

Making a Grand Gesture?

**The Influence of Sign Language Interpreters on the Persuasion of a Message for Good
Hearing People**

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Abstract

For the first time a live sign language interpreter is visible on Dutch national television during the press conferences about the coronavirus. This is a good addition for hearing-impaired individuals but their influence on good hearing people is unknown. Research emphasizes the importance of nonverbal behavior, in particular gestures, in increasing persuasion. For good hearing people the sign interpreter could function as a producer of gestures and increase persuasion. The current study aims to fill the gap in literature by answering the question ‘Does the addition of a sign language interpreter increase persuasion on good hearing people, or is it distracting from the message and thus less persuasive? An online survey was conducted among good hearing Dutch adults. Participants watched a video of a press conference with either the speaker only, speaker and synchronized sign interpreter or speaker and unsynchronized sign interpreter. The persuasiveness of the video was measured by nonverbal presence, attention, understanding, memory, persuasion and intention to comply. We found that the presence of a sign language interpreter does not have a main effect on persuasion among good hearing people, but that the synchronized interpreter strengthens the effect of previously formed opinions on persuasion. For future research it is recommended to study the effect of the sign interpreter using an unknown speaker and a neutral topic. It is concluded that the addition of the sign language interpreter to the press conferences is a good move. Results of the study are a valuable first step in optimizing important communication.

Keywords: sign language interpreters, nonverbal behavior, gestures, persuasion, press conference

Making a Grand Gesture?

The Influence of Sign Language Interpreters on the Persuasion of a Message for Good Hearing People

Sign language interpreters (SLI's) are increasingly popular. For the first time a SLI is visible during the Dutch national press conferences about the coronavirus. While the presence of the interpreter is a good addition for hearing-impaired individuals, the influence of a sign interpreter on good hearing people is unknown. The addition of an extra person besides the speaker can be distracting from the message and therefore decrease persuasion. On the other hand, research emphasizes the importance of nonverbal behavior, in particular gestures, on increasing persuasion. Therefore, the SLI could function as an additional producer of gestures and increase persuasion. The present research thus aims to answer the question 'Does the addition of a sign language interpreter increase persuasion on good hearing people, or is it distracting from the message and thus less persuasive?'

Have you seen the videos of the Eurovision song contest with the SLI signing and almost play backing the songs? Or the soccer match with the sign interpreter commenting on the game? And what about the SLI on the local news channel? SLI's can be seen on many different occasions, ranging from cinema movies to rap concerts. Sign language is getting increasingly popular, which, among other things, can be seen from the 42% increase in registrations for the course sign language interpreter in The Netherlands (Zwart, 2020). This increase is also due to the presence of a SLI during Dutch national press conferences.

Sign Language Interpreter Present During Press Conferences

Since the beginning of 2020, The Netherlands, as well as many other parts of the world, has been dealing with the coronavirus. In order to get some control over this pandemic the government announced measurements and restrictions like wearing facemasks, avoiding physical contact, or even curfews. Updates about additional restrictions and relaxations were

given by the prime minister during national press conferences. Such press conferences were given in many different countries around the world. During a few of them, including the Dutch press conferences, SLI's were present.

Moreover, the presence of a SLI during a Dutch national press conference was a first (Gallimore, 2020). This has been regarded as a positive development for the approximately 1.5 million deaf and hearing-impaired Dutch citizens (Ipenburg, 2021). Although the deaf and hearing impaired are their primary target, the much larger hearing portion of the population is also exposed to the SLI's during the press conferences. Yet, no research can be found on the effect of SLI's on good hearing people. The aim of the current study is to fill that gap in literature. Therefore, this study will contribute to knowledge about the impact of SLI's for good hearing people. There is, however, a lot already known about signing in the form of nonverbal behavior and gestures. This will be further explained.

The Importance of Nonverbal Communication and Gestures

According to two classic studies by Mehrabian and Ferris (1967) and Mehrabian and Wiener (1967), 93% of our communication is nonverbal. With nonverbal communication, the actions distinct from speech are meant (Mehrabian, 2007). The studies divide communication further in the famous 7%/38%/55% rule, that states that 7% of our communication is verbal, 38% is vocal and 55% is facial. The high numbers for nonverbal communication are questioned by Wahler (2012) who exposes some methodological errors in the Mehrabian studies and states that the division is situation dependent. Apart from the exact numbers, the Mehrabian studies do emphasize the importance of nonverbal communication. This claim is supported by studies in different fields, for example in applying for jobs, where a direct link has been established between nonverbal communication and job interview performance (Kumazaki et al., 2019; Strickland et al., 2003). Moreover, nonverbal behaviors such as smiling, nodding and gesturing increase a person's hiring chances (Cuddy et al., 2012).

A considerable share of the large body of research on nonverbal communication has focused on gestures and, has shown the role of hand gestures in human communication (Holler et al., 2009). Gestures and speech are closely related (Peters & Hoetjes, 2017), and speakers adapt the amount and size of gestures to their expected benefit for the listener's comprehension (Hostetter, 2011). Thus, speakers use more gestures while being aware of someone seeing them compared to knowing that no one is watching (Alibali et al., 2001), and use bigger gestures when describing unknown information (Holler & Stevens, 2007).

Gestures are thus being used by the speaker with the intention to increase comprehensibility, and research confirm that gestures do indeed improve comprehension. For example, teachers' gestures improve student comprehension and learning (Valenzo et al., 2003) and children understand a mother's request better when it is accompanied by gestures (Kelly, 2001). A meta-analysis by Hostetter (2011) including 63 samples demonstrates that gestures improve comprehension, conceptual understanding, and communication, strengthens memory trace, and have a long-lasting effect.

The importance of gestures, which are universal and can be found in every human culture (Kendon, 2004), is further illustrated by the facts that infants begin to gesture before they can talk (Rodrigo, 2004) and continue using gestures even after being able to talk (Guidetti & Nicoladis, 2008), that blind people also gesture even if they were born blind and have thus never seen gestures before (Krauss, 1998), and that intentional use of gestures can even be found among multiple ape species (Call & Tomasello, 2020), which are considered to be the most similar to humans on a cognitive level (Byrne et al., 2017).

The Influence of Gestures on Persuasion

Based on research mentioned above, it can be concluded that nonverbal behavior, and in particular gestures, play an important role in human communication. More specifically, gestures play an important role in the persuasiveness of human communication (Maricchiolo

et al., 2009). Persuasion can be defined as “a way to influence other people, that is, to make them do actions, pursue goals, that they would have not otherwise” (André et al., 2010, p. 585), and can be seen as a way of eliminating barriers to behavior change (Hunter, 2018). This is supported by Falk et al. (2010) who mention that both self-reported responses and brain activity indicate that persuasive communication is a great predictor of future behavior.

Persuasion differs from other influence strategies for the following three reasons (André et al., 2010). First, the action or goal is aimed at being in the interest of the one who is being persuaded (the persuadee). Second, there is no use of force, rather it is targeted at the free choice of the persuadee. Third, persuasion tries to influence through communication. Only a small part of this communication goes through argumentation (André et al., 2010). The old saying can be applied here; “it’s not what you say, it’s how you say it”.

This saying is supported by Maricchiolo et al. (2009) in a research about the persuasiveness of hand gestures in speeches. This study used a video-message of a professional actress arguing in favor of increasing university fees for students. Different versions of this video were created manipulating only the presence and type of gestures. Results show that the absence of gestures is evaluated more negatively and using gestures is better on the message persuasiveness than not using gestures.

The influence of gestures on persuasion can be found in many other fields as well. Ranging from psychology and communication to marketing and advertising (Gass & Seiter, 2018). For example, Clarke et al. (2019) found support for the effectiveness of gestures in entrepreneur pitches. They also mention the importance of gestures over verbal communication. Even social robots can increase their persuasiveness by using nonverbal cues such as gestures (Chidambaram et al., 2012). In fact, robots who use only nonverbal cues can still increase persuasion while the use of only verbal cues could not.

Another area where the importance of gestures on persuasion are noticeable is in political discourse. These speeches are different from normal face-to-face communication for the reason that they are mostly monologues and the listener(s) of the speech does not actively participate in the communication process (Peters & Hoetjes, 2017).

Studies about gestures in political speeches also acknowledge the important role of gestures (Vincze, 2009). The persuasive qualities of gestures in political discourse are for example demonstrated by Poggi and Pelachaud (2008). Another example is the study of Peters and Hoetjes (2017) on the role of gestures in political speech. Participants were shown a video of (what was said to be) a politician, discussing a new final exam at the university. The video was manipulated such that one group of participants saw the accompanying gestures and the other group saw only a slideshow of screenshots from the video where no gestures were produced. Results showed that participants who viewed the video with gestures found it more persuasive than participants who did not see the accompanying gestures.

Are Two Bodies Better Than One?

In summary, it can be said that research is quite conclusive about the important role of nonverbal behavior, in particular gestures, on communication and persuasion. One group of people who make considerable use of gestures are SLI's. For the hearing-impaired, the SLI is verbally communicating. However, for hearing people who do not speak this language, it could function as nonverbal communication and thus possibly increase persuasion. Since the effect of SLI's on good hearing people has not been studied before, the current study aims to fill this gap in literature.

At the same time, the aim is to investigate the effect of gestures coming from someone other than the speaker. In most studies about gestures, the speaker and the one gesturing are the same person. But, since a SLI is producing gestures to accompany the speaker, gestures thus come from someone other than the speaker. For hearing-impaired individuals the sign

interpreter is the most common resource of information. For good hearing people this is the speaker. Adding a second person who produces gestures can be more persuasive. However, the addition of an extra person who produces gestures that are unknown to the good hearing listener can also be distracting from the speaker and be less persuasive. In other words, are two bodies better than one? The current research aims to answer the question; ‘Does the addition of a sign language interpreter increase persuasion on good hearing people, or is it distracting from the message and thus less persuasive?’ Previously mentioned literature provides a strong point for the influence of gestures on persuasion. For good hearing people, the SLI could function as an additional producer of gestures. Therefore, it is hypothesized that the SLI will increase the persuasion of the message.

As mentioned before, it is the first time that a SLI is visible during a Dutch national press conference (Gallimore, 2020). This offers an excellent opportunity to look at the addition of a SLI in real life political discourse. In fact, the message provided during the press conference can be considered important in persuading the citizens to obey the given advice and norms in order to stop the coronavirus from spreading. The current research could provide useful information on whether the addition of the interpreter is positive or negative in the persuasion of the provided message. On a broader spectrum, the results of the study can be considered important in optimizing the communication from the government in important times, like during the coronavirus epidemic.

The Current Study

To test our hypothesis that two bodies will be better than one, we will conduct an experiment in which a video of a Dutch press conference by the Prime Minister about the announcement of measures against the coronavirus will or will not be accompanied by a SLI who will or will not be synchronized with the speaker. If the addition of the interpreter is distracting and thus lowers persuasion, the unsynchronized and synchronized should both

yield less persuasion than the video without the interpreter. If, on the other hand, the addition of the SLI strengthens the persuasive impact, only the synchronized condition should yield higher persuasion. The crucial condition to test our hypothesis is thus the synchronized condition.

Methods

Participants

Participants were recruited using convenience sampling (Neuman, 2012). Individuals 18 years or older and Dutch speaking were allowed to participate. A total of 183 participants filled out the online survey. Two participants were excluded from the data analysis due to their inability to recognize sign language. The remaining 181 were assigned to either the *speaker only* condition ($n = 55$), the *synchronized SLI* condition ($n = 59$) or the *unsynchronized SLI* condition ($n = 67$). The sample consisted of 69 males (38%), 111 (61%) females and 1 person of unknown gender. Their age ranged from 18 to 75 years ($M = 35.8$, $SD = 15.75$). Moreover, the majority of the participants work, either part-time (47,5%) or full-time (33,1%). At the time of data collection, 45,9% of the participants were students. Noteworthy is that 46 participants (25,4%) were psychology students, 7 were logistics students and 6 participants were educational or pedagogical science students. Other study areas are medicine or nursing (3 participants), marketing (2), Social work (2), law (2), veterinary (2), health science (2), other (9) and unknown (2).

Materials

The current research contains three different conditions. The difference between the conditions is in the shown video. All participants were presented with a video with a duration of 3 minutes and 49 seconds. The video shows a fragment of the whole 61 minute during press conference about the coronavirus. During this fragment the Dutch Prime Minister Mark Rutte is seen with next to him the SLI Corline Koolhof. Three different videos were made.

The video shown in the first condition contains only the speaker. For this video the SLI was removed. This is done by pasting a part of the background over the interpreter rather than cropping her out of the fragment. This to ensure that the videos in all conditions have the same size. The video of the second condition contains the speaker and SLI. The original video was used, so no adjustments were made. Finally, the video of the third condition contains the speaker and SLI but unsynchronized with each other. This was done by pasting a video of the interpreter with a delay of 30 seconds over the interpreter in the original video. This resulted in a video where the SLI is unsynchronized with the speaker.

In choosing the particular press conference for the video, the provocativeness, recency and content were taken into consideration. The chosen press conference does not inform about extreme new measurements. This could, namely, evoke strong emotions which could damage the internal validity of the research. Also, a very recent press conference could still be in people's memories which could also damage the validity. Lastly, in order to measure the persuasion, the video should contain convincing content. In other words, viewers need to be able to be persuaded by some call to actions. For all of the reasons above, the Dutch press conference on the 6th of august 2020 was chosen as material for the video.

Instruments

To gather information about the persuasiveness of the message a questionnaire was constructed. The questionnaire consisted of 41 questions. All questions were in Dutch. The complete questionnaire can be found in appendix 1.

Persuasion is measured by six domains: nonverbal presence, attention, understanding, memory, persuasiveness and intention. Also, questions about the political preference and opinion about the sign interpreter were asked. First, nonverbal presence is found to be related to job hiring chances (Cuddy, Wilmuth, Yap, & Carney, 2015). Since job applications can be seen as a form of persuasion it seems important to include nonverbal presence in the

questionnaire. Attention is also found to be an important factor for the persuasiveness of a message (Tom et al., 2006). Moreover, Wyer and Shrum (2012) describe the long history in social psychology about the role of comprehension in persuasion. Because of this role the current study measured how understandable the message is. Next, successful memory formation is necessary for long lasting persuasion (Klucharev, Smidts & Fernández, 2008) and is therefore included in this questionnaire. The subjective persuasion is measured by the domain persuasiveness. The use of this measurement is also found in a study about the effect of hand gestures in persuasive speech (Maricchiolo et al., 2009). Finally, persuasion is also measured by intention. Literature is quite conclusive about the importance of intention on behavior. Both the Theory of Planned Behavior and the Theory of Reasoned Action emphasize the direct link between the intention to act and the actual behavior (Kaiser & Gutscher, 2003). In order to measure persuasion, intention thus seems an important measurement to include. The domains, political- and sign interpreter questions will be further explained below.

Nonverbal Presence

Nonverbal presence measures the nonverbal traits of the speaker and consists of 15 questions in total. First, participants were asked to indicate the extent to which the speaker radiated 14 different traits. An example trait is ‘convincing’. Answers were given on a 6-point Likert scale ranging from ‘not at all’ to ‘very much’. Participants were also asked to grade the speaker on a scale of 1 to 10, where 1 is the worst and 10 the best score to give. Scores were recalculated to a 6-point scale so that the total domain score could be made using the mean of the 15 items. Nonverbal presence shows a good internal consistency with a Cronbach’s Alpha (α) of .88.

Attention

Attention measures the degree to which people pay attention to the video. Attention contains 3 items with an example question being 'I found it difficult to keep my attention to the video'. Answers were given on a 6-point Likert scale ranging from 'not at all' to 'very much'. The total score is the mean of the 3 items. With a Cronbach's α of .90 the consistency of the domain can be considered good.

Understanding

Understanding measures how understandable the message is and consists of 3 items. 'I found the message difficult to understand' is an example question. Answers were given on a 6-point Likert scale ranging from 'not at all' to 'very much'. The total score is made using the mean of the 3 items. Understanding had an acceptable internal consistency with the Cronbach's α being .69.

Memory

Memory measures how well the message is remembered and consists of 3 items. An example question is 'I would be able to reproduce the content of the message'. Answers were given on a 6-point Likert scale ranging from 'not at all' to 'very much'. The total score is the mean of the 3 items. Cronbach's α of .79 shows a good consistency.

Persuasiveness

The subjective persuasion is measured by asking participants about their opinion on the persuasiveness of the message. Persuasiveness consists of 3 items with an example question being 'I found the message convincing'. Answers were given on a 6-point Likert scale ranging from 'not at all' to 'very much'. The total score is the mean of the 3 items. Although the lowest, Cronbach's α , being .67, can still be considered acceptable.

Intention

The intention to comply measures the degree to which people intent to act upon the measurements as being described in the video. Intention also contains 3 questions with 'After

hearing this message, I would intend to stick to the measures' being an example question. Answers were given on a 6-point Likert scale ranging from 'not at all' to 'very much'. The total score is the mean of the 3 items. Intention shows the highest internal consistency with Cronbach's α being .91.

Political Preference and Support for The Prime Minister

All participants received at least 4 additional questions about their political preference. The first question measures the support for the Prime Minister (the speaker). Participants were asked to grade the speaker on how he performed as Prime Minister in the current corona crisis. Answers were given on a scale of 1 to 10, where 1 is the worst and 10 the best score to give. Next, the political positions (left-right, conservative-progressive) were asked. Answers were given on 3-point scales, which are: left, middle, right and conservative, middle, progressive. Finally, participants were asked to select their preferred political party.

Sign Language and The Subjective Experience of The SLI

Participants in the conditions with the SLI answered an additional 7 questions. In order to be able to exclude participants who know sign language this skill was asked. Finally, 6 questions about the subjective experience of the SLI were added to learn more about what viewer think of the addition of the SLI. Example questions are 'the sign language interpreter distracted me from the speaker', 'the sign language interpreter annoyed me', and 'The sign language interpreter made the message clearer'. To stay consistent on the answer options, participants could give their answers on a 6-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree). A total score was made by taking the mean of the 6 items.

Procedure

Data collection was conducted in the spring of 2021. The sample was collected using convenience sampling (Neuman, 2012). By using WhatsApp and other social media, individuals in the author's network were asked to participate in the online survey. Also, the

survey was presented on Sona Systems, a website for study participation for psychology students. By opening the supplied link, the online survey opened in Qualtrics. Given that the current research includes three different conditions, participants were automatically and randomly assigned to one of the three conditions. A random classification was chosen because a random selection process reduced the chance of a sampling error and ensures that the sample is as representative as possible in relation to the population (Neuman, 2012).

By accepting the informed consent prior to the survey, participants declared to have read the informed consent and participate voluntarily in the research. Some demographic questions about age, gender, work-and study situation were asked. Next, they were asked to watch and pay attention to the video. Only after the time of the duration of the video had passed, the arrow appeared for moving on to the next page. This addition stimulates participants to watch the video completely before continuing the survey. After watching either one of the three video's the questions about the six persuasion domains appeared. Next, the political questions were asked. After these, the survey was finished for the participants in the speaker-only condition. The participants in the conditions where the SLI was visible received an additional 7 questions. Afterwards, students from Utrecht University who wanted to receive credits for their participation could leave their student number. The last question gave the opportunity for leaving comments about the research. Finally, the participants received a short debriefing and were thanked for their participation. In total, the questionnaire took approximately 10-15 minutes.

Data-analysis

The obtained data was transferred from Qualtrics to SPSS. Furthermore, a power analysis using G*power 3 was done, which revealed a power of 0.86, which is above the desired level for a study (Statistics Solutions, 2012). A factorial between group analysis of variance (ANOVA) was used as the main analytical approach to investigate the effect of the

experimental condition on persuasion. Assumptions for scale of measurement and independence were met. Levene's test was used to evaluate the assumption of homogeneity of variance and this was not violated. Shapiro-Wilk's test was used to evaluate the assumption of normality. However, this assumption was violated.

The central limit theorem states that when samples are large, the data will take the shape of a normal distribution (Field, 2013). A sample is accepted as large from a value of 30. The higher the sample size, the more normal the distribution shape is. Meaning that a violation of the assumption of normality is not a pressing concern. This is supported by Agresti and colleagues (2015) who state that for large samples the assumption of normality is generally not important. Again, the definition of a large sample is 30 or higher. The current study has a sample of 181 in total and between 55 and 67 per condition group. Taking this into account, it is decided to continue analyzing the data using ANOVA tests.

Results

Main Effects of SLI on Persuasion

Table 1 shows the scores on the persuasion domains in every condition. To test our hypothesis that the SLI increases persuasion, a multivariate analysis of variance (MANOVA) was used to examine the effect of the different conditions on persuasion. The MANOVA revealed no significant differences between the three conditions on persuasion overall, $F(12, 348) = 1.61, p = .088$. More specifically, although condition 2 had the highest scores in 5 out of the 6 domains (see Table 1), analysis of the dependent variables individually confirmed that there were no significant results for nonverbal presence ($F(2, 178) = 1.14, p = .322$), attention ($F(2, 178) = 2.29, p = .105$), understanding ($F(2, 178) = 1.30, p = .276$), memory ($F(2, 178) = 2.15, p = .120$), persuasiveness ($F(2, 178) = 0.28, p = .757$), and intention ($F(2, 178) = 0.87, p = .422$). Post-hoc analyses revealed significant differences between the two SLI conditions, with the synchronized interpreter yielding higher scores on attention ($p = .034$).

and memory ($p = .043$) than an unsynchronized interpreter. Indicating that the SLI is not distracting and thus persuasion decreasing.

Table 1

Means and Standard Deviations of the Three Conditions on each Persuasion Domain

Domain	Speaker Only condition		Synchronized SLI condition		Unsynchronized SLI condition	
	M	SD	M	SD	M	SD
Nonverbal presence	4.16	0.67	4.32	0.69	4.22	0.63
Attention	3.70	1.24	3.92	1.33	3.68	1.22
Understanding	5.31	0.63	5.36	0.65	5.28	0.62
Memory	4.51	0.77	4.72	0.81	4.41	0.84
Persuasiveness	4.59	0.85	4.63	1.16	4.63	0.77
Intention	4.47	0.93	4.70	0.93	4.55	0.96

Taking Political Preference into Account

As political preference may have an effect on the persuasion of the message, a multivariate analysis of variance (MANOVA) was used to investigate the effect of the experimental conditions and the political questions on persuasion. Findings were statistically non-significant $F(12, 278) = 1.25, p = .249$, indicating the absence of any meaningful differences in condition, when controlling for political questions, on persuasion. Furthermore, a factorial between group analysis of variance (ANOVA) was used to investigate the relationship between the different conditions and the separate political questions on persuasion. Only significant results will be presented.

First, a factorial MANOVA was done to examine the effect of the different conditions and the preferred political party on persuasion. No significant results were found between the conditions, when controlling for the preferred political party, on persuasion $F(12, 284) = 1.42, p = .156$. Next, an ANOVA was done to investigate the relationship between the

preferred political party and persuasion. Since VVD is the political party of the speaker, the preferred political party was split into VVD voters and non VVD voters. VVD voters scored higher on persuasiveness ($M = 4.50, SD = .079$) than non VVD voters ($M = 4.87, SD = .152$). These results are significant $F(1, 175) = 4.70, p = .032$. VVD Voters also scored higher on nonverbal presence ($M = 4.16, SD = .053$) than non VVD voters ($M = 4.43, SD = .101$), which also gave a significant result $F(1, 175) = 5.46, p = .021$. VVD voters are thus more persuaded than non VVD voters.

If we look specifically at the speaker, a factorial MANOVA revealed also no significant differences between the conditions on persuasion when controlling for the grade given to the Prime Minister $F(12, 302) = 1.47, p = .133$. However, when looking at the relationship between the grade given and persuasion, ANOVA's revealed a significant main effect for grade given to the Prime Minister on nonverbal presence: $F(8, 155) = 16.82, p = .000$, attention: $F(8, 155) = 3.49, p = .001$, understanding: $F(8, 155) = 2.89, p = .005$, persuasiveness: $F(8, 155) = 10.07, p = .000$, and intention: $F(8, 155) = 7.68, p = .000$. Higher scores on grade Prime Minister meant higher scores on nonverbal presence, attention, understanding, persuasive and intention. The prior opinion on the speaker is thus an important influence on persuasion.

Moreover, significant interaction effects were found between grade Prime Minister and the experimental conditions on attention: $F(14, 155) = 2.87, p = .001$, memory: $F(14, 155) = 1.93, p = .028$, persuasiveness: $F(14, 155) = 2.36, p = .006$, and intention: $F(14, 155) = 3.02, p = .000$. These interaction effects, depicted in Figures 1 to 4, show that the strength of the association between the grade given to the Prime Minister and persuasion varies across conditions. As can clearly be seen, the strongest effect consistently occurs in the synchronized SLI condition. So, results not only indicate a role of the opinion of the speaker

on persuasion but a larger role of this opinion in the synchronized SLI condition. Thus, the effect of the prior opinion on the speaker is moderated by the presence of a SLI.

Figure 1

Scatterplot of the Interaction between Predicted Values of Attention and Grade Given to the Prime Minister on Condition

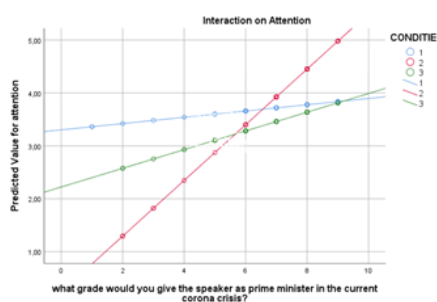


Figure 2

Scatterplot of the interaction between predicted values of memory and grade given to the Prime Minister on condition

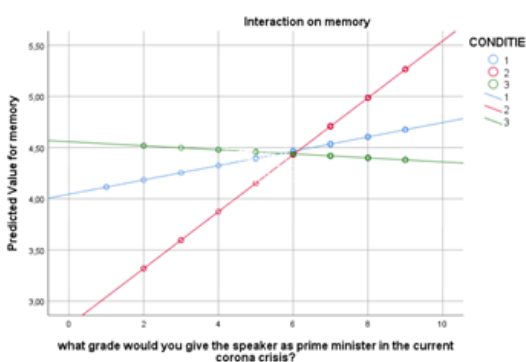


Figure 3

Scatterplot of the interaction between predicted values of persuasiveness and grade given to the Prime Minister on condition

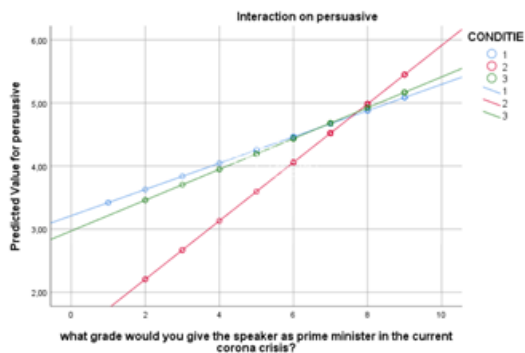
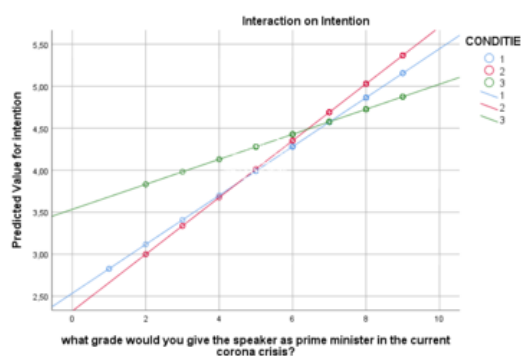


Figure 4

Scatterplot of the interaction between predicted values of intention and grade given to the Prime Minister on condition



The Subjective Experience of the SLI

An ANOVA was done to look at differences between the SLI conditions on the SLI questions. While the synchronized condition ($M = 3.66$, $SD = .95$) scored higher than the unsynchronized condition ($M = 3.64$, $SD = 1.01$), no significant differences were found on the sign interpreter questions: $F(1, 121) = 0.01$, $p = .912$. Therefore, there appear to be no differences in the subjective experience of the SLI among the different conditions. This is confirmed by analysis of the separate SLI items.

Furthermore, a one-way MANOVA was done to examine the influence of subjective experience of the SLI on persuasion. Finding showed that there was a significant effect of the sign interpreter questions on persuasion $F(6, 116) = 2.79$, $p = .014$. Analysis of the

persuasion measures individually revealed only significant results of the interpreter questions on attention $F(1, 121) = 12.94, p = .000$. Where higher scores on the sign interpreter questions result in higher scores on attention. So, the more positive the subjective experience of the SLI is, the higher the scores on attention.

Discussion

Multiple studies show the role of nonverbal behavior in communication. More specifically, they show the importance of gestures on persuasion. Gestures are widely used by SLI's. About a year ago was the first time a SLI was visible during a Dutch national press conference about the coronavirus (Gallimore, 2020). This offered an excellent opportunity to study the influence of the SLI on the persuasion of a message. At the time, no research was to be found about the impact of a SLI on good hearing people. The present study was therefore aimed at filling this gap in literature and contributing to the knowledge about persuasive communication. The study was targeted at answering the research question 'Does the addition of a sign language interpreter increase persuasion on good hearing people, or is it distracting from the message and thus less persuasive?'

Based on literature about the influence of gestures on persuasion, the addition of the SLI was expected to increase persuasion. Except for one domain, the highest scores for persuasion in the current study were indeed obtained in the synchronized SLI group. However, the differences between the three groups were not statistically significant. Results thus indicate that the sign interpreter does not increase persuasion as a result of being an additional producer of gestures, and does not decrease persuasion as a result of being distracting either. As one might expect, the opinion people have about the Prime Minister and whether or not they prefer the party of the speaker is found to influence persuasion. More noteworthy is the finding of the current study that there is a relationship between the opinion

of the speaker as Prime Minister and persuasion, which increases in strength when a synchronized sign interpreter is present. The results will be more extensively discussed next.

To start with, it can be concluded that, on the whole, the addition of the SLI does not increase persuasion on good hearing people. This is in line with Krauss and colleagues (2000) who emphasize the overestimation of the role of gestures in communication. Also, a study done by Kelly and Goldsmith (2004) found that gestures were unable to influence lecture comprehension. Moreover, according to Hostetter (2011) the influence of gestures differs amongst the topic of a speech. More specifically, gestures do not benefit communication when the topic of the speech is abstract. Abstract topics talk about those things that are not concrete and not directly in the environment. The speech in the current study about battling the coronavirus can be seen as abstract and therefore less sensitive to the influence of gesture.

On the bright side, while the results of the current study indicate that the addition of the SLI does not boost persuasion, it does not seem to decrease it either. This means that the SLI is not too distracting for the persuasion. This is supported by the finding of the current study that neither the synchronized nor the unsynchronized sign interpreter group score significantly lower in persuasion. A cautious conclusion can be made that the addition of the sign interpreter is not distracting from the message. SLI's are important for deaf and hearing-impaired people and, according to the results, not negative for good hearing individuals. This could mean that the addition of the sign interpreter to the Dutch press conference is a good move and can also be used during subsequent political discourse.

Secondly, the current study found that participants who have voted on the political party of the speaker score higher on persuasiveness and nonverbal presence. This can be well understood from an ingroup/outgroup perspective. People favor someone from their ingroup (one with a shared social identity) and evaluate them and their actions more positively (Balliet et al., 2014; Greenaway et al., 2014). This results in more effective communication with

someone from the ingroup than from the outgroup. Moreover, the communication of the ingroup speaker is also perceived as more effective. This can be seen in the results of the present study where persuasion was higher on nonverbal presence and the subjective persuasiveness amongst ingroup participants.

The present study also found an effect of the grade participants gave to the speaker as Prime Minister in the current corona crisis on persuasion. Higher grades given to the Prime Minister meant higher scores on nonverbal presence, attention, understanding, persuasiveness and intention. This can be explained through the concept of competence. High grades given to the speaker as Prime Minister in the corona crisis can be interpreted as evaluations of competence. Political leaders who are seen as competent have a higher chance of persuading others (D'Errico, 2020).

A final important finding of the current study is that the relationship between the grade given to the speaker as Prime Minister and persuasion varies across conditions. This could mean that the presence of the interpreter does have an effect on persuasion, but only when the interpreter is synchronized with the speaker. It shows that the link between the opinion of the speaker and persuasion, in particular attention, memory, persuasiveness and intention, is the strongest in the synchronized sign interpreter condition. Moreover, it is noticeable that in the condition with the synchronized sign interpreter, both high and low graders take on more extreme persuasion scores. To elaborate, people who graded the Prime Minister high, are more persuaded with the synchronized SLI than with either no or the unsynchronized interpreter. People who graded the Prime Minister low, are less persuaded after seeing the synchronized sign interpreter than the other two conditions. In other words, people who are positive about the speaker are more persuaded by the speaker and synchronized SLI and people who are negative about the speaker are less persuaded by the SLI. A conclusion can be

made that the synchronized SLI boosts the effect of previously formed opinions on persuasion. For future research it is recommended to further investigate these effects.

A possible explanation for these results could lie in the fact that the video with the synchronized sign interpreter is the original video from the press conference. Opinions and emotions people have about either the speaker, SLI, press conferences or the corona crisis in general could be triggered when the video reminds them of the real-world situation.

This can be supported by the concept of constructivism (Amineh & Asl, 2015). According to this theory new knowledge builds on existing knowledge. In other words, new knowledge is influenced by prior knowledge such that the new information gets assimilated into the existing knowledge. Authenticity is an important influencer in this process (Amineh & Asl, 2015). This might help to explain why the strongest effect of the current study was found in the condition which used a part of the original video of the press conference. To illustrate, the video with the synchronized sign interpreter is more authentic than the other two videos. Since authenticity strengthens constructivist learning, this could explain why the video with synchronized interpreter has the strongest effect. Moreover, according to the constructivism theory, new knowledge builds upon existing knowledge. Applied to the current study, the video of the press conference with synchronized sign interpreter builds on the prior knowledge and opinions one has about the speaker. This might account for the fact that people with a low image of the speaker are less persuaded and people with a high image are more persuaded by the synchronized sign interpreter.

Other possible moderators on persuasion that are worth mentioning could be age and native language. According to Hostetter (2011), children are more likely to be affected by gestures. Since children are less verbally developed than adults, they may rely more on gestures for helping them understand the message. This can explain why studies with children resulted in larger effects of gestures than studies with adults. In addition, verbal proficiency

can also be seen with respect to native language. Gestures are considered to provide additional information about a message, regardless of the language of the speaker, and could therefore benefit more for nonnative listeners (Hostetter, 2011).

Some strengths and limitations of the current study have to be taken into consideration. To start with a methodological error. To ensure internal validity, participants were stimulated to watch the entire video before continuing with the survey. This has increased the likelihood that found results are the consequence of the video. However, this also caused a methodological shortcoming, concerning an error in the data collection. After watching the video, an arrow should occur on the page to continue with the survey. However, in some cases the arrow did not appear. This has led to situations where participants stopped the survey, re-entered it, were assigned to a different condition and therefore watched a different video. This resulted in some participants who have watched more than one video. Since the video is the manipulation of the addition of the SLI, this is a concern for the reliability of the study.

On the other hand, the external validity can be perceived as strong. Instead of showing an actor in front of a camera, an existing video of a press conference has been used. This real-world approach of the study improves the generalizability and applicability of the found results. First, the results of the study do not only give information about hypothetical settings, but contribute to real-world situations. Second, results can be directly applied to press conferences and on a broader spectrum to important political discourse.

This does however also come with a limitation. Using a video from an existing press conference could trigger previously formed emotions and opinions about the speaker, interpreter or the corona crisis in general. As previously mentioned, the constructivist theory explains how new knowledge builds on prior knowledge (Amineh & Asl, 2015). The use of an existing video from the press conference could build on prior knowledge and opinions

about the press conference instead of forming new opinions. Therefore, the prior opinions and accompanying emotions could interfere with the results of the study.

This interference has been minimized by carefully selecting the video for being relatively non provocative. However, for future research, it is recommended to study the addition of a SLI using an unknown speaker, for the reason that previously formed opinions cannot interfere with the experiment. For the same reason it is advised to choose a less emotionally charged topic, since the corona crisis can be seen as an emotionally heavy and controversial subject. In conclusion it is recommended to further investigate the influence of SLI's on persuasion among good hearing people in a situation outside the corona crisis with unknown subjects.

A final strength of the current research is the statistical power of 86%, meaning that there is a 14% probability of encountering a false negative error. Powers of 80% are common in experiments and can be considered minimally desired (Brownlee, 2020). In other words, the power of the present research can be seen as a strength.

Finally, another limitation concerns the participant sample. Almost half of the participants are students. Research found that university students are more compliant to authority, from a higher socio-economic class and have higher cognitive and verbal skills, which might make them not well representable for the complete population. (Gallander Wintre et al., 2001). For future research it is therefore recommended to collect participants based on age and occupation, such that there is an equal representation of the population.

In conclusion, the current study aimed at answering the question 'Does the addition of a sign language interpreter increase persuasion on good hearing people, or is it distracting from the message and thus less persuasive? Contrary to the expectation, it was found that the addition of the SLI does not increase persuasion on good hearing people. However, the addition of the interpreter also did not cause a decrease in persuasion. Furthermore, it was

found that the opinion people have about the speaker and the preferred political party have an effect on persuasion. And finally, it was found that the prior opinion people have of the speaker more strongly affects persuasion when the speaker was accompanied by the synchronized sign interpreter. Results contribute to the knowledge about gestures and persuasion.

The present study has made a first step in filling the gap in literature about the influence of SLI's on good hearing people. Like all good first steps, it raises more questions than it gives answers. More research is needed to look at the interaction between prior opinions and persuasion, and to measure the influence of the sign interpreter on good hearing people in a neutral setting to prevent interference from previously formed opinions and emotions. Yet, the current study found no negative effects as a consequence of the sign interpreter. The preliminary conclusion can be made that the addition of the SLI to the press conference is a good move. This can be seen as valuable knowledge for the press conferences in particular and effective communication in general. In other words, the results of the present study, together with future research are important in optimizing the communication from the government in important times, like during the corona epidemic.

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Appendix 1

Questionnaire ‘Sign language persuasion in Corona press conferences’

Welkom bij het onderzoek naar persconferenties in coronatijd!

Leuk dat je mee wilt doen aan dit onderzoek! We vragen je medewerking voor een onderzoek naar persconferenties in coronatijd. Voor dit onderzoek is het van belang dat je Nederlandstalig en ouder dan 18 jaar bent.

Het onderzoek

Deze vragenlijst maakt deel uit van een afstudeeronderzoek aan de Universiteit Utrecht naar de overtuigingskracht van sprekers en berichten, en factoren die hierop van invloed kunnen zijn. In dit onderzoek krijg je een fragment van een persconferentie te zien en worden er vragen gesteld over je ervaring van het fragment. Ook worden er enkele achtergrond- en controle gegevens gevraagd, waaronder je politieke voorkeur. Het invullen van de vragenlijst duurt ongeveer 10-15 minuten.

Vertrouwelijke gegevens

De Universiteit Utrecht werkt volgens de ethiek-code van het Nederlands Instituut voor Psychologen. De gegevens die je tijdens dit onderzoek elektronisch doorgeeft, zullen worden verwerkt en gebruikt voor onderzoeksdoeleinden. De verkregen onderzoeksgegevens worden altijd vertrouwelijk behandeld en anoniem opgeslagen. De resultaten worden slechts op groepsniveau gerapporteerd.

Deelname aan onderzoek

Je kunt aan dit onderzoek deelnemen indien je 18 jaar of ouder en Nederlandstalig bent. Als je niet wil deelnemen, dan hoef je daarvoor geen reden te geven. Ook als je nu toestemming geeft, kun je die te allen tijde zonder opgave van redenen weer intrekken. Je kunt op elk gewenst moment stoppen met het invullen van de vragenlijst zonder dat dat negatieve gevolgen voor je heeft. Je kunt ook tussentijds stoppen en later doorgaan.

Contact

Als er achteraf nog iets is dat je wilt bespreken of uiten naar aanleiding van dit onderzoek, dan kun je contact opnemen met Brenda van der Lee (b.a.m.vanderlee@students.uu.nl) of dr. Tom Frijns (t.frijns@uu.nl). Voor formele klachten over het onderzoek kun je terecht bij een onafhankelijke klachtenfunctionaris (klachtenfunctionaris-fetcsowet@uu.nl).

Toestemmingsverklaring

Indien je bereid bent om uw medewerking aan dit onderzoek te verlenen, vink dan aan dat je toestemming geeft om het onderzoek te kunnen starten.

Consent toestemmingsverklaring

- JA | Hierbij verklaar ik bovenstaande informatie gelezen en begrepen te hebben en akkoord te gaan met deelname aan het onderzoek. (1)
- NEE | Ik ga niet akkoord en wil dus niet deelnemen aan dit onderzoek. (2)
-

Voordat we van start gaan, willen we graag een paar achtergrondgegevens van je weten

Q1 (leeftijd) Hoe oud ben je? Vul je leeftijd in jaren in.

Q2 (geslacht) Wat is je geslacht?

- Man (1)
- Vrouw (2)
- Anders (mag je hieronder toelichten als je wilt) (3)
-

- Zeg ik liever niet (4)

Q3 Werk je?

- Nee (1)
- Ja, part-time (2)
- Ja, full-time (3)

Q4 Studeer je?

- Nee (1)
- Ja namelijk: (2)
-

Er volgt nu een kort videofragment uit een van de persconferenties over corona die vorig jaar door de regering gehouden zijn. Zorg dat je geluid aanstaat en je de video goed kunt zien. Kijk en luister aandachtig, na het fragment zullen er enkele vragen over gesteld worden.

Bekijk het onderstaande fragment aandachtig en ga daarna door naar de volgende pagina. Na afloop van het fragment zal er rechtsonder een pijl verschijnen om naar de volgende pagina te gaan (scrol eventueel naar rechts als de pijl niet zichtbaar is)

[FRAGMENT CONDITIE 1, 2 OF 3]

Er volgen nu enkele vragen over het fragment dat je zojuist bekeken hebt. Beantwoord de vragen open en eerlijk. Hierbij zijn er geen goede of foute antwoorden.

Q5 We willen graag weten hoe de spreker uit het fragment op jou overkwam. Hieronder staat een aantal eigenschappen. Geef bij elke eigenschap aan in hoeverre jij vindt dat de spreker uit het fragment deze eigenschap uitstraalde

	helemaal niet (1)	niet (2)	nauwelijks (3)	enigszins (4)	best wel (5)	heel erg (6)
overtuigend (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
krachtig (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelfverzekerd (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
open (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
timide (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
aanwezig (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
energiek (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
charismatisch (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
dominant (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
enthousiast (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
warm (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
competent (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fascinerend (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
onbeholpen (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 Welk rapportcijfer zou je de spreker op basis van dit fragment geven?

▼ 1 (1) ... 10 (10)

Q7 Hieronder staat een aantal uitspraken over je ervaring tijdens het bekijken van het fragment en je mening hierover. Geef steeds aan in hoeverre elke uitspraak op jou van toepassing is.

Ik vond het makkelijk om mijn aandacht erbij te houden (10)

Ik heb de boodschap goed begrepen (11)

Ik zou de inhoud van de boodschap kunnen reproduceren (12)

Ik weet nog precies wat er verteld werd in het fragment (13)

Na deze toespraak zou ik me houden aan de genoemde maatregelen (14)

Na het horen van deze boodschap zou ik van plan zijn om me aan de maatregelen te houden (15)

In het fragment was een politicus aan het woord. Er volgen nu nog enkele vragen over deze politicus en jouw politieke voorkeuren in het algemeen.

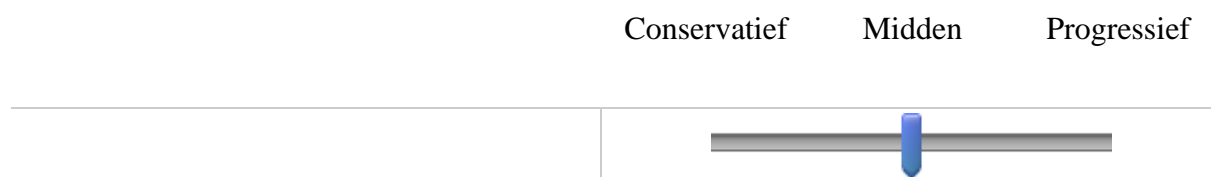
Q8 In het fragment was minister-president Mark Rutte aan het woord. Welk rapportcijfer zou je hem geven als minister-president in de huidige coronacrisis?

▼ 1 (1) ... 10 (10)

Q9 Waar zou je jezelf plaatsen op onderstaande schaal van 'Links' naar 'Rechts' in politieke voorkeur?



Q10 Waar zou je jezelf plaatsen op onderstaande schaal van 'Conservatief' naar 'Progressief'?



Q11 Op welke partij heb je gestemd bij de tweede kamerverkiezingen op woensdag 17 maart? (indien je niet gestemd hebt: op wie zou je gestemd hebben als je dat wel gedaan had?)

▼ Zeg ik liever niet (1) ... Partij voor de Republiek (38)

In het fragment zag je ook een gebarentolk. We willen je daarover ook nog enkele vragen stellen.

Q12 Kan je gebarentaal?

- Ja (1)
- Een klein beetje (2)
- Nee (3)

Q13 Geef bij elk van de onderstaande uitspraken aan in hoeverre je het er mee eens bent.

	helemaal niet mee eens (1)	niet mee eens (2)	enigszins mee oneens (3)	enigszins mee eens (4)	mee eens (5)	helemaal mee eens (6)
De gebarentolk leidde mij af van de spreker. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vond het moeilijker mijn aandacht bij de boodschap te houden vanwege de aanwezigheid van de gebarentolk. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De gebarentolk maakte het makkelijker om de spreker te volgen. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De aanwezigheid van de gebarentolk maakte de boodschap helderder. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De gebarentolk irriteerde mij. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vond het fijn dat er een gebarentolk was. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14 Als je psychologiestudent bent aan de Universiteit Utrecht en graag proefpersoonuren (PPU) wilt ontvangen, vul dan hieronder je studentnummer in. Je studentnummer zal alléén gebruikt zal worden voor het toekennen van proefpersoonuren en zal losgekoppeld worden van jouw antwoorden in deze vragenlijst.

Studentnummer:

Q15 Vragen of opmerkingen over de vragenlijst en/of het onderzoek kun je hieronder kwijt:

.....

Je bent aan het einde van dit onderzoek aangekomen. Hartelijk dank voor je deelname!

Wil je meer informatie over waar dit onderzoek over gaat? Lees dan hieronder verder. Wil je op de hoogte gehouden worden van de uitkomsten van het onderzoek. Stuur dan een mail naar b.a.m.vanderlee@students.uu.nl

Nogmaals bedankt en een fijne dag!
Je kunt dit venster nu sluiten.

Het onderzoek:

Het huidige onderzoek draagt bij aan de kennis over de invloed van non-verbale communicatie op de overtuigingskracht. In dit onderzoek wordt er dan ook gekeken naar het effect van een gebarentolk op het goed horende publiek. Het onderzoekt de invloed van de gebarentolk op de overtuigingskracht van een boodschap. Om dit te onderzoeken zijn er verschillende condities waarbij een fragment van dezelfde persconferentie te zien is waarbij alleen de spreker of de spreker met de gebarentolk in beeld is. Op basis van de resultaten wordt er onderzocht of de toevoeging van de gebarentolk voor meer overtuiging zorgt.

Persuasion Domains:

Nonverbal presence: Q5, Q6

Attention: Q7(1), Q7(8), Q7(10)

Understanding: Q7(2), Q7(3), Q7(11)

Memory: Q7(4), Q7(12), Q7(13)

Persuasiveness: Q7(5), Q7(7), Q7(9)

Intention: Q7(6), Q7(14), Q7(15)

Items to be recoded:

Q5(5), Q5(14), Q7(1), Q7(2), Q7(8), Q7(9), Q13(1), Q13(2), Q13(5)