Comparing facial cues in English and Dutch first dates

Non-verbal Communication

Assignment 1 – Individual paper

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3 June 2020

Words: 3251

Eye contact

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Introduction

This study compares non-verbal facial behaviors of English and Dutch first dates, in successful and unsuccessful dates. While numerous non-verbal cues can be expressed during first dates, the human face can express emotion sooner than people verbalize or even realize their feelings (Tian, Kanade & Cohn, 2001). Therefore, the focus of this study will be on three facial cues that seem most relevant for the moment analyzed: eye contact, surprise and smiling. The following research question has been formulated:

RQ: *Which facial cues are used more on a successful date compared to an unsuccessful date, and how does that differ between first dates in England and the Netherlands?*

Success of the date

Differences in non-verbal behavior on first dates might be explained by the success of the date. For instance, making eye contact has been associated with directness, for instance, immediacy (Mehrabian, 1969) and assertiveness (Watson, 1970). In a very relevant study, Thayer & Schiff (1977) found that when eye contact during first meetings is high, couples have more sexual interest in each other. Moreover, several studies suggest that people have more eye contact when they share feelings of warmth and liking (Kleinke, 1986), leading to the hypothesis that:

H1: People who had a successful date make more eye contact in the decision-moment than people who had an unsuccessful date.

Moreover, looking surprised is generally defined as an emotional state experienced as a reaction to an unexpected interruption in an on-going action (Silvia, 2009). The emotion of surprise is related to negative (stressful) events rather than positive events (Ekman, 1973). Considering successful dates, Ekman (1973) points to the fact that people produce more surprised facial expressions when they are watching a stressful movie versus a happy movie. An unsuccessful date is, in this study, considered a negative experience compared to a successful date, which is considered a positive experience, leading to the hypothesis that:

H2: People who had an unsuccessful date show more surprised facial expression (e.g eyebrow-raising, eye-widening, and blinking) in the decision-moment than people who had a successful date.

Lastly, smiling is universally understood as a gesture of friendliness (Thompson & Meltzer, 1964). It was found that showing friendliness through smiling is one of the most important factors in social environments, such as meeting new friends (Lau, 1982). Also, happiness and intelligence are positive attributes that are associated with smiling, as smiling is socially desirable and positively related to positive emotions in our brain activity (Thompson & Meltzer, 1964; Ekman, Davidson, & Friesen, 1990). In fact, smiling has a positive effect on interpersonal attraction (Byrne, 1971; Lau, 1982), which is perfect in first dates and the decision whether two daters would like to see each other again. It is hypothesized that:

H3: People who had a successful date smile more in the decision-moment than people who had an unsuccessful date.

Culture

Differences in non-verbal behavior during the decision-moment in the television program First Dates might also be explained by culture. For instance, Remland, Jones & Brinkman (1995) found that Dutch people use more indirect body orientations than English people, meaning the Dutch were not facing each other as much as the English. They also kept more interpersonal distance than the English (Remland, Jones, & Brinkman, 1991). This leads to the following hypothesis:

H4: English people make more eye contact in the decision-moment than Dutch people.

Regarding surprise, there has not been previous research done in which English and Dutch people were compared on the amount of surprise in the face. However, the Dutch are often more direct than the English who are more polite (Lau, 2019). At the time of the decision, it is expected that Dutch people will be more direct in giving their judgment on the date than the English. For looking surprised, this directness will result in more unexpected situations. For smiling, this directness means that smiling will be less, since according to Ambadar, Cohn & Reed (2008) many smiles of people are found to be polite, connecting politeness to smiling. Hypotheses are:

H5: Dutch people show more surprising facial expressions (e.g. eyebrow-raising, eye-widening, and blinking) in the decision-moment than English people.

H6: British people smile more in the decision-moment than Dutch people.

Method

Dataset

A dataset of 80 video fragments from the television show First Dates was used, acquired via convenience sampling. 40 fragments were from the Dutch edition and were collected from the NPO-website. The other 40 fragments were from the English edition and were collected from YouTube. Also, within each culture (Dutch or English), 20 clips of successful dates and 20 clips of unsuccessful dates were used. This resulted in a dataset of 20 successful Dutch dates, 20 unsuccessful Dutch dates, 20 successful English dates, and 20 unsuccessful English dates.

To determine whether a date was successful, a critical moment in the date was used: the moment when the interviewer asked whether the daters wanted to see each other again. If the answer was yes, the date was considered successful. If the answer was no, the date was considered unsuccessful. For feasibility, it was also decided to analyze only non-verbal cues during this critical moment: the decision-moment. This was considered the most important because it involves confronting the other about your feelings towards each other and could serve as a trigger for non-verbal behavior.

Coding

To measure the amount of eye contact, a codebook was created (see Appendix A). In short, this meant that something was considered eye contact when both persons were facing each other, either during a conversation or not. Thus, when one person looked at the other but the other did not look back, this was not considered eye contact. Image 1 and 2 represent examples of respectively non-eye contact and eye contact. The amount of eye contact was then measured by taking the total seconds of eye contact as a fraction of the duration of the total moment (Mehrabian, 1968). This means that the seconds of eye contact and the seconds of the total decision moment were timed, and then the seconds of eye contact was

made into a percentage of the whole decision moment (e.g. a value of 13.56 means that from the whole decision moment, there was eye contact for 13.56% of the time). Two coders completed this coding process for all 80 videos. Afterward, inter-rater reliability was calculated to evaluate agreement on the measurement.

Image 1. Example of not making eye contact.

Image 2. Example of making eye contact.

To measure surprise and smiling, two different coding schemes were used that were based on the Facial Action Coding System (FACS; Ekman & Friesen, 1978), which is a widely used and comprehensive method of coding people's facial expressions (Sayette, Cohn, Wertz, Perrott, & Parrott, 2001). For looking surprised, three specific action units regarding eye movement were selected: eyebrow-raising (AU 1), blinking (AU 2), and widening of the eyes (AU5). In FACS 2002, eyebrow-raising (AU 1) was divided into two separate brow raises, namely the inner and outer brow raise. For this study, these two action units were combined into one action unit to ease the coding process. In this case, action unit 1 was described as: 'The inner and/or outer brows raise and horizontal wrinkles appear across the forehead'. Action unit 2 was described as: 'The eyelids come down and are relaxed' (Cohn, Ambadar & Ekman, 2007). The third action unit used was defined as 'raising the upper eyelid' (Reisenzein, 2000). The possible emotions that matched (the combination of) these action units were surprise and/or startle (Cohn, Ambadar & Ekman, 2007; Ekman, Friesen & Simons, 1985). The presence or absence of these action

units was noted. When the auction unit(s) were present, i.e. if one or both persons expressed an action, they were coded with a 1 and when the action units were absent, they were coded with a 0. A summary of the codebook is shown in Appendix B.

For smiling, the FACS coding scheme distinguishes spontaneous and deliberate smiling and laughter (Ekman & Friesen, 1982). Spontaneously smiling is defined when the lip corners are pulled up toward the cheekbones including a raised cheek, whereas with laughter much more happens in the facial expressions, namely that the muscles are more relaxed, which resulted in lowering the jaw and widening the mouth. Regarding deliberate smiling behavior and laughter, only the lip corners are pulled up towards the cheekbones in both situations. Nonetheless, for this study, only spontaneous smiles and laughter are taken into account. Since dating is with two persons, the smiles of both candidates were measured. However, as there were some videos containing daters with the same sexes, we decided not to test the difference in smiling behavior in gender. Moreover, for the coding scheme, we decided that 0 meant no smile at all, 1 meant smiling, and 2 meant laughter. The coding was done by two coders. A summary of the codebook is explicated in Appendix C.

Image 1. Example of not smiling

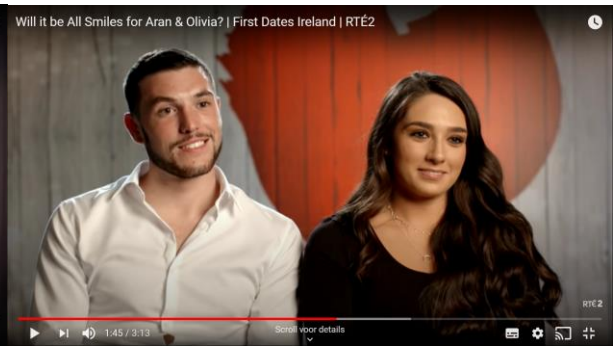

Image 2. Example of smiling

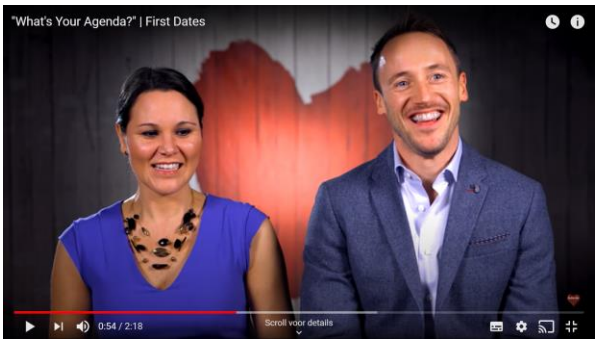

Image 3. Example of laughter

Results

Reliability

The variable that represented eye contact was created by dividing the seconds of eye contact by the seconds of the total moment and multiplying this by 100 to represent a percentage. This was done with the data of both coders that coded for eye contact, after which inter-rater reliability was examined using Krippendorff's Alpha. It was sufficient, $\alpha = .97$, indicating a reliable measurement of the eye contact percentage because a kalpha of .80 is often brought forward as the norm for a good reliability test. It was then decided to use the scores of coder 1, since these scored better for normality and homogeneity of variance (see below). The final percentages of eye contact were between 0% and 64.08% and the mean percentage of eye contact was 22.21% (SD = 15.68).

For the surprise coding, 20% of the data was double coded to ensure the reliability, meaning 16 video fragments were coded twice. Reliability was measured using Cohen's Kappa. The results showed that a strong agreement exists between the two coders ($\kappa = .89$, $p = .042$). Moreover, for the smiling coding we also ran a Krippendorff's Alpha. There was a strong agreement between the two coders with a Krippendorff's Alpha of $\alpha = .82$.

ANOVA for eye contact

A two-way ANOVA was conducted to test for H1 and H4 with the percentage of eye contact as the dependent variable, and culture and success of the date as independent variables. Means and standard deviations can be found in Table D1 in Appendix D. The most eye contact was made in successful Dutch dates (M = 27.15, SD = 12.77), while in unsuccessful English dates, the couples made the least eye contact (M = 13.53, SD = 12.12).

Before analysis, the assumptions of normality and homogeneity of variance were tested. For all four groups, the Kolmogorov-Smirnov statistic was not significant ($p > .192$ for all groups), meaning we can assume normality. Moreover, Levene's F-test was not significant, $F(3,76) = 2.20$, $p = .094$, meaning we can also assume homogeneity of variance and we may generalize the results to the population.

The two-way ANOVA revealed no significant main effect of the success of the date on the percentage of eye contact in the decision- moment, $F(1,76) = 1.85$, $p = .178$. partial $\eta^2 = .02$, representing a small effect. Although the means revealed that there was more eye contact in the successful dates (M = 24.49, SD = 13.42) compared to the unsuccessful dates (M = 19.93, SD = 17.53), this difference was not significant. Therefore, H1 is rejected.

There was a significant main effect of culture on the percentage of eye contact in the decision moment, $F(1,76) = 7.30$, $p < .001$, partial $\eta^2 = .09$, representing a medium-sized effect. The means show that the Dutch (M = 26.75, SD = 16.53) made significantly more eye contact than the English (M = 17.68, SD = 13.53). This is the exact opposite of what was expected from the literature. Therefore, H4 is rejected.

Pearson Chi-Square Tests for Surprise and Smiling

A total of four Pearson Chi-Square tests was performed to test H2, H3, H5, and H6. For all counts and percentages, see the table in appendix D. First, to test H2, with the success of the date as the independent variable and the surprised facial expressions as the dependent variables. Eyebrow raising occurred in 55% of the successful dates and in 50% of the unsuccessful dates, blinking occurred in 47% of the successful and in 45% of the unsuccessful dates and widening the eyes occurred in 20% of the

successful dates and in 15% of the unsuccessful dates. The results showed that there is no significant association between successfulness of the date and surprised facial expressions $\chi2(1) = .201$, $p = .347$. This means that people who had an unsuccessful date do not show more surprising facial expressions than people who had a successful date at the decision-moment and H2 is rejected.

The second test for H3 also had successfulness of the date as the independent variable but smiling as the dependent variable. The results showed that during an unsuccessful date, 42 persons (52.5%) did not smile, 27 persons smiled (33.8%), and 11 persons laughed (13.8%). With respect to a successful date, 28 persons did not smile at all (35%), 43 persons smiled (53.8%), and 9 persons laughed (11.3%). The test showed that there was a significant difference between successful and unsuccessful dates regarding smiling, $\chi2\ (2) = 6.66$, $p = .036$. This means that H3 is confirmed.

The third test for H5 was with culture as the independent variable and the surprised facial expressions as the dependent variables. In 60% of the English videos, people raised their eyebrows, 47% blinked and 25% widened their eyes. Overall, English people showed more surprised facial expressions than Dutch people did, namely 45% of the Dutch people raised their eyebrows, 45% blinked and 28% widened their eyes. The results showed that there is no significant association between culture and surprised facial expressions $\chi2(1) = 3.17$, $p = .187$. This means that Dutch people do not show more surprising facial expressions than English people at the decision-moment and H5 is rejected.

The last test, for H6, also had culture as the independent variable and smiling as the dependent variable. The results showed that 38 British people did not smile (47.5%), 31 persons smiled (38.8%), and 11 British people laughed (13.8%) during the decision-moment. With respect to Dutch people, 32 persons did not smile (40%), 39 persons smiled (48.8%), and 9 persons laughed (11.3%). The test showed that there was not a significant difference between smiling behavior between the Dutch and British people, $\chi2\ (2) =1.63$, $p = .44$. Therefore, H6 is rejected.

Discussion

To explore facial cues during the decision moment of first dates, 80 videos from successful and unsuccessful dates in England and the Netherlands were analyzed. With regard to the success of the date, a significant effect was found for smiling: daters in successful dates smiled more, which confirmed earlier studies on the relationship between smiling and positive emotions (Thompson & Meltzer, 1964; Ekman, Davidson, & Friesen, 1990). Although the means for eye contact point in the direction of higher levels in successful dates, these results are not significant, indicating better measurement of the phenomenon is needed to make conclusions. Further, there were almost no differences in surprise between successful and unsuccessful dates, indicating that the success of a date is not important for the amount of unexpectedness elicited. Perhaps (in)agreement over the success of the date might be a factor for further research, as it might contribute to an unexpected situation when daters do not agree on their decision.

With regard to culture, a significant effect was found for eye contact: Dutch people made more eye contact than English people. This contrasts earlier findings by Remland, Jones & Brinkman (1995), in which the Dutch showed more indirect body orientations than the English. However, the directness of the Dutch was pointed out as well (Lau, 2019). Based on this, it was expected that Dutch people smiled less and caused more unexpected situations. Although these findings were not supported, their directness could have caused Dutch people to be sure of themselves while expressing their opinion during the decision moment. This might have led to a greater amount of eye contact compared to English people, who are considered more polite (Lau, 2019). However, according to the current study, this politeness did not cause English people to smile more or to be less surprised. There might be measurement issues at play here, as it is considered difficult to measure explicit meaning of facial expressions with the FACS (iMotions, 2016).

While the coding schemes for surprise and smiling were based on the widely used FACS, providing a steady base for facial expressions research, the measure for eye contact was less founded by literature. It used timing rather than a binary ‘yes or no’ system, leading to a more complete image of the non-verbal behavior, since simply coding if there was eye contact or not would have not been useful: in

only 6 dates out of 80, there was no eye contact at all. For smiling and surprise, it could also be interesting to compare timing instead of simply occurring – perhaps this will lead to a better insight in these processes. Also, since eye contact was per definition something that happened between the two persons, no decisions had to be made regarding which person to focus on while coding. However, surprise and smiling could occur in both persons and thus had to be coded separately, which brought challenges for coding, because which person analyzed and their gender were now also factors to be coded. Ultimately, for feasibility, it was decided to not include gender in the analyses for surprise and smiling, but further research should definitely focus on gender differences in these behaviors.

Moreover, all three methods required manual coding by the research team. Although for every method, two coders completed the process and reliability scores were sufficient, further research should focus on different methods for measuring eye contact, smiling and surprise. For instance, perception tests with participants can reveal if an untrained individual is also able to distinguish whether a couple makes eye contact, whether a person is smiling or laughing, and whether a look is surprised. This is important, because it is precisely these individuals that encounter non-verbal behaviors in their daily lives.

Lastly, the setting of the measured moments is such that there is an interviewer present, asking whether the couple wants to date again. The daters face this interviewer and not each other and because of this, a person has to change their body position to make eye contact, making it of greater effort than settings where daters are already facing each other. This could influence levels of eye contact. Moreover, the presence of an interviewer could influence awkwardness or embarrassment, possibly leading to more smiling during the decision moment, as people tend to smile when they are nervous (Ambadar, Cohn & Reed, 2008). Further research could therefore focus on settings that are more natural.

To conclude, although the current study has its limitations, it is a first impression of how smiling differs between successful and unsuccessful dates and how eye contact differs between English and Dutch daters. The results provide a useful starting point for further research, but also address the need for different methods and including more factors, such as gender.

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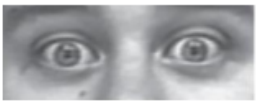
Appendices

Appendix A - Coding scheme for Eye-contact

The left column presents the variables that are measured. In the right column a description is given of how that specific variable is coded (in spss).

Culture	1 = Dutch 2 = English
Successful	1 = Successful date (when they want to see each other again) 2 = Unsuccessful date (when they do not want to see each other again)
Total moment (coded as seconds)	The timing of the total moment begins with the moment that one of the presenters asks the couple if they want to see each other again. The timer stops when the camera perspective changes; so when the scene of the couple is not in the picture anymore. If the couple did not make a decision in the moment timed, the timer is turned back on when the same scene is in the picture again.
Duration eye contact (coded as seconds)	The timer is turned on when both persons are looking at each other. When they are not looking at each other anymore, the timer is turned off.
Percentage	The seconds of eye-contact are made into a percentage of the whole decision moment.

Appendix B - Coding scheme for Surprise

Action unit	Facial display feature	Form of expression	Description	Example image	Code	Emotion
1	Eyebrows	Inner eyebrows raise Outer eyebrows raise	The inner/outer eyebrows raise on the forehead.		No = 0 Yes = 1	Surprise
2	Eyes	Eyes closing	Eyelids come down		No = 0 Yes =1	Surprise/ startle
3	Eyes	Widening of the eyes	Raising upper eyelid		No = 0 Yes = 1	Surprise

Appendix C - Coding scheme for Smiling

Country	1 = English 2 = Dutch
Successful	Succes (string) = Successful date (when they want to see each other again) Unsuccess (string) = Unsuccessful date (when they do not want to see each other again)
Smiling behavior	0 = no smile at all 1 = smile (the lip corners are pulled up toward the cheekbones including a raised cheekbones) 2 = laughter (the lip corners are pulled up toward the cheekbones including a raised cheekbones + lowering of the jaw and widening the mouth)

Appendix D - Tables with descriptive information

Table D1.

Eye contact: means and standard deviations per group

Culture	Success	Mean	Standard Deviation
Dutch	Yes	27.15	12.77
	No	26.34	19.93
	Total	26.74	16.53
English	Yes	21.84	13.87
	No	13.53	12.12
	Total	17.68	13.53
Total	Yes	24.49	13.42
	No	19.93	17.53
	Total	22.21	15.68

Table D2.

Look surprised: counts per action unit.

	Succes	**Raising of the eyebrows**	**No raising of the eyebrows**	**Total**
English	Yes	11	9	20
	No	13	7	20
Dutch	Yes	11	9	20
	No	7	13	20
Total		42	38	80

	Succes	**Blinking**	**Not blinking**	**Total**
English	Yes	11	9	20
	No	8	12	20
Dutch	Yes	8	12	20
	No	10	10	20
Total		37	43	80

	Succes	**Widening of the eyes**	**No widening of the eyes**	**Total**
English	Yes	5	15	20
	No	5	15	20
Dutch	Yes	3	17	20
	No	1	19	20
Total		14	66	80

Table D3.

Smiling: total count and percentages

Variable	**No smile Count, %**	**Smile Count, %**	**Laughter Count, %**
Successful date	28, 35%	43, 53.8%	9, 11.3%
Unsuccessful date	42, 52.5%	27, 33.8%	11, 13.8%
English	38, 47.5%	31, 38.8%	11, 13.8%
Dutch	32, 40%	39, 48.8%	9, 11.3%

Group Process Document

Planning

Date	**Activities**
17 April	First meeting with the group Brainstorming for ideas Tasks for next meeting: search literature and material
22 April	Second meeting with the group Fine tuning our research question, determining what moment to analyze Dividing the non-verbal behaviors among the six of us Tasks for next meeting: search literature for specific behaviors
29 April	Third meeting with the group Determining methods we are going to use (and who does which) Tasks for next meeting: finish dataset with 80 video's, start writing methods section
7 May	**Deadline:** all material for the dataset collected
	Working in duos on the separate parts of the assignment Contact via WhatsApp, no real meeting needed
17 May	**Deadline:** all Methods sections finished
19 May	**Deadline:** all coding finished
29 May	**Deadline:** all Results sections finished
31 May	Final group meeting and fine tuning the paper

All group members respected the deadlines, so there was no reason further formulate group rules.

Roles (who coordinated what?)

Part	**Coordinator**
Deciding topic	Tessa
Deciding RQ	Danée
Coding	Lotte
Statistics	Anne
Final Document	Darcy
Group meetings	Irene