

Non-verbal Communication and Leadership

The impact of hand gestures used by leaders on follower job satisfaction

Author: Bianca Malaika Ciuffani

University of Twente
P.O.Box 217, 7500AE Enschede
The Netherlands

ABSTRACT: This study investigated the association between the hand gestures used by organizational leaders in regular staff meetings and follower job satisfaction. Using a cross-sectional research design, the objective was to find whether a relationship exists between a leaders' use of hand gestures and the job satisfaction. Regular staff meetings were videotaped, the hand gestures of leaders (N=20) were then monitoring and coded. Followers (N=113) were given surveys to fill out directly after each meeting, in which the level of job satisfaction was measured. The results from the videotaped and coded hand gestures used by leaders and level of job satisfaction by followers was then analyzed. A significant positive relationship, although weak, was found between the use of mixed hand gestures with follower job satisfaction. Results showed non significant relationships with other hand gestures. In conclusion, the research displays interesting unforeseen results. A larger sample size and investigation to other possible links between other variables and leader hand gestures in relation to job satisfaction is desirable.

Graduation Committee members:

Prof. Dr. Celeste P.M. Wilderom

Jacco. G.w.l. Smits, MSc

Keywords

Nonverbal communication, hand gestures, job satisfaction, leadership, employee

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

9th IBA Bachelor Thesis Conference, July 5th, 2017, Enschede, The Netherlands.

Copyright 2017, University of Twente, The Faculty of Behavioural, Management and Social sciences.

1. Introduction

Communication occurs in two forms. The first, known as explicit communication, is verbal communication. Verbal communication is communication using words and sounds, and plays a significant role in the daily interaction between individuals and groups.

The second form is implicit communication, also known as non-verbal communication. Non-verbal communication consists of communicating information with the use of gestures, body movements, eye gazes, facial expressions, pace of speech and many more. In short, non-verbal communication refers to communicating information without the use of speech and it is something humans learn to do before the development of verbal communication begins (Miller, 2005). According to Leathers (1992), 93% of all communication that occurs face-to-face is nonverbal.

Verbal communication, whether it occurs in person or virtually, is many times accompanied by non-verbal forms of communication as well, such as hand gestures (Werner & Kaplan, 1963). However, non-verbal communication on the other hand, can easily exist independently of verbal communication (McNeill, 2000).

A form of non-verbal communication, as a part of body language, is gestures. Gestures are also known as *kinesics* (Hans & Hans, 2015) – another word for *movement* – and refer to the study of arm movement, hand movement, body movement, and face movement. Hand gestures specifically tend to have both positive and negative impacts on the information received by the receiver (McNeill, 2000).

Previously, hand gestures as a non-verbal communication method were assumed to aid verbal and non-verbal communication without having implicit effects that could in fact deter the desired outcome (Kendon, 2000). However, in present research there is evidence that hand gestures may have an impact on the way a message is received. Kendon (2000) and Toastmakers (1996) found that during communication, hand gestures consciously and subconsciously influence the communication process.

In business environments, verbal and non-verbal communication occurs daily. Every type of such interactions serve a unique purpose with unique outcomes. Interactions transpire through communication, which refers to the transmitting of information from one individual, known as the sender, to another individual or group of individuals, known as the receiver, or receivers (Shannon & Weaver, 1999). And for leaders in a business environment, effective communication skills are vital. Effective interactions between leaders and followers increase the ability for leaders to motivate followers to successfully perform their jobs, and in turn increase team and business performance (Luthra & Dahiya, 2015).

Within organizations, managers communicate with employees and vice versa, employees communicate amongst one another, as well as with their customers. Previous research has been conducted to better understand the impacts of verbal communication in a work environment, and also forms of non-verbal communication in a work environment (Wilderom & Hoozeboom, 2016). There has been some evidence of the impact a leaders' non-verbal communication has on followers who receive the messages and information being communicated, especially in a work environment, as well as the link it has to employee motivation and job satisfaction (Bonnacio et al., 2016; Naile & Selesho, 2014). Non-verbal communication has the ability to influence sender and receiver of information subconsciously and consciously that may interfere with the message being conveyed (Cohen & Harrison, 1972). However, the existing research has analyzed what impact a leaders' use of verbal communication has on

the employees. Accompanying said research, it has been discovered that hand gestures play a vital role, both dependently and independently, in the communication process. In order to build a more robust understanding of leadership and hand gestures, a relevant step forward would therefore be to investigate whether there also is a relationship with employee job satisfaction.

The importance of understanding non-verbal communication using hand gestures and its implications on information sharing may make communication more effective for managers in the future. Furthermore, an understanding of the types of gestures used by leaders and the impact of employee motivation may result in a strategic understanding on how to increase employee motivation with the use of said gestures. A more wholesome understanding of increasing motivation and job satisfaction could have further positive effects on company performance (Bokatic, 2013).

In sum, this research will examine the existing research gap between hand gestures, leadership, and the effects on job satisfaction. Following this, the research questions that will guide the remainder of this paper has been formulated as follows:

How do leaders, through the use of hand gestures, impact follower job satisfaction during regular staff meetings?

For the clear investigation and attempt in answering the research question, the following sub-questions will aid this study:

(1) What hand gestures do leaders use during regular staff meetings?

(2) What types of hand gestures used by leaders increase follower job satisfaction during regular staff meetings?

(3) What types of hand gestures used by leaders decrease follower job satisfaction during regular staff meetings?

2. Theoretical Background

2.1 Non-verbal communication

Non-verbal communication is defined as “the communication and interpretation of information by any means other than language” (Ambady & Rosenthal, 1998, p.775). Research shows that non-verbal communication occurs more than half of the time during human communication (Toastmakers, 1996). Also, Butterworth and Beattie (1978) found that, during speech, the amount of gestures used was more frequent during pauses of speech than while an individual was speaking. Furthermore, studies show that people use gestures more when face-to-face with individuals, implying that gestures are a form of social communication (Cohen & Harrison, 1972).

Hand gestures have communicative reasons for being used, whether this is conscious or sub-conscious (Toastmakers, 1996). The impact hand gestures have on speech, people, and message deliverance, varies tremendously. Kendon (2000) exemplifies that in previous studies it was understood that hand gestures did not influence speech, and conversely that speech did not influence gestures. However, Kendon (2000) describes that gestures can provide a context for verbal communication and that they can enhance the understanding of the content for the receiver of the message. David McNeill (2000) depicts gestures as communicative movements, and complies with Kendon's theory that gestures and speech should be considered as a unified system. However, in research done by Cohen and Harrison (1973), in which the use

of hand gestures was observed by participants interacting personally with other individuals or via an intercom. Results showed that the frequency of hand gesture use only increased slightly with face-to-face interaction. These results further suggest that hand gestures may be more of a way to help the speaker during the lexical retrieval stage of speech, which is the process of getting from a thought to a word (Werner & Kaplan, 1963).

On the other hand, gestures may help the process of lexical retrieval of the speaker, but there are also impacts that gestures have on the follower. In studies done by Brezeal et al. (2005), results show that gestures impact followers' emotions, feelings, and understandings. They concluded that gestures and other forms of non-verbal communication portray the speaker's emotions and feelings, and that this affects how the listener interprets the message or tone (Brezeal et al., 2005).

Moreover, it is important to recognize that the degree of impact of certain gestures depends on cultural influences. Because gestures are culturally specific, a high power gesture or high respect move in one culture may represent low power or disrespect in another culture (Adetunji & Sze, 2015). Nevertheless, researchers have been able to classify hand gestures as either negatively stimulating or positively stimulating (Ekman, 1976).

There has been a lot of research conducted as to what types of gestures people use during interactions (Kendon, 2000), but less on the effect these gestures have on the receiver of the communicative message (Shannon & Weaver, 1999). McNeill (2000) coined *Kendon's Continuum*, which ranges from gestures that accompany speech to gestures having their own linguistics constructions. The five categories appointed by McNeill (2000), Kendon (2000) and Healey and Braun (2013) in Kendon's continuum are: (1) *Gesticulation*, which refers to the motions used during speech complementing communication, (2) *Speech-framed gestures*, which are part of a sentence, (3) *emblems*, which are symbolic gestures (Ricci, Bitti & Poggi, 1991) that need little verbalization to communicate a message including a 'thumbs up', the OK symbolic hand gesture with the index finger and thumb tips touching and the movement of a 'byebye' wave, (4) *pantomime* gestures, known as dumb show gestures (McNeill, 2000) as they are gestures which can be used completely without speech and tell a story, and (5) *sign language*, which too does not need speech but instead requires somewhat of an understanding before the sender's message can be fully understood by the receiver. These gestures respectively rank from accompanying speech to not needed speech to communicate.

2.2 Job satisfaction

Job satisfaction is also important to understand for the scope of this study. Job satisfaction is described as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1304).

The social communicative impact in organizations with hand gestures is no different to any other situation where communication takes place. Earlier research on hand gestures and the impact leaders have on followers, shows that hand gestures have the ability to influence followers or listeners in a variety of ways (Goman, 2011). Research confirms that leaders and leadership have impacts on job satisfaction, which in turn may affect organizational success (Saleem, 2015). In a study done by Afshinpour (2014) there was indeed a positive correlation, ($F= 5.06, p < 0.001$), found between leadership and job satisfaction.

Employee motivation and its relation to job satisfaction is considered as one of the core factors in a successful

organization which Rajan (2015) describes that there is a significant link between employee motivation and job satisfaction. Additionally, Naile and Selesho (2014) have studied the ability for leaders to affect job satisfaction and employee motivation. It was discovered that employee motivation could be increased or decreased based on the perceived verbal and non-verbal actions of a leader (Naile & Selesho, 2014). Khuong and Huong (2015) investigate the impacts of employee motivation through the use of job satisfaction as a variable, and found that they have a positive relationship with organizational performance. Additionally, Bakotic (2013) also investigated the relationship between job satisfaction and organizational performance and found, although weak results, that there was a positive correlation between both variables.

Despite this, the literature review provided clear implications that there was a lack of existing knowledge on the impacts of the use of hand gestures used by leaders on its followers' motivation.

As such, this study will further investigate the relationship between the abovementioned concepts and find whether there is a relationship between hand gestures used by leaders and their impact on job satisfaction.

In conclusion, the literature review shows evidence of leaders non-verbal impacts on followers. However, there is less known about, specifically, the hand gestures used by leaders and the impact it has on job satisfaction. This research thus serves as a suitable entry point in understanding potential relationships between leaders' hand gestures on employee motivation. Understanding the potential impact between a leader's hand gesture and employee motivation could prove beneficial in improving job satisfaction and performance.

2.3 Hand gestures and hypothesis

Hand gestures are, as previous research shows, extremely important in the way in which individuals communicate (Krauss, 1995). If there were a lack of hand gestures used during speech it could have an impact on the intended message being communicated correctly (Krauss et al., 1991), as a listener would be only listen to words, tone of voice and see body movements and facial expressions, which may give off a different message. Therefore the following hypothesis can be drawn:

H1: The use of no hand gestures by leaders in regular staff meetings is negatively related to job satisfaction.

Alongside the investigating to the association of no hand gesture and follower job satisfaction, the different types of hand gestures, within Kendon's (2000) continuum relevant to this study are: (1) *Upward* facing palm gestures, (2) *downward* facing palm gestures, (3) *mixed* palm gestures, (4) *clasped hands*, (5) *object touch*, (6) *self-touch head* and (7) *self-touch body*

2.3.1 Upward, downward and mixed palm hand gestures

Studies done by Charles Darwin (1872) gave light to upward palm gestures being somewhat of a helpless form of non verbal behavior. The research Darwin conducted illustrated an understanding that upward palm hand gestures were part of the "shoulder shrug" gesture, as displayed in Image 1. The shoulder shrug is a body movement, a non-verbal communicator, used during speech, which portrays uncertainty. Coinciding to Darwin's (1872) discoveries, Yerkes National Primate Research Center believes the upward facing palm hand gesture to be the oldest gesture used by

humans (Tierney, 2007). Additionally, it is considered as a “gestural byproduct” of the circuits in human’s brains and spinal cords millions of years ago, which would arch over and protect the human body if threats were to occur (Givens, 2002). Although it was believed to previously have been used as a form of protection, it has now evolved into a help seeking gesture and used to submit oneself as relative to others (Givens, 2016).



Image 1: The ‘I don’t know’ shoulder shrug gesture that Darwin found to accompany upward palms (Warner, 2012).

More recent research, however, proves upward palm hand gestures to convey confidence, communicate trust and have positive impacts on the information being received by the follower (Fradet, 2017). Research by Kendon (2004) has also shown that upward palm hand gestures can influence followers and listeners in a positive manner and effectively communicate positivity. Encompassing all conclusions drawn by previous research, that upward gestures has a positive impact on followers, the following hypothesis is formulated:

H2: Upward facing palm hand gestures used by leaders during regular staff-meetings is positively related to follower job satisfaction

Downward palm gestures, as shown in image 2, however, are considered as a “power move”, an indication of something being wrong, or as a link with the emotion of anger (McNeill, 1992; Kendon, 2000; Imai, 1996). Downward palms are associated with gestures such as pointing,



Image 2: A dominating downward palm gesture (Fradet, 2017).

which is understood as an accusatory and intimidating gesture (McNeill, 2000). However, it can also aid the leader in directing follower attention to objects that help understanding of information (Kendon, 2004). Still, these gestures can be somewhat intimidating, as Imai (1996) indicates that pointing gestures should be avoided in many cultures. Therefore the following hypothesis:

H3: Downward facing palm gestures used by leaders during regular staff-meetings is negatively related to follower job satisfaction

Mixed palm gestures, as illustrated in image 3, is associated with downward facing palm gestures. Weinschenk (2012) illustrates that mixed palm gestures display power, however they are more associated with displaying power in knowledge, which can either intimidate a listener or create trust. Since the frequent showing of power is associated with intimidation (Luca, 2005).



Image 3: A mixed palm hand gesture (Atnip, 2015).

H4: Mixed palm hand gestures used by leaders during regular staff-meetings is negatively related to job satisfaction

2.3.2 Closed body posture hand gestures

On the other hand, closed gestures are related to the *clapsed or clenched hands* gesture, which is investigated in several leaders in this study. Clapsed hands, in this study, refers to a hand gesture where one hand is holding the other either in its palms or with fingers interlocked into one another. Cummings (2011) found that clapsed hands shows signs of discomfort and insecurity.



Image 4: Clapsed hands (Parvez, 2015)

In contrast to clapsed hands showing discomfort, its relative hand gesture *steeping hands* shows signs of confidence (Chris, 2013). *Steeping hands* are isolated gestures commonly used during speech, as it reflects complex thinking and is used frequently by politicians (Pease, 2017).



Image 5: The steeping hand gesture (Atnip, 2015)

Pease (2017) also suggests that the rubbing of hands instead of a steeping position resembles self-consciousness and anxiousness, which has a negative affect on the follower. Based on the literature found, it is apparent that clasped hand gestures, associated with closed body postures, portray closedness and confidence, yet with the slightest deviation may portray insecurity, which may negatively influence followers. Therefore the following hypothesis can be deduced:

H5: Clasped hand gestures used by leaders during regular staff-meetings is negatively related to job satisfaction

2.3.3 Object and self-touch

Object-adaptors are hand gestures that incorporate object-touch during communication (Hartman, 2004). Hans and Hans (2015) state that smart-phones have become this centuries object adaptor of choice, as most people play with their phones during speech.



Image 6: One person (right) with a pen in their hand for no use other than holding it or playing with it, this is object touch (Jones, 2016).

Object adaptors can either aid information comprehension by referring to and touching objects under topic, or distract the follower when objects are being touched out of topic (Poyatos, 1983). An example of an out of topic object touch is a speaker playing with their coffee mug whilst talking about different matters. Tanenbaum (2014) explains that followers are more likely to interpret a speaker touching or associating speech to an object, than truly listening to what a speaker is saying. Meaning, object touch is at times more effective than speech (Ekman, 1999). The imperceptible significance to speech is what makes object adaptors important for understanding the association of non-verbal communication on job satisfaction

(Tanenbaum, 2014). Through the results of the literature explored, the following hypothesis is developed:

H6: Object touch used by leaders during regular staff-meetings is negatively related to job satisfaction

Self-adaptors are gestures that comprise of self-touch. In studies done by Neff et al. (2011), it was found that self-adaptors reflect emotional stability. Kraus (1995) found that the more self-adaptors used during communication, the lower the emotional stability of individuals was and vice versa. In this study, head-touch and body-touch were explored. Hartman (2004), states that adaptors satisfy a speakers self needs, such as yawning or adjusting reading glasses. Head-touch is where the leader touches his or her head (portrayed in Image 7), and can be associated when, for example, adjusting reading glasses. Body touch (Illustrated in Image 8) is where the leader actively touches him or herself, also called ‘manipulation’, somewhere on the body (Neff, 2011).

Due to research that self-adaptors show a speakers emotional state and can act as a distraction to speech, the relationship between job satisfaction and self-adaptors is interesting to investigate. Therefore, the following hypotheses are proposed:

H7: Self-touch head used by leaders during regular staff-meetings is negatively related to job satisfaction

H8: Self-touch body used by leaders during regular staff-meetings is negatively related to job satisfaction



Image 7 & 8: Self-touch head (upper image) and self-touch body (lower image), (Parvez, 2015).

The relationship between the variables can be viewed further in the model presented in the conceptual model below (Image 9).

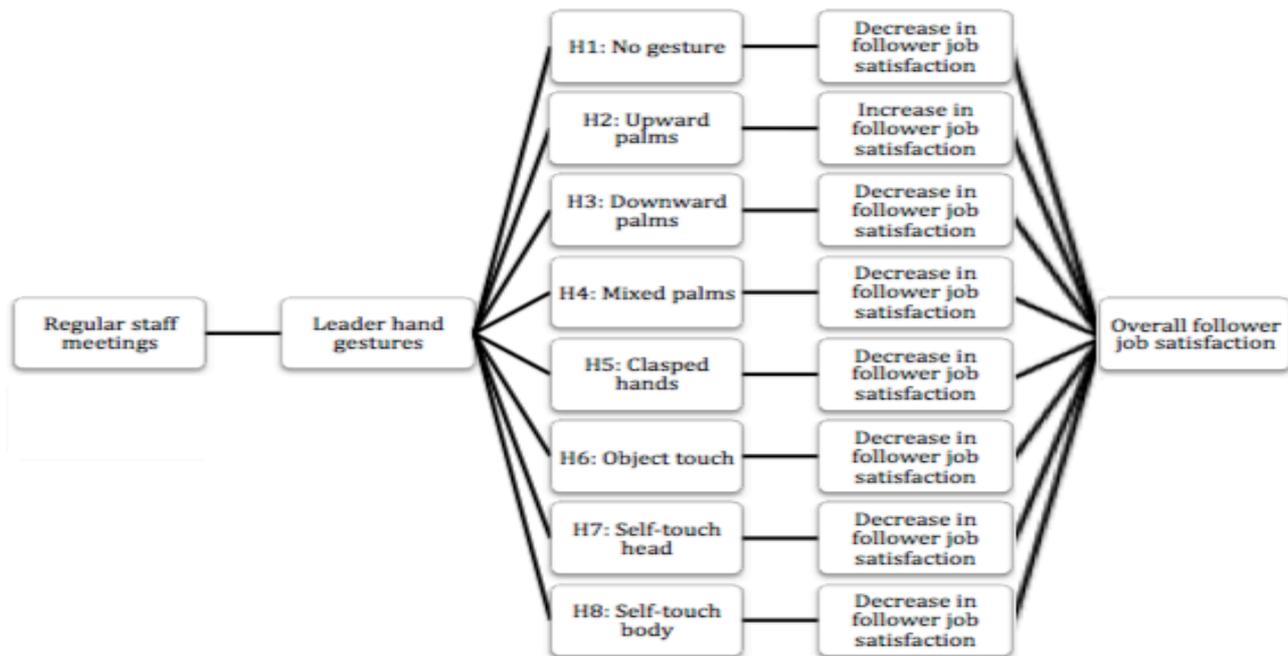


Image 9: Relationship model of variables

3. Methodology

3.1 Design

In order to investigate this topic and the research question, this research approach contained a cross-sectional design whilst investigating existing qualitative and quantitative data. The study was based on an observational design, also known as cross sectional design. It is a social study by which the non-verbal behavior of leaders during regular staff meetings have been video taped. The video material was analyzed using a coding scheme for specific hand gestures. A coding scheme (Appendix 1, Table 2) was used to ensure a scientific and non-biased data collection took place. The quantitative data serves to answer the research question. Furthermore, surveys were distributed to leaders, experts, and followers after the staff meeting took place. The results from the hand gestures video coded and observed during regular staff meetings and the answers retrieved from followers levels of job satisfaction, were then analyzed to see whether relationships exist between the variables.

3.2 Sample

The leader sample of this study – leaders being either from M1 level of management or M2 level of management within a public sector organization – consisted of 20 leaders (N = 20).

The sample included 3 female and 17 male leaders, where the average age was 51,55 years old ranging from 34 to 64 years old (SD = 8.54 years). The average job tenure of the leader sample group is 15.31 years, ranging between 3 to 32 years (SD = 8.98).

The follower sample consisted of 113 employees (SD = .34) from the public sector organization.

Surveys were given to both the leaders, experts and the followers directly after each regular staff meeting. The survey consisted of questions where followers, experts and

leaders themselves could rate the leader performance during the meeting and the influence on job satisfaction.

3.3 Measures

3.3.1 Job satisfaction

Job satisfaction displays the overall scores given by followers in the survey. These scores indicate the satisfaction of followers based on the following four criteria (Appendix, Table 3): (1) “I find real enjoyment in my work”, (2) “I like my job better than the average person”, (3) “Most days I am enthusiastic about my work” and (4) “I feel fairly well satisfied with my present job”.

The scoring criteria ranged from 1 to 7 (Appendix, Table 3), 1 being “Very different” and 7 being “Very much agree”. The mean was computed for each answered criterion per leader and regular staff meeting and was used to create an outcome for the overall job satisfaction of each follower. The Cronbach’s Alpha was 0.89, which shows high reliability (Tavakol & Dennick, 2011).

3.3.2 Nonverbal behavior

Leadership behavior was video-coded (N=20), using Noldus software; a special software in which human behavior can be observed. The videotapes were then analyzed using a software program, Observer XT 12.

The videos were coded using a coding scheme for the 8 different hand gestures. A coding scheme exists (Appendix 1, Table 2) of the hand gestures coded in this study.

Two objective coders, independently, coded the videos and the results were later compared for reliability. The coders were first coached on how to professionally use the Observer XT 12 software program, to allow for reliable consist results. The reason for the coders to independently code and compare results after was to increase the reliability in a non-influenced and biased way. The inter-related reliability during the video coding procedure is where the two coders compare the independently found results and come to a certain coder agreement (Gwet, 2014). In order to increase reliability, a time-frame restriction of 2 seconds was agreed upon. This meant that

all hand gestures coded, by each of the coders, could only occur within a 2 second difference from one another in order for it to be accurate. The inter-rater reliability average percentage from the coded videos was 94%. This means the agreement between coders on the overall hand gestures used by leaders in each regular staff meeting was 94%, which is acceptable for a reliable agreement (Gwet, 2014). Kappa coefficient was also measured for the inter-rater reliability, the average Kappa (k) was found to be 0.93. A Kappa value higher than (k) > .80, means 'Very good' or 'Excellent' reliability (Emam et al., 1999).

3.4 Data analyses

As previously described, all meetings were video taped and surveys were handed out to leaders, followers and experts who gave criteria based on the staff-meeting. The video taped meetings analyzed with Observer XT 12 using specific coding scheme for hand gestures and outcomes aid in answering Hypotheses 1-7. The data collected from the video coding is compared in a frequency table, Pearson's Correlation test and a Regression analysis to find whether a relationship exists between Job Satisfaction levels of followers and hand gestures used by the leaders of the staff-meetings.

4. Results

The results, duration and frequency of coded hand gestures in leaders during regular staff meetings, obtained from the video analysis are displayed in Table 1. Leaders using *no gestures* during regular staff meetings occurred the majority of time, with 47% duration of all gestures and 26% of overall frequency. *Clasped hands* (18,84% of the total duration) and *object touch* (12,44% of the total duration) are the hand gestures that were used the longest after *no gesture*. The hand gestures used the shortest were *downward palm* (3,47% of the total duration) and *upward palm* (1,74% of the total duration) gestures. Frequency refers to the amount of times a hand gestured occurred, and after *no gesture*, the most frequently used hand gestures by leaders in regular staff meetings *mixed palm gestures* (19,22% of the total frequencies) and *clasped hands* (15,58% of the total frequencies). The hand gesture with the least frequency, relating to that which was used less during regular staff meeting is *Self-touch body* (4,93% of the total frequencies) and *self-touch head* (7,39% of the total frequencies).

Table 1

Duration and frequency of leader hand gestures in % (N = 20)

Displayed Gestures	% Duration in seconds	% Frequency of hand gestures used
No Gesture	47,7	26,18
Upward palms	1,74	8,52
Downward palms	3,47	10,09
Mixed palms	4,91	19,22
Clasped hands	18,84	15,58
Object touch	12,44	8,09
Self-touch head	5,72	7,39
Self-touch body	5,18	4,93
	100 %	100 %

Table 2 and Table 3 represent the correlation between the duration and frequency of all variables. A positive value in the table represent a positive correlation, where one variable increases or decreases the corresponding variable does the same. A negative value shows a negative relationship, where one variable increases or decreases, the corresponding variable falls and vice versa. The Pearson correlation analysis (1-tailed) is used to show whether there is a correlation between variables and whether it is significant or not. The dependent variable is job satisfaction and the independent variables are: no gesture, upward palms, downward palms, mixed palms, clasped hands, object touch, self-touch head, and self-touch body. The results in Table 2 show two significant correlations between follower job satisfaction and the duration of hand gestures. The first, mixed palms showed a moderate, positive correlation with job satisfaction ($r = .44, p < 0.05$). The second, self-touch head, was also found to have a positive relationship with job satisfaction ($r = .42, p < 0.05$).

Table 3 shows no significant relationships between job satisfaction and hand gesture frequency, as the p -value is larger than .05 ($p > 0.05$). However, Table 4 shows that only 4.4% of gesture impact on job satisfaction is due to the frequency of mixed gestures, however 19% of mixed gesture duration is the reason for an increase in follower job satisfaction.

Table 2

Follower Job Satisfaction and Gesture Duration Correlation and Descriptive Statistics

Variables	1	2	3	4	5	6	7	8	9
1. Job Satisfaction	—								
2. No Gesture	.062	—							
3. Upward palms	-.043	-.066	—						
4. Downward inward palms	.276	-.632**	-.005	—					
5. Mixed palms	.437*	-.454*	.261	.665**	—				
6. Clasped hands	-.265	-.824**	-.305	.229	-.012	—			
7. Object touch	.232	.120	-.174	-.074	-.215	-.028	—		
8. Self-touch head	.415*	-.005	-.017	.207	.369	-.128	-.111	—	
9. Self-touch body	.194	-.128	-.308	.267	.096	.122	-.119	-.298	—

* $p < .05$ ** $p < .01$. (one-tailed)

Table 3*Follower Job Satisfaction and Gesture Frequency Correlation and Descriptive Statistics*

Variables	1	2	3	4	5	6	7	8	9
1. Job Satisfaction	–								
2. No Gesture	.093	–							
3. Upward palms	-.169	.718**	–						
4. Downward inward palms	.319	.479*	.236	–					
5. Mixed palms	.209	.670**	.459*	.515*	–				
6. Clasped hands	-.108	.014	.072	.348	.592**	–			
7. Object touch	.060	.324	-.041	.235	.100	.122	–		
8. Self-touch head	.368	.288	-.085	.418*	.188	.064	.337	–	
9. Self-touch body	-.066	-.153	-.310	-.072	-.187	-.221	-.055	-.120	–

*p < .05 **p < .01. (one-tailed)

Table 4 also presents that 17.2% of the relationship between self-touch head and job satisfaction can be explained by the duration of the gesture, whereas Table 5 shows that 13.5% can be explained by the frequency of the gesture. A linear regression analysis was computed to predict whether, the dependent variable, job satisfaction increased or decreased based on the independent variables; no gesture, upward palms, downward palms, mixed palms, clasped hands, object touch, self-touch head and self-touch body. Considering the independent variable *no gesture*, the duration cannot influence job satisfaction $b=7.800$, $t(18)=-.27$, $p>.05$ and there was no significant relationship found (Table 4) with an $R^2 = .004$, $F(1,18) = .070$, $p > .05$, and frequency $b=.001$, $t(18) = .398$, $p>.05$ and a regression of (Table 5) $R^2 = .009$, $F(1,18) = .158$, $p > .05$, using the

regression analysis. This means that Hypothesis 1: ‘The use of no hand gestures by leaders in regular staff meetings is negatively related to job satisfaction’, can be rejected. There is no significant relationship between a leaders’ use of no hand gesture and followers job satisfaction.

Looking at the results obtained in the analysis of Hypothesis 2: ‘Upward facing palm hand gestures used by leaders during regular staff meetings is positively related to follower job satisfaction’, the results for upward palm duration as a predictor variable for follower job satisfaction was $b = .00$, $t(18)=-.18$, $p>.05$, with a regression of $R^2 = .002$, $F(1,18) = .034$, $p > .05$, and for upward palm frequency; $b=-.003$, $t(18) = -.729$, $p<.05$ and $R^2 = .029$, $F(1,18) = .531$, $p > .05$. Therefore, Hypothesis 2 can also be rejected, meaning there is no significant relationship

Table 4*Regression**Follower Job Satisfaction and Gesture Duration (N = 20)*

Variable	No Gesture	Upward palms	Downward palms	Mixed palms	Clasped hands	Object touch	Self-touch head	Self-touch body
Job Satisfaction	.062	-.043	.276	.437	-.265	.232	.415	.194
R ²	.004	.002	.076	.191	.070	.054	.172	.038

Note: Coefficients are betas (standardized regression coefficients)

Table 5*Regression**Follower Job Satisfaction and Gesture Frequency (N = 20)*

Variable	No Gesture	Upward palms	Downward palms	Mixed palms	Clasped hands	Object touch	Self-touch head	Self-touch body
Job Satisfaction	.093	-.169	.319	.209	-.108	.060	.368	-.066
R ²	.009	.029	.102	.044	.012	.004	.135	.004

Note: Coefficients are betas (standardized regression coefficients)

between a leaders' use of upward palm hand gestures and follower job satisfaction.

Hypothesis 3, depicted a negative relationship between downward hand gestures used by leaders and followers' job satisfaction. Namely, H3: 'Downward facing palm gestures used by leaders during regular staff-meetings is negatively related to follower job satisfaction', meaning the more downward palm gestures used the lower job satisfaction levels would fall. The results for duration of downward palm gestures and job satisfaction show $b = .001$, $t(18) = 1.216$, $p > .05$ and $R^2 = .076$, $F(1,18) = 1.480$, $p > .05$, and the frequency results were $b = .007$, $t(18) = 1.427$, $p > .05$ and $R^2 = .102$, $F(1,18) = 2.037$, $p > .05$. These results show that Hypothesis 3 can also be rejected, and that there is no significant relationship between the duration and frequency of downward palm hand gestures used by leaders and job satisfaction. Interestingly, though, the correlation is positive.

Hypothesis 4 investigated the relationship between mixed palm hand gestures and followers' job satisfaction and claimed a negative relationship between the variables. H4: 'Mixed palm hand gestures used by leaders during regular staff-meetings is negatively related to job satisfaction'. First investigated was the duration of mixed hand gestures and its relationship to job satisfaction, the results were $b = .002$, $t(18) = 2.062$, $p = .05$ and $R^2 = .191$, $F(1,18) = 4.250$, $p = .05$. This means that there is, although weak, a significance between the duration of mixed hand gestures and follower job satisfaction and that the independent variable mixed hand gestures can be used to predict the dependent variable follower job satisfaction. The frequency was also investigated, the results between the variable relationships was, $b = .003$, $t(18) = .908$, $p > .05$ and $R^2 = .209$, $F(1,18) = .825$, $p > .05$. These results show that there was no significant relationship between the frequency of mixed palm gestures and follower job satisfaction, meaning that only the duration of mixed palm gestures used by leaders had a significant relationship with follower job satisfaction.

Hypothesis 5 investigated the relationship; 'Clasped hand gestures used by leaders during regular staff-meetings is negatively related to job satisfaction'. The results for duration were $b = .00$, $t(18) = -1.168$, $p > .05$ and $R^2 = .009$, $F(1,18) = .158$, $p > .05$, and for frequency $b = -.002$, $t(18) = -.459$, $p > .05$ and $R^2 = .012$, $F(1,18) = .210$, $p > .05$, meaning no significant relationship was found during this data analysis and H5 can be rejected.

Hypothesis 6: 'Object touch used by leaders during regular staff-meetings is negatively related to job satisfaction'. The results were as follows; duration, $b = .00$, $t(18) = 1.011$, $p > .05$ and $R^2 = .054$, $F(1,18) = 1.021$, $p > .05$, and for frequency, $b = .001$, $t(18) = .255$, $p > .05$ and $R^2 = .004$, $F(1,18) = .065$, $p > .05$ meaning no significant relationship was found during this data analysis and the independent variable cannot be used to predict the dependent variable.

Hypothesis 7: 'Self-touch head used by leaders during regular staff-meetings is negatively related to job satisfaction'. The results that arose from the regression analysis were; $b = .001$, $t(18) = 1.936$, $p > .05$ and $R^2 = .172$, $F(1,18) = 3.748$, $p > .05$, for self-touch head duration and follower job satisfaction is $b = .011$, $t(18) = 1.678$, $p > .05$ and $R^2 = .135$, $F(1,18) = 2.815$, $p > .05$. Resulting in no significant relationship between a leaders duration and frequency of use of self-touch head gestures and follower job satisfaction.

Hypothesis 8 investigated whether there was a relationship with the following variables: 'Self-touch body used by

leaders during regular staff-meetings is negatively related to job satisfaction'. The regression analysis results for duration were $b = .001$, $t(18) = .838$, $p > .05$ and $R^2 = .038$, $F(1,18) = .702$, $p > .05$ and for frequency, $b = -.003$, $t(18) = -.280$, $p > .05$ and $R^2 = .004$, $F(1,18) = .078$, $p > .05$, implying there is no significant relationship between the variables, and Hypothesis 8 can be rejected.

The results in this section show that there are only two significant relationships between gestures and job satisfaction, the two gestures being mixed palms and self-touch head. The two gestures that proved to have a significant relationship were both positive. This means that when leaders used mixed palm hand gestures for longer periods of time and more frequently than other gestures, the followers responded with a positive increase in job satisfaction. The variable self-touch head showed the same results, when leaders touched their heads for longer duration and more frequently than other gestures the variable job satisfaction increased.

5. Discussion

The results from this study were the outcomes of the combination of three different research methods. The first, coding of videotaped regular staff-meetings in which the hand gestures that leaders used during speech was observed. Second, follower's job satisfaction was obtained through surveys. Thereafter, correlation and regression analyses were applied to the data collected.

Through this research the research questions can be answered as follows. (1) Leaders use all of the gestures reviewed in this study: no gestures, upward palms, downward palms, mixed palms, clasped hands, object touch, self-touch head and self-touch body, in one regular staff meeting, whether conscious or subconscious. (2) The hand gestures used by leaders that increase follower job satisfaction is mixed palm hand gestures. (3) There were no significant results in hand gestures which negatively influenced follower job satisfaction during regular staff meetings.

Subsequently, the results obtained from the analysis of the video and survey data presented a positive and significant relationship between mixed hand gestures used by leaders and follower satisfaction (Hypothesis 5). With Hypothesis 5, the correlation was positive and amongst the highest ($r = .43$) with a p-value smaller than .05. This positive impact on the results of follower job satisfaction can be explained by Weinschenk (2012), whom describes that mixed palm gestures are seen as a confident, "I am an expert on this", non-verbal communicating gesture. Mixed hand gestures made up for 19% ($r = .19$) of rise in follower job satisfaction, however this could be due to it being the only independent variable showing a significant relationship to the dependent variable follower job satisfaction.

Although there was no significance found in the regression analysis between a leaders use of self-touch head and follower job satisfaction as the p-value was larger than .05, the exact p-value = .69, which was closer to the benchmark than any other independent variable in this study after mixed palm hand gestures. In the correlation analysis there was a significance found between self-touch head and follower job satisfaction ($p < .05$). A larger sample size ($N > 20$), may have given more significant results during the regression analysis. As previously investigated by Neff et al. (2011), self-adaptors reflect the emotional stability of a speaker. This could be an explanation to why the analyses of Hypothesis 8, self-touch head and follower job satisfaction, resulted in a weak positive correlation ($r = .42$, $p = .69$).

Although, it is noteworthy to state that previous research by Neff et al. (2011) deduced that self-touch head was usually a result of speakers or leaders being at unease which causes negative feelings in followers, however the results in the correlation investigation are positive.

Although Hypothesis 4 was found to have a significance, the results that came from analyzing the other hypotheses were that there was no great significance, meaning that the results from the data analysis did not support Hypotheses 1 to 8, with the exception of H4. The hypotheses that cannot be considered concerned the following hand gestures: upward gesture, downward gesture, clasped hands, object touch, self-touch head and self-touch body. These variables seemed to not have a significant enough impact on follower job satisfaction. A reason for this could be due to the sample size being small (N= 20) and therefore not effective enough to give a strong statistical relationship (Lenth, 2001). A larger sample size may show significant relationships that are unobservable in smaller sample sizes. Nonetheless, when comparing results from the correlation test and regression analysis for upward palm gesture to previous research done would have been expected that the hand gesture have a positive significant relationship with job satisfaction. In fact, the results given, although not significant, show a negative correlation between upward palm hand gestures and job satisfaction (duration; $r = -.04$, frequency; $r = -.17$). In contradiction to the correlation analysis, the regression analysis showed positive results. However, studies and literature produced, thus far, have all indicated a positive psychological relationship between speakers using upward facing palm hand gestures during speech and listeners (Ekman, 1976; Kendon, 2000; 2004; Brezeal et al., 2005; Fradet, 2017).

Hypothesis 3, the correlation between downward facing palm gestures and job satisfaction was tested and the results showed a positive correlation (although not significant). This implies that the more downward palm hand gestures used by leaders during speech could have a positive relationship with follower job satisfaction, however the weak significance means it cannot be accepted that a relationship may exist. The results from the analysis on Hypothesis 5, the relationship between clasped hands and job satisfaction (although no significance) showed a negative correlation, which means that the higher the frequency and duration of clasped hands the lower job satisfaction results fall, and vice versa. This is interesting as it complies with previous research done by Cummings (2011) that clasped hands portrays discomfort, having a negative impact on the listener.

Hypothesis 6, also resulted in lack of significance after analysis, however it is mentioned that the results from the correlation test showed that gesture duration had a higher ($r = .23$) correlation than object touch frequency ($r = .06$). This could be due to a leader sitting behind a computer during regular staff-meetings and despite statically touching the computer and not using it functionally, still seeming busy and focused in the eyes of the follower.

Hypothesis 8 tested the relationship between self-touch body and follower job satisfaction, (although not significant) the correlation results show a negative relationship, which, similarly to clasped hands, means an increase of self-touch body by leader's correspondingly a decrease in job satisfaction and vice versa.

5.1 Theoretical and Practical implications

According to the literature investigated in this study, hand gestures act as a basis for all types of communication. Even in situations where speaker and followers are not visible to one another, however it acts as a communicator of its own when speaker and follower are visible to one another. This implies the importance of hand gestures as a method of communication. Therefore, this study may prove as a foundation to any individual attempting to understand the implications of specific hand gestures.

It may also prove useful to analyze certain hand gestures from video coding in order to gain understanding what hand gestures leaders use and any other types of gestures.

This study may be of use to future leaders and management of organizations, or it may act as an informative research to individuals whom require better understanding of hand gesture relationship with speech and the affect on followers/listeners. The study shows that a positive significant relationship exists between mixed palm gestures and the self-adaptor head-touch, this may prove useful during leadership and speech trainings.

5.2 Strengths, Limitations, and Future research

The strength of this study is a result of the use of (1) videotaped and video-coding analysis, which allowed in-depth analysis and understanding of gestures used by leaders during speech in regular staff-meetings. (2) Surveys filled in by meeting participants directly after each meeting, which directly documented the job satisfaction of employees.

It is also possible that the researcher was biased in their methods and conclusions, which may have resulted in a manipulation of data to their favorable opinion. This is important to look for when investigating previous research as this may influence this particular study based on unreliable results. Further limitations in this study lie in the sample size of the study, however a large enough sample of videos and surveys was taken to ensure it was representative of a larger population. Also, it is important that the coding is done correctly to ensure the reliability of the study is kept in high regard. The coding, was therefore done by more than one student, with an agreement percentage above 90% (Krippendorff, 2011). This decreases chances of a possible mistake, which may alter the results of the study. Future research may want to look at the association hand gestures have on job satisfaction during regular staff-meetings, however include a larger sample size. Also, it may be interesting to observe the association hand gestures have on an array of follower emotions, satisfaction levels and perception of the leaders performance and effectiveness. Since there was a significance between the variables mixed palms, self-touch head and job satisfaction, future research could look at the association these two gestures have on other areas of leader and follower interactions.

Further research into the association of the use of hand gestures by leaders and the impact it has on job satisfaction is needed. This study serves as a starting point for future investigation. Further research can, for example, be done including cultural differences and the perception of different hand gestures on culture, as Hofstede (1984) found significance between cultural views of gestures and its link to power and intimidation. It may also deem interesting to expand this study further and add variables such as leadership style, investigating further the link

between hand gestures and job satisfaction and finding whether they are linked to the type of leadership style used by a leader. It may also be interesting to investigate the relationship between hand gestures and leadership effectiveness, and whether this can be linked to job satisfaction. The possibilities for further research are endless, and may deem useful for investigation into further understanding leaders' non-communicative impacts on employees in a work environment.

6. Conclusion

This study has established a relationship between mixed palm hand gestures and job satisfaction. However weak the relationship, these results are significant as they may provide previously undiscovered insight into ways in which leaders may positively influence followers. The results display 'negative gestures' (Kendon, 2004), mixed palms and self touch head as possibly having a positive effect on followers. This is a in contrast to what was initially expected through research, and with further research may have great implications for understanding hand gestures in the future. It was firstly suspected that the relationship would be a negative one and that the more use of mixed palms and head touching would decrease follower job satisfaction. This may an interesting for future research, in example investigating the depths to which a relationship between these variables may exist.

There were no other significant relationships found between upward or downward palms, clasp hands, object touch or self-touch body and follower job satisfaction. The small sample size could have been the reason for this, and a larger sample size may have presented different results. In conclusion, to this study, it is evident that through the use of mixed palm gestures, leaders are able to positively influence follower job satisfaction during regular staff meetings.

7. Acknowledgements

I thank my supervisor Jacco.G.w.l. Smits for his guidance, kindness and patience throughout this journey. I am grateful for having had the opportunity to be a part of such interesting research.

7. References

1. Adetunji, R., & Sze, K. (2015). Understanding Non-Verbal Communication across Cultures: A Symbolic Interactionism Approach. *Research Gate*, 1-8. Retrieved from https://www.researchgate.net/profile/Raji_Adetunji/publication/255967701_Understanding_Non-Verbal_Communication_across_Cultures_A_Symbolic_Interactionism_Approach/links/00b7d538350957115a000000/Understanding-Non-Verbal-Communication-across-Cultures-A-Symbolic-Interactionism-Approach.pdf.
2. Afshinpour, S. (2014). Leadership Styles and Employee Satisfaction: A Correlation Study. *International Letters of Social and Humanistic Sciences*, 27, 156-169. doi:10.18052/www.scipress.com/ilshs.27.156
3. Ambady, N., & Rosenthal, R. (1998). Non-Verbal Communication. *Encyclopedia of Mental Health*, 2, 775-783. Retrieved from <https://ambadylab.stanford.edu/pubs/1998Ambady.pdf>.
4. Atnip, K. (2015). Decoding Alpha Body Language. Retrieved from <http://www.bodylanguageinsider.com/alpha-body-language.html>
5. Bonnacio, S., O'Reilly, J., O'Sullivan, S., & Chiochio, F., 2016. Nonverbal Behaviour and Communication in the Workplace: A Review and an Agenda for Research. *Journal of Management*. University of Ottawa.
6. Breazeal, C., Kidd, C., A., Hoffman, G., & Berlin, M. (n.d.). Effects of Nonverbal Communication on Efficiency and Robustness in Human-Robot Teamwork*. *MIT Media Lab*, 1-6. Retrieved from <http://www.cc.gatech.edu/~athomaz/papers/Breazeal05-IROS.pdf>
7. Butterworth, B., & Beattie, G. (1978). Gesture and silence as indicators of planning in speech. In R. N. Campbell & P.T. Smith (Eds) *Recent advances in the psychology of language: Formal and experimental approaches*. 347-360.
8. New York: Plenum Press
9. Chris. (2013). Hand Steepling. Retrieved from <http://bodylanguageproject.com/the-only-book-on-body-language-that-everybody-needs-to-read/hand-steepling/>
10. Cohen, A . A., & Harrison, R . P.(1972). Intentionality in the use of hand illustrators in face-to-face communication situations. *Journal of Personality and Social Psychology*, 28, 276-279.
11. Cohen, A. A., & Harrison, R. P. (1973). Intentionality in the use of hand illustrators in face to face
12. communication situations. *Journal of Personality and Social Psychology*, 28, 276-279.
13. Cummings, K. (2011). *NONVERBAL COMMUNICATION AND FIRST IMPRESSIONS* (Unpublished master's thesis). Kent State University Honors College . from https://etd.ohiolink.edu/rws_etd/document/get/ksuhonors1305161866/inline

14. Darwin, C. (n.d.). Means Of Expression In Animals. *The Expression of the Emotions in Man and Animals*, 88-121. doi:10.1017/cbo9780511694110.006
15. Emam, K. E., Goldenson, D., Briand, L., & Marshall, P. (1999). Interrater agreement in SPICE-based assessments: some preliminary results. *Proceedings of Software Process 1996*,(4), 113-133. doi:10.1109/icsp.1996.565032
16. Givens, D., Ph.D. (2002). The non verbal dictionary to gestures, signs & body language cues. *Center for Nonverbal Studies Press*, 1-781. Retrieved from <https://www.politicalavenue.com/10862/SIGN%20AND%20BODY%20LANGUAGE/The%20Nonverbal%20Dictionary%20of%20Gestures,%20Signs%20&%20Body%20Language%20Cues%20-%20David%20B%20Givens.pdf>.
17. Givens, D. B. (2016). Reading palm-up signs: Neurosemiotic overview of a common hand gesture. *Semiotica*,2016(210). doi:10.1515/sem-2016-0053
18. Gwet, K. L., Ph.D. (2014). *HANDBOOK OF INTER-RATER RELIABILITY: The Definitive Guide to Measuring the Extent of Agreement Among Raters*(4th ed.) [4]. Retrieved from http://www.agreestat.com/book4/9780970806284_prelim_chapter1.pdf
19. Ekman, P. (1976). Movements with precise meanings. *Journal of Communication*, 26, 14-26.
20. Ekman, P. (1999). Emotional and conversational nonverbal signals. *Gesture, Speech, and Sign*, 45-55. doi:10.1093/acprof:oso/9780198524519.003.0003
21. Fradet, N. (2017) 13 Revealing Body Language Hand Gestures. (n.d.). Retrieved April 14, 2017, from <http://www.nicolasfradet.com/hand-body-language/>
22. Hans, A., & Hans, E. (2015). Kinesics, Haptics and Proxemics: Aspects of Non -Verbal Communication. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*,20(2). Retrieved from <http://iosrjournals.org/iosr-jhss/papers/Vol20-issue2/Version-4/H020244752.pdf>
23. Hartman, N. A. (2004). Non verbal communication. Retrieved from <https://dspace.mit.edu/bitstream/handle/1721.1/55898/15-281Spring2004/NR/rdonlyres/Sloan-School-of-Management/15-281Spring2004/BE8A9AEB-CBBC-4A61-A473-8FF4B143C151/0/nonverbal.pdf>
24. Healey, M. L., & Braun, A. R. (2013). Shared Neural Correlates for Speech and Gesture. *Functional Brain Mapping and the Endeavor to Understand the Working Brain*, 1-17. doi:10.5772/56493
25. Hofstede, G. (1984). *Cultures consequences: international differences in work-related values*. Beverly Hills: Sage Publications.
26. Imai, G. (1996). Gestures: Body Language and Nonverbal Communication. Retrieved from <http://www.coralgablescavaliers.org/ourpages/users/099346/IB%20Theory%20of%20Knowledge/Bastian%20Chapter%2006/Bastian%206/Gestures%20Nonverbal%20Communication%20and%20Body%20Language.pdf>
27. Kendon, A. (2000). Language and Gesture: Unity or Duality (D. McNeill, Ed.). In *Language and Gesture: Window into Thought and Action* (pp. 47-63). Cambridge: Cambridge University Press.
28. Kendon, A. (2004). *Gesture: Visible action as utterance*. Cambridge: Cambridge University Press.
29. Krauss, R. M., Dushay, R. A., Chen, Y., & Rauscher, F. (1995). The communicated value of conversational hand gestures. *Journal of experimental social psychology*, 533-552. Retrieved from <http://www.cogsci.ucsd.edu/~nunez/COGS200/Krauss.pdf>
30. Krauss, R. M., Morrel-Samuels, P., & Colasante, C. (1991). Do conversational hand gestures communicate? *Journal of Personality and Social Psychology*,61(5), 743-754. doi:10.1037//0022-3514.61.5.743
31. Krippendorff, K. (2011). Agreement and Information in the Reliability of Coding. *Communication Methods and Measures*,5(2), 93-112. doi:10.1080/19312458.2011.568376
32. Khuong, M. N., & Hoang, D. T. (2015). The Effects of Leadership Styles on Employee Motivation in Auditing Companies in Ho Chi Minh City, Vietnam. *International Journal of Trade, Economics and Finance*,6(4), 210-217. doi:10.7763/ijtef.2015.v6.471
33. Leathers, D. G. (1992). Successful nonverbal communication : principles and applications (2nd ed.). New York: Macmillan.
- Lenth, R. V. (2001). Some Practical Guidelines for Effective Sample Size Determination. *The American Statistician*,55(3), 187-193. doi:10.1198/000313001317098149
34. Luca, A005). WHERE DO WE STAND? A STUDY ON THE POSITION OF ROMANIA ON HOFSTEDÉ'S CULTURAL DIMENSIONS .*INTERACT* , 2, 1-21. from <https://alingavreliuc.files.wordpress.com/2010/10/hofstede-romania-comparativ.pdf>.
35. Luthra, A., & Dahiya, R., Dr. (2015). Effective Leadership is all About Communicating Effectively: Connecting Leadership and Communication. *IJMBS*,5(3), 43-48. Retrieved from <http://www.ijmbs.com/Vol5/3/7-Anchal-Luthra.pdf>
36. McNeill, David. McNeill, David. 2000. Introduction. In David McNeill (ed.), *Language and gesture*, 1-10. Cambridge: Cambridge University Press.
37. McNeill, D. (1992). *Hand and mind: what gestures reveal about thought*. Chicago: University of Chicago Press.
38. Miller, P. W. (2005). *Body language: an illustrated introduction for teachers*. Munster: Patrick W. Miller and Associates.
39. Naile, I., & Selesho, J. M. (2014). The Role of Leadership in Employee Motivation. *Mediterranean Journal of Social Sciences*. doi:10.5901/mjss.2014.v5n3p175

40. Neff, M., Toothman, N., Bowmani, R., Tree, J. E., & Walker, M. A. (2011). Don't Scratch! Self-adaptors Reflect Emotional Stability. *Intelligent Virtual Agents Lecture Notes in Computer Science*, 398-411. doi:10.1007/978-3-642-23974-8_43
41. Parvez, H. (2015, December 06). PsychMechanics. Retrieved from <http://www.psychmechanics.com/2015/05/body-language-clenching-and-clasping-of.html>
42. Pease, A. (2017). *Definitive book of body language*. Place of publication not identified: Orion.
43. Poyatos, F. (1983). Language and nonverbal systems in the structure of face-to-face interaction. *Language & Communication*, 3(2), 129-140. doi:10.1016/0271-5309(83)90010-1
44. Rajan, D. (2016). Motivation and Job Satisfaction: A Comparative Study among Pharmacists. *Training & Development Journal*, 7(2), 87. doi:10.5958/2231-069x.2016.00012.3
45. Ricci Bitti, P. E., & Poggi, I. A. (1991). Symbolic nonverbal behavior: Talking through gestures. In R. S. Feldman & B. Rimé (Ed.), *Fundamentals of nonverbal behavior* (pp. 433-457). New York: Cambridge University Press.
46. Jones, R. G. (2016, April 1). Chapter 4 Nonverbal Communication. Retrieved from <https://2012books.lardbucket.org/books/a-primer-on-communication-studies/s04-nonverbal-communication.html>
47. Saleem, H. (2015). The Impact of Leadership Styles on Job Satisfaction and Mediating Role of Perceived Organizational Politics. *Procedia - Social and Behavioral Sciences*, 172, 563-569. doi:10.1016/j.sbspro.2015.01.403
48. Schubert, A. (1974). A Study of Nonverbal Communication and Leadership Emergence in Task-Oriented and Informal Small Group Discussions. 1-16.
49. Shannon, C. E., & Weaver, W. (1999). *The mathematical theory of communication*. Urbana: University of Illinois Press.
50. Sharma, M., & Jain, S. (2013). Leadership Management: Principles, Models and Theories. *Global Journal of Management and Business Studies*, 3(3), 309-318. Retrieved from https://www.ripublication.com/gjmb_spl/gjmbv3n3spl_14.pdf.
51. Tanenbaum, J., El-Nasr, M. S., & Nixon, M. (2014). *Nonverbal communication in virtual worlds: understanding and designing expressive characters*. Pittsburgh, PA: ETC Press.
52. Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 1-3. doi:10.5116/ijme.4dfb.8dfd
53. Tierney, J. (2007, August 27). A World of Eloquence in an Upturned Palm. Retrieved from <http://www.nytimes.com/2007/08/28/science/28tier.html>
54. Toastmasters. (1996). *Gestures: your body speaks: how to become skilled in nonverbal communication*. Mission Viejo, CA: Toastmasters International.
55. Ulrich, D. (2013). *What is Leadership*. Michigan: Stephen M. Ross School of Business.
56. Wilderom, C., & Hoogeboom, A. (2016). INTEGRATING TWO CLASSIC LEADERSHIP MODELS: AUGMENTATION EFFECTS WITH INITIATING STRUCTURE. *Group & Organization Management*, 1-41.
57. Warner, J., Dr. (2012, August 31). Listening. Retrieved from <http://blog.readytomanage.com/10-body-language-signals-every-leader-needs-to-know/>
58. Weinschenk, S., Ph.D. (2012, September 26). Your Hand Gestures Are Speaking For You. Retrieved June 20, 2017, from <https://www.psychologytoday.com/blog/brain-wise/201209/your-hand-gestures-are-speaking-you>
59. Werner, H., & Kaplan, B. (1963). *Symbol formation*. New York: Wiley.

9. Appendix

Table 1: Gesture typology

Gesture	Authors	Definition	Example
Gesticulation	Kendon (2000) & McNeill (2000) & Healey & Braun (2013)	"..motion that embodies a meaning relatable to the accompanying speech." Kendon (2000, p.1)	- Hand gestures - Body movements: expansion - Facial expressions - Head movements - Leg movements
Speech-framed gestures	Kendon (2000) & Healey & Braun (2013)	"..are part of the sentence itself." (Kendon, 2000; p.2)	- Showing the direction someone went in: "She went.. (points in direction) that way"
Emblems	Ricci, Bitti & Poggi (1991) & Kendon (2000) & Healey & Braun (2013)	"Arbitrary but conventionalized representations of linguistic meaning." (Healy & Braun, 2013; p.63)	- Thumbs up for 'Good' - The okay hand gesture where the index finger touches the thumb to say 'I am okay'
Pantomime	McNeil (2000) & Kendon (2000) & Healey & Braun (2013)	".. is dumb-show, a gesture or sequence of gestures conveying a narrative line, with a story to tell, produced without speech." (Healey & Braun, 2013; p.63)	- Describing a ball and making the shape of a ball with ones hands
Sign language	Kendon (2000) & Healey & Braun (2013)	"Full-fledged language system with syntactic structure and a community of users." Healy	- Sign language; a language of its own using only hands to communicate

Table 2: Hand Gestures coded in this study

Hand gesture type	Author	Definition	Example
Upward palm	Darwin (1872) Givens (2002) Givens (2016) Kendon (2004) Tierny (2007) Fradet (2017)	Any hand gestures where the hand is open and the palm is facing upwards	- Shrug gestures with hands facing outward and palms facing up - The hand motion made when holding out your help for something
Downward palm	McNeill (1992) Kendon (2000) Kendon (2004) Imai (1996)	Any hand gesture where the hand is open and the palm is facing the floor	- The gesture made when telling people to be seated
Mixed palm	Weinschenk (2012) Luca (2005)	Hand gestures where the hands are open and palms are facing one another or hand gestures where there is a lot of movement	- The hand gestures made when explaining how long something was to someone - Moving hands around with palms in no real direction (not up nor down)
Clasped hands	Cummings (2011) Pease (2017)	Hand gestures where the fist is clenched together or the fingers are interlocking one	- The clasping of hands together, usually done during thinking

		another	<ul style="list-style-type: none"> - Finger tips touching one another and palms separated (steeping clasped hand gesture) - Interlocked fingers, hands holding one another
Object touch	Hartman (2004) Hans & Hans (2015) Povatos (1983) Tanenbaum (2014) Ekman (1999)	The manipulation of objects during speech	<ul style="list-style-type: none"> - A person is statically touching an object - Playing with pens, glasses, cups - Does not get taken into consideration when someone is functionally using their pen, drinking from their coffee cup or put their glasses on and off their head
Self-touch head	Neff (2011) Kraus (1995) Hartman (2004)	Touching oneself on the head (area)	<ul style="list-style-type: none"> - Scratching of the head - Resting the head on hands - Touching hair
Self-touch body	Neff (2011) Kraus (1995) Hartman (2004)	Touching oneself on the body	<ul style="list-style-type: none"> - Scratching of any kind on the upper torso area - Interlocking arms - Rubbing - Fixing of shirt

Table 3: Employee survey questions on job satisfaction

