzoek van studenten van de Radboud Universiteit over het leren van een vreemde taal.

De procedure van dit onderzoek bestaat uit de volgende stappen: 1) het bekijken van een video waarin u de Slowaakse vertaling van 14 woorden zult leren, 2) het invullen van een korte algemene vragenlijst, 3) het nogmaals bekijken van dezelfde video als in stap 1, waardoor u de kans heeft om de woorden nog eens te leren, 4) het invullen van een vragenlijst over uw taalachtergrond, en 5) het bekijken van een video waarna we benieuwd zijn van hoeveel Slowaakse woorden u de betekenis hebt onthouden.

Het is belangrijk dat het volume op uw computer of telefoon goed werkt en dat u de video in optimale omstandigheden, zonder afleiding, kunt bekijken. Daarvoor heeft u een hoofdtelefoon nodig. Voor de testfase heeft u pen en papier nodig. Deelnemen aan deze studie duurt ongeveer 20 minuten.

Uw deelname aan dit onderzoek is vrijwillig en u kunt zich op elk moment terugtrekken. Al uw antwoorden blijven vertrouwelijk, worden anoniem verwerkt en worden alleen gebruikt voor deze studie.

Als u hieronder op de knop 'Ik ga akkoord' klikt, betekent dit dat:

- U de bovenstaande informatie heeft gelezen
- U vrijwillig instemt met de deelname
- U minimaal 18 jaar oud bent

Indien u niet wenst deel te nemen aan deze studie, kunt u de deelname weigeren door deze webpagina te verlaten.

Voor meer informatie over deze studie kunt u contact opnemen met j.chan@student.ru.nl.

Nogmaals hartelijk bedankt voor uw deelname. Wij zijn hier bijzonder mee geholpen!

Rivka van den Berg
Iris Kattar
Benthe Meijer
Linda Schellekens
Leonard Lauko
Jimi Lee Chan

- Ik ga akkoord (doorgaan met het onderzoek)
- Ik ga niet akkoord (stoppen met het onderzoek)

U gaat van de volgende 14 woorden de Slowaakse vertaling leren:

Mengen	Appel	Schaatsen	Fout
Praten	Gordijn	Schieten	Liften
Vliegtuig	Varken	Bloem	
Hardlopen	Wereld	Komen	

Bekijk alsjeblieft de volgende video en volg de instructies.

(Displaying video 1, 2, or 3)

Nu u de woorden heeft geleerd krijgt u een paar minuten pauze. In deze tijd kunt u alvast de volgende gegevens invullen.

Q7_age

Wat is uw leeftijd?

Q8_gender

Wat is uw geslacht?

- Man
- Vrouw
- Anders, namelijk

Q9_education_level

Wat is uw opleidingsniveau?

- WO Master
- WO Bachelor
- HBO Master
- HBO Bachelor
- MBO 4
- MBO 3
- MBO 2

- MBO 1
- VWO
- HAVO
- VMBO

Q10_education_name

Indien u studeert, wat is de naam van uw opleiding?

Q11_profession

Indien u werkt, wat is uw beroep?

Q12_born_in_NL

Bent u geboren in Nederland?

- Ja
- Nee

(In case no, the following three questions, in case yes, skipping the next three questions)

In welk land bent u geboren?

Q14_age_moving_to_NL

Hoe oud was u toen u naar Nederland kwam?

Q15_duration_in_NL

Hoeveel jaren woont u al in Nederland?

Om ervoor te zorgen dat u de woorden goed onthoudt, vragen wij u om nog eens op dezelfde manier de 14 woorden te leren door middel van dezelfde video.

Het gaat hierbij dus weer om deze woorden:

Mengen	Appel	Schaatsen	Fout
Praten	Gordijn	Schieten	Liften
Vliegtuig	Varken	Bloem	
Hardlopen	Wereld	Komen	

Bekijk alsjeblieft de volgende video en volg de instructies.

(Displaying video 1, 2, or 3)

Q55

Nu u de woorden heeft geleerd krijgt u een paar minuten pauze. In deze tijd kunt u alvast de volgende gegevens invullen.

Q16_first_language

Wat is/zijn uw eerste taal/talen?

- Nederlands
- Engels
- Duits
- Frans
- Vlaams
- Anders, namelijk

Q17_other_languages

Geef alstublieft aan welke andere talen u nog meer kent. Noteer de talen die u nog veel in het dagelijks leven gebruikt of voor een langere periode in het verleden hebt gebruikt. Probeer een schatting te maken van de beheersing die u hebt over elke taal. Gebruik hierbij de volgende schaal:

Niet goed 1 2 3 4 5 6 7 8 9 10 Heel goed

	Spreken	Luisteren	Schrijven	Lezen
Taal 1 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Taal 2 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Taal 3 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Taal 4 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Taal 5 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Q18_activities

Geef alstublieft aan welke taal/talen u gebruikt voor de volgende activiteiten:

	Taal/talen
Lezen	<input type="text"/>
TV kijken	<input type="text"/>
Luisteren naar de radio/muziek	<input type="text"/>
E-mail/internet	<input type="text"/>

Q19_like_languages

Hoeveel houdt u ervan om nieuwe talen te leren?

1 2 3 4 5 6 7 8 9 10

Ik hou er totaal niet van	<input checked="" type="radio"/> <input type="radio"/>	Ik hou er heel erg van
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Q20_easy_languages

Hoe makkelijk vindt u het om nieuwe talen te leren?

1 2 3 4 5 6 7 8 9 10

Moeilijk	<input type="radio"/>	Makkelijk
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Q21_multiple_languag

Hoe vaak maakt u gebruik van meerdere talen gedurende een periode?

1 2 3 4 5 6 7 8 9 10

Bijna nooit	<input type="radio"/>	Heel vaak
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Q22_testing_video

We zijn nu benieuwd van hoeveel Slowaakse woorden u de betekenis nog weet. U krijgt nu alleen de Slowaakse woorden te horen, waarvan u de Nederlandse vertaling moet geven. Het gaat hierbij om deze Nederlandse woorden:

Mengen	Appel	Schaatsen	Fout
Praten	Gordijn	Schieten	Liften
Vliegtuig	Varken	Bloem	
Hardlopen	Wereld	Komen	

Schrijf eerst de Nederlandse vertaling op een kladblaadje en vul deze daarna in onder de video, zodat u te allen tijde de Slowaakse spreker ziet.

Bekijk alstublieft deze video en volg de instructies.

(Displaying video 1, 2, or 3)

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
 - 8.
 - 9.
 - 10.
 - 11.
 - 12.
 - 13.
 - 14.
-