Non-verbal Cues of Dutch Soccer Players After a Match

Kweku Ndamah-Arthur, Vera van den Hanenberg, Yvonne Leijten, Quinty Martens and Simone Schaffelaars

Abstract

The purpose of this study was to understand the relationship between non-verbal cues of Dutch soccer players and the outcome of a soccer match. A total of 50 participants completed an online survey showing several videoclips of soccer players after a match, without sound. The results showed that participants are capable of predicting the outcome of a certain soccer match, based on the non-verbal cues (facial expressions and gestures) the soccer player is showing in that clip. No support was found for the hypothesis that gender has influence on the prediction of the outcome. This also applies to the number of non-verbal cues that occurred in the clip. Results also showed that smiles do not necessarily occur more often in winning clips than in losing clips, even though smiling is an expression of happiness.

Keywords: Non-verbal behaviour, facial expressions, gestures, emotions, winning, losing

Introduction

During social interactions people usually do not restrict themselves to mere uttering of words. When people interact with each other, they produce a number of non-verbal cues as well. Not only do these non-verbal cues stimulate social interactions, non-verbal cues also have communicative values (Darwin, 1872; Besson, Graf, Hartung, Kropfhäusser & Voisard, 2004). Non-verbal cues refers to all the messages other than that which is coded in words (Eisenberg & Smith. 1971). Non-verbal cues therefore include facial expressions, body gestures, eye contact, interpersonal distance, body posture, tone of voice and vocally produced noises that often accompany oral discourse (Meuse, 1987; Besson et al., 2004). People try to make sense of the non-verbal behaviours shown by others as they communicate by attaching some meanings to those behaviours (Izard, 1994; Besson, Graf, Hartung, Kropfhäusser & Voisard, 2004). As a result, by watching the facial expressions and body gestures of others in action we can to some extent know how they feel (Lazarus, 1980; Besson et al., 2004).

Recognition of non-verbal cues in communication has been a subject of great importance to researchers for many years (Tottenham, Tanaka, Leon, A McCarry, Nurse, Hare, & Nelson, 2009). With the major focus on investigating interactions where most emotions and non-verbal behaviours are expressed. For instance, in previous studies (e.g. Kerr, Wilson, Nakamura & Sudo, 2005; Wann, Dolan, McGeorge & Allison, 1994; Fernández-Dols & Ruiz-Belda, 1995) the link between emotional experience and facial expressions in sport were examined. Kerr, Wilson, Nakamura and Sudo (2005) investigated the emotional reactions of winning and losing teams at two professional soccer matches and observed that, the losing soccer club experienced increases in unpleasant emotions during the match, and pleasant emotions were experienced by the winning soccer club. Similarly, Wann, et al (1994) found positive or pleasant emotions to be associated with winning a university basketball match and also found negative or unpleasant emotions to be associated with losing a basketball match. In these studies, participants were exposed to a judgment or perception task designed to determine what emotions naïve judges attribute to certain facial expressions (Fernández-Dols & Ruiz-Belda, 1995).

According to Darwin (1872) facial expressions are the actions of more complete behavioural responses and occur in combination with other bodily movements. To conceptualize these bodily movements that are used to convey emotions, Troisi and Moles (1999) developed a coding scheme (Ethological Coding System for Interviews-ECSI) for assessing non-verbal cues. Parties in interaction (soccer players interviewed after a soccer match) may exhibit such non-verbal behaviours as looking away, eyebrow movement, hand to face, smile and shoulder movement (Troisi & Moles, 1999).

As stated before, soccer players experience different emotions after a match. The extent to which the soccer players show their emotions through non-

verbal cues varies among the players. Therefore, the present study sets out to investigate whether non verbal cues of Dutch soccer players can be used to predict the outcome of the match. Based on this the following hypothesis is formulated:

H1: *Non-verbal cues of Dutch soccer players after a match reveal the outcome of that match.*

Further, a number of studies (e.g. Hall, 1978; McClure, 2000) have examined the differences in recognition of emotions between men and women and consistently found that women outperform men in judgment or perception tasks on non-verbal behaviours. To find out if the recognition of non-verbal cues was different for men and women, the following hypothesis was formulated:

H2: *The outcome of the match was more often predicted correctly by women than by men.*

During interactions, soccer players may or may not look into the camera; either move their eyebrows up and down or frown; touch, scratch, or rub face; smile by moving corners of the mouth upwards either far upwards or slightly; move shoulders up and down among others. Based on the above information, the following hypothesis is formulated:

H3: *The more non-verbal cues expressed by a soccer player, the more the outcome of the match can be predicted correctly.*

According to Izard (1994), certain facial expressions of emotions are so basic and universally recognized that they can be used to judge emotions of others. Ekman and Friesen (1971) identified six of these basic emotions as anger, disgust, fear, happiness, sadness and surprise. For example, happiness is universally attributed to smiles (Ekman, 1989), and can be shown when a soccer player has won a match. Similarly, sadness can be shown by a soccer player that has lost a match (Keltner, 1995). Therefore, the following hypothesis is formulated:

H4: *More smiles occur in the clips in which soccer players won, than in the losing clips.*

Stimuli collection

Selection Criteria

A within subject experiment was designed with two conditions: won vs. lost. Matches in which the soccer clubs played a tie were not taken into account, because this could either feel as winning as well as losing. For the stimuli, 40 videoclips of interviews right after a match were randomly selected from YouTube. To make sure both conditions were equally represented in the clips, 20 clips per condition were selected. In total, 24 different Dutch soccer clubs were used in the selection of the video clips (Appendix I). To rule out any differences in nationality and culture, only Dutch soccer clubs and players were selected. The study did not take any female players into account.

Video Editing

All the selected videoclips were cropped till a clip of approximately 10 seconds. By doing so, the stimuli was not too long for the participants and only the relevant moment of the video was shown to the participants. By deciding what was most relevant, certain criterion were taken into account. First of all, the soccer players in the videoclip had to give a verbal response to a question of the reporter. Secondly, it was important that this question was about winning or losing, e.g. ‘‘Congratulations on this victory. Should be a really nice feeling, right?’’. Questions that did not regard to winning or losing, e.g. ‘‘Do you consider playing for this club much longer?’’ were not taken into account. When the question of the reporter was not specifically about the outcome of a match, but the soccer player mentioned it in his answer, e.g. ‘‘I am happy and proud that we won’’, this was also taken into account.

Coding

The Ethological Coding Scheme for Interviews (ECSI) by Troisi and Moles (1999) was used to code the clips. The choice for this scheme was based on usability for facial expressions and gestures. In total, four facial expressions (eyebrows up and down, frowned eyebrows, smile and looking away) and two gestures (hand to face and shoulder movement) were coded. Coding took place by one researcher, looking at all 40 clips focussing on one non-verbal cue. The researcher looked at the videoclips and then counted

the number of occurrence of a certain facial expression or gesture. The second researcher followed exactly the same procedure, without knowing the results of the first researcher. To make sure all five researchers were coding the same non-verbal cue, all features were defined by and discussed among the researchers before coding the clips (Appendix II).

When both researchers finished coding, their answers were compared via a bivariate correlation. For two cues (smile and shoulder movement), the correlation was very low ($r_{\text{shoulder movement}} = 0.32$; $r_{\text{smile}} = 0.65$). Therefore, it was decided to code the clips in which the most differences occurred (> 1) again, and the researchers came to a consensus for those few clips. In the end, for all the features a significant correlation between the first and second coding was found ($r_{\text{hand to face}} = 1.00$; $r_{\text{shoulder movement}} = 0.55$; $r_{\text{smile}} = 0.79$; $r_{\text{eyebrow up down}} = 0.89$ and $r_{\text{eyebrow frown}} = 0.85$).

Perception test

Participants

In total 50 participants (29 females, 21 males, age *M* = 34.42 years, *SD* = 16.98 years) completed the online perception test. One of the criteria was that the participant had a sufficient fluency in English, because the questions were in English. Since the researchers had to deal with time and budget constraints, a network sampling approach was used to select participants for this study.

Materials and Procedure

Other important criteria played a role in selecting the video clips. Video clips on which the reporter was clearly visible, were not taken into account. Next to that, in all the clips only the upper body of the soccer player was filmed. To rule out the possibility that participants might remember a certain match outcome, the clips ranged from 2010 up till 2017. All the soccer players were only used once in the study, to make sure participants did not get biased. As mentioned earlier, the answer of the soccer players should only contain information about the matched they played.

To show the video clips to the participants, an online survey in Qualtrics (2009) was used. All 40 clips were shown to the participants. After every videoclip the participant had to predict the outcome of the match (won or lost). The clips were shown randomly, which means that not all participants saw the clips in the same order and the winning and losing clips were divided randomly among the survey. The survey can be found in Appendix III.

Results

To examine if the non-verbal cues of Dutch soccer players reveal the outcome of a match, a repeated measures test was performed. A significant effect was found, $F(1,48) = 546.43$, $p < .001$, $\eta p^2 = .92$. Therefore, as shown in Table 1, support was found for the first hypothesis that non-verbal cues of Dutch soccer players after a match reveal the outcome of that match.

Table 1.

The means, variables, standard deviation and p-value of the significant hypothesis.

Hypothesis	Non-verbal cues of Dutch soccer players after a match reveal the outcome of that match.	
Variables	Winning	Losing
N	50	50
Mean	7.60	15.24
SD	2.48	2.51
P-value	$p < .001$	

On average, the prediction of women (winning: *M* = 7.93, *SD* = 2.36; losing: *M* = 15.72, *SD* = 2.31) compared to the prediction of men (winning: *M* = 7.14, *SD* = 2.63; losing: *M* = 14.57, *SD* = 2.68) was not significant, $F(1,48) = 2.38$, $p = .130$. Thus, no support was found for the second hypothesis that women predicted the outcome of the match more often correctly than men.

To investigate whether the more non-verbal cues a soccer player expresses, the better the result of the match can be predicted, a regression analysis was performed. The regression analysis showed that the number of occurrences of non-verbal cues of Dutch soccer players does not predict the degree in which participants predicted the outcome of a match correctly, b = .43, $\beta = .09$, $t(38) = .55$, $p = .583$. Therefore, no support was found for the third hypothesis that the use of more non-verbal cues ensure a better prediction among participants.

To examine if smiles occur more frequently in the winning clips than in the losing clips, an independent sample t-test was performed. More smiles occur in the clips in which soccer players won (M = 1.25, SD = 1.02), than in the losing clips (M = 0.70, SD = 1.08). However, this difference, 0.55, was not significant $t(38) = 1.66$, $p = .549$. Appendix IV shows a table with all the results of the four hypotheses.

Discussion

Conclusion

In an attempt to contribute to previous research with respect to non-verbal behaviour, an experimental study was conducted among 50 participants. The aim of this study was to understand the relationship between non-verbal cues of Dutch soccer players and the outcome of the soccer match. After a match soccer players experience different emotions. There was found evidence that non-verbal cues of Dutch soccer players after a match reveal the outcome of that match.

Contrary to expectations, this study did not find evidence for the second hypothesis which stated that the outcome of the match was more often predicted correctly by women than by men. Those results are not in line with the studies of Hall (1978), and McClure (2000) who concluded that women outperform men in perception tasks on non-verbal behaviours.

Based on the coding scheme developed by Troisi and Moles (1999), the current study examined whether the more non-verbal cues expressed by a soccer player, the more correctly the outcome of the match can be predicted. However, no support was found for this third hypothesis.

Surprisingly, no support was found for the fourth hypothesis that more smiles occur in the clips in which soccer players won, than in the losing clips. These results are contrary to the results of Ekman (1989) who concluded that happiness is universally attributed to smiles.

Implications

There were a few limitations during this study. Firstly, the survey consisted of 40 clips of approximately 10 seconds which should have taken seven minutes of the respondents' time. However, the researchers received many responses that the survey was quite long. The average time to complete the survey was 13 minutes, which might have led to less attention to the video clips and answers that were chosen quick and randomly, instead of deliberately.

Additionally, fanatical supporters of Dutch soccer clubs might be biased. First of all because they might have recognized the soccer player or interview and already know the outcome of the match. Secondly, those fanatical supporters might have a preference for a certain soccer club, which might result in more favourably answers for those clubs. To rule out the fact that participants might recognize a certain interview, the shown clips ranged from 2010 till 2017.

The coding consistency was another limitation in the current study, since the correlation coefficient of two features (smiles and shoulders) was lower than 0.65. However, after discussion and agreement between the researchers the coding of the two features was reliable and significant.

Future research

The results of this study found evidence that non-verbal cues of Dutch soccer players after a match reveal the outcome of that match. However, the results do not show any cause for this result since gender, the number of non-verbal cues and the occurrence of smiles do not have any influence on the prediction. More research is needed to better understand how, and especially which, non-verbal cues of soccer players reveal the outcome of a match. A possible approach for future research could be asking the respondents why they think a soccer player won or lost the match. This provides more insights in the reasoning of the participants and possible causes of their answers.

References

Besson, C., Graf, D., Hartung, I., Kropfhäusser, B., & Voisard, S. (2004). The importance of non-verbal communication in professional Interpretation. Retrieved from *https://aiic.net/page/1662/the-importance-Of-non-verbal-communication-in-professional -interpretation/lang/1*. Accessed on March 1, 2017.

Darwin, C. (1872). The expression of the emotions in man and animals, New York: *D. Appleton and Company*.

Eisenberg, A. M., & Smith, R. R. (1971). *Nonverbal communication* (Vol. 9). MacMillan Publishing

Ekman, P. (1989). The argument and evidence about universals in facial expressions. *Handbook of social psychophysiology*, 143-164. Company.

Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology*. *17*, 124-129.

Fernández-Dols, J. M., & Ruiz-Belda, M. A. (1995). Are smiles a sign of happiness? Gold medal winners at the Olympic Games. *Journal of personality and social psychology*, *69*(6), 1113.

Hall, J. A. (1978). Gender effects in decoding nonverbal cues. *Psychological Bulletin*, 85, 845–857.

Izard, C. E. (1994). Innate and universal facial expressions: Evidence from developmental and cross-cultural research. *Psychological Bulletin*, *115*, 288-299.

Kerr, J. H., Wilson, G. V., Nakamura, I., & Sudo, Y. (2005). Emotional dynamics of soccer fans at winning and losing games. *Personality and individual Differences*, *38*(8), 1855-1866.

Keltner, D. (1995). Signs of appeasement: Evidence for the distinct displays of embarrassment, amusement, and shame. *Journal of personality and social psychology*, *68*(3), 441.

Meuse, K. P. (1987). A review of the effects of non-verbal cues on the performance appraisal process. *Journal of Occupational Psychology*, *60*(3), 207-226.

Lazarus, R. S. (1980). Foreword. In P. Ekman, The face of man: Expressions of universal emotions in a New Guinea village. New York: Garland.

McClure, E. B. (2000). A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. *Psychological Bulletin*, 126, 424-453.

Qualtrics Labs, Inc. [Computer software] (2009). Retrieved from https://tilburghumanities.eu.qualtrics.com/controlPanel/

Tottenham, N., Tanaka, J. W., Leon, A. C., McCarry, T., Nurse, M., Hare, T. A., ... & Nelson, C. (2009). The NimStim set of facial expressions: judgments from untrained research participants. *Psychiatry research*, *168*(3), 242-249.

Troisi, A., & Moles, A. (1999). Gender differences in depression:: an ethological study of nonverbal behavior during interviews. *Journal of psychiatric research*, *33*(3), 243-250.

Wann, D. L., Dolan, T. J., McGeorge, K. K., & Allison, J. A. (1994). Relationships between spectator identification and spectators perception of influence, spectators emotions and competition outcome. *Journal of Sport and Exercise Psychology*, *14*, 347–364.

Appendix I

Soccer clubs used in the analyses

1. Roda JC
2. Ajax
3. Willem II
4. PEC Zwolle
5. SC Cambuur
6. Excelsior
7. VVV Venlo
8. NAC
9. NEC
10. Almere City
11. Vitesse
12. Heracles
13. FC Utrecht
14. FC Eindhoven
15. ADO Den Haag
16. FC Twente
17. Go Ahead Eagles
18. FC Volendam
19. FC Groningen
20. Feyenoord
21. PSV
22. SC Heerenveen
23. Kerkrade
24. Sparta Rotterdam

Appendix II

Definition features based on ECSI

Looking away

Some soccer players in the videos look clearly in the camera, while others do not look in the camera at all during the interview. This means that looking away differs in the videos. The direction in which the players looks most of the time in the videos, is sort of a baseline. Every time he departed from this direction, either by looking up, down, right or left, this was coded as 'looking away.'

Eyebrow movement

Eyebrow movement is divided into two different categories: eyebrows up/down or frowned eyebrows.

- *Eyebrows up and down* - when the eyebrows moved up and downwards
- *Frowned eyebrows* - when the eyebrows moved to one and other and there occurred a wrinkles between the eyebrows.

Hand to face

The feature hand to face was accounted when the hand of a soccer player was clearly visible in the video and reached to the face of the player. Hand to face could either mean: touching the face, rubbing the face or scratching the face. When the soccer player went through his hair with his hand, this was also coded as hand to face. Touching ears was also a part of touching the face.

Smile

A smile was accounted when the corners of the mouth moved upwards. This corners could have moved far upwards or slightly, both this was coded as a smile. Therefore, it was not necessary that a smile showed the teeth of the player.

Shoulders

When a player moved his shoulders up and down, this was coded as shoulder movement. This could either be moving both shoulders at the same time, or one of the shoulders. It was not necessary that the upward movement was directly followed by the downward movement. Moving shoulders forwards and backwards was not taken into account.

Appendix III

Survey - online perception test

Dear participant,

Welcome to our survey! We are 5 students from Tilburg University and currently doing a study on non-verbal communication. In this survey you will get to see several video clips (from which the sound has been removed) followed by a question. In order to answer this question, it is important first to look at the full video (+/- 10 seconds). It will take no longer than 10 minutes to complete this survey. Your answers will be processed anonymously.

Thank you very much for participating!

Kweku, Quinty, Simone, Vera and Yvonne

By looking at this soccer player, do you think he lost or won the match?

Lost

Won

In the survey, there were 40 questions like the upper one.

The full survey can be reached via the following link:
https://tilburghumanities.eu.qualtrics.com/jfe/form/SV_cGSeTdWNz0hSpXT

Appendix IV

Table 2.

Means, variables, standard deviations and p-values of each hypothesis.

	Hypothesis	Variables	N	Mean	SD	P-value
H1	Non-verbal cues of Dutch soccer players after a match reveal the outcome of that match.	Winning	50	7.60	2.48	$p < .001$
		Losing	50	15.24	2.51	
H2	The outcome of the match was more often predicted correctly by women than by men.	Women winning	29	7.93	2.36	$p = .130$
		Men winning	21	7.14	2.63	
		Women losing	29	15.72	2.31	
		Men losing	21	14.57	2.68	
H3	The more non-verbal cues expressed by a soccer player, the more the outcome of the match can be predicted correctly.	Number of features	40	7.28	2.45	$p = .583$
		Number of people good prediction	40	34.55	11.82	
		Predicted value	40	34.55	1.06	
H4	More smiles occur in the clips in which soccer players won, than in the losing clips.	Smile winning	20	1.25	1.02	$p = .549$
		Smile losing	20	0.70	1.08	