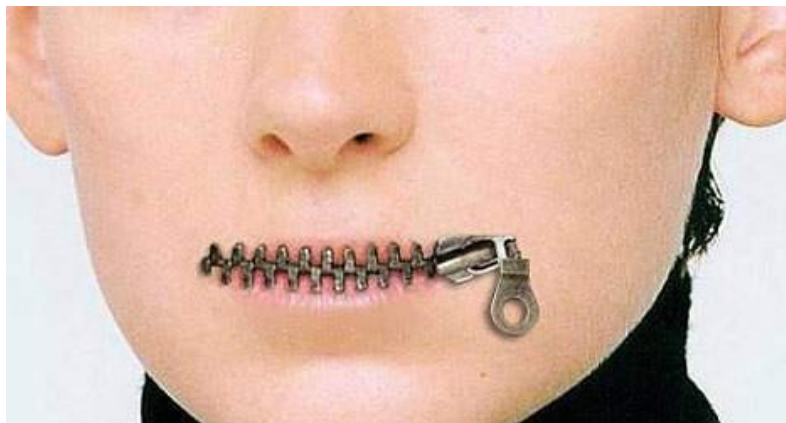


Body**system**ics



Does the body snitch on the snitch who does not want to snitch?

The body language of a loyalist



Trineke Kroeze

Groningen, July 4, 2017

Does the body snitch on the snitch who does not want to snitch?

The body language of a loyalist

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Preface

Non-verbal science captivated me. For the past three years I studied at the Expertise centre Body Language (Expertisecentrum Lichaamstaal Nederland) under *Gerard Stokkink* with much pleasure and eagerness. I experienced the final year as icing on the cake, because *Rabah Aiouaz* and *Yacine Aiouaz* of Bodysystemics from Switzerland generously shared their knowledge on body language in an enthusiastic and professional way. Their motto is: ALL IS ENERGY.

The explanation of Rabah taught me to see details. Small in the moment, great in their meaning. I also learned from Rabah how to ask the right question at such a time. Rabah, Yacine, Gerard. Thank you very much!

I would also like to mention my fellow students Eelke, Ivo, Jeroen, Maja, Rosanne en Tamar. The three years flew by. We must have sent thousands of Whatsapp messages. Beautiful time. Thank you all.

I've been working for a year and a half as a manager at an organisation with a pleasant social atmosphere, or family culture, as used in organisational sciences. The downside of this nice social atmosphere is that colleagues don't or rarely address each other. I was curious about the barriers that cause this and started reading about the topic. I came across an explanation about hindering principles. One of these principles is the loyalty principle. *You cover for your colleagues at all times!*

The management is expected to contribute to the promotion of a culture of dialogue. I started to wonder whether my knowledge on body language could be useful in this.

I prefer a positive approach in which I want to use my knowledge about body language. This all starts with the recognition of behaviour of colleagues who keep relevant information to themselves because of the principle of loyalty. I respect the choices of the ones who do this after careful consideration but people who do this and as a consequence start to carry a burden, build up frustrations, become personally disadvantaged or cause organisational interests to be jeopardised I would love to help in addressing colleagues. The following question therefore started to occupy my thoughts: could I identify colleagues who are burdened by the principle of loyalty based on their body language? Would these people show the same body language as the people who don't speak, who keep their thoughts to themselves or consciously mislead people? Although much research on lying and lie detection exists, I don't want to focus on lying as a phenomenon.

I choose for a positive approach with the objective of good communication. That's what's in my opinion the purpose of the further development of non-verbal science.

From my perspective, reading the body language is not about accusing people of lying or promoting a continuous vigilance in a working situation. Far from it. For me, it's not about recognising the lie, but actually seeing the truth and thereby tightening and strengthening relations. I hope to have made a contribution to that with this research.

Anton D, Anton S, Bob, Danique, Inge, Iris, Jolien, Joris, Linda, Kevin, Maaïke, Marloes, Natalia, Ricardo, Romy, Rutger, Sharona, Victor, Willemijn and Yana.

You let me film you. Thank you so much!

Trineke

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Summary

In organisations with a family culture, employees often have difficulties addressing each other. One of the limiting principles is the principle of loyalty. You cover for your colleagues at all times!

Managers could possibly change their conversation techniques in case they're dealing with someone who does not want or dare to address a colleague because of loyalty. How do you recognise the loyalist?

Reading the body language could provide support during the right conversations to stimulate addressing colleagues and making things discussable. This requires the ability to recognise the corresponding body language.

Loyalists share a common feature with deceivers which is that they keep information to themselves in order to show socially desirable behaviour.

Emotions always leak via the body language. Literature refers to these as hotspots. Hotspots are visible when tension occurs between what we think and feel. This is the case when we don't speak the truth.

A lie is never visible!

A hotspot is.

The purpose of this research is to determine whether loyalists and deceivers show differences in the type and number of hotspots. The following research question was formulated: Do the hotspots that can expose deceivers the same in frequency and type as the hotspots of loyalists or witnesses?

In order to provide an answer to this research question a qualitative analysis was conducted, consisting of a literature research and an experiment analysing the body language of nineteen people in detail, after which the number and types of hotspots were assessed. The nineteen people had different roles during the experiment: deceiver, ignorant or witness (loyalist).

A deceiver is someone who makes an intentional attempt, successful or not, to verbally or non-verbally conceal, develop and/or manipulate factual and/or emotional information in order to create or maintain an opinion in another person that will be considered incorrect by the communicator.

A loyalist is someone who makes unconscious or intentional attempt to verbally or non-verbally conceal factual and/or emotional information to prevent another person from being snitched on.

An ignorant is someone who is not involved in the information from a loyalist or a deceiver.

The hypotheses for this research are that loyalists display an equivalent number of hotspots as deceivers and that the ignorants display fewer hotspots than deceivers and loyalists.

Literature research shows that the body language of liars has been a frequent topic of research. No research or literature was found about the body language of loyalists/witnesses. The experiment showed there were no significant differences in the number of displayed signals of discomfort, tense or hotspots (signs of deceiving) between the three investigated roles: the deceiver, the ignorant and the loyalist (witnesses). This means the hypotheses could be rejected.

However, because of the experimental nature of the research, the low reliability and the low level of validity, both the first and second hypothesis could neither be rejected nor confirmed.

More careful research is needed for this.

The research showed that no further research was done on the body language of witnesses.

Initiating research on the body language of witnesses is recommended. The information could possibly be valuable for detection, justice and other facets of society.

This research raised a number of different questions.

1. Do women touch their hair more often than men and do women (or men) with long hair touch their hair more often than those with short hair?
2. Are many different movements of the mouth a general item or does this occur more frequently in young adults?
3. Men covered their mouth more often than women. Is this generally the case?
4. When men touched their face this often concerned coarser movements (rubbing), whereas women displayed more subtle movements (scratching). Is this generally the case?
5. Coding and definitions by Bodysystemics were used to write down the body language. However, no standard coding or definition could be found for a number of items. Is future research on this topic useful?

It is recommended to start research on the aforementioned questions.

The research question about whether the hotspots that can unmask deceivers are similar in frequency and type as in loyalists/witnesses was not answered by this research. Additional research is recommended for this purpose.

1. Introduction

Motive

Limiting principles in addressing behaviour

Managers of the agency Telecom of the Ministry of Economic Affairs are expected to contribute to a cultural change in the organisation. A part of this cultural change consists of employees addressing each other more and better. And that employees report difficult issues to the management more easily.

The culture of the organisation can be defined with the term family culture. The family culture is often highly valued among employees in the concerning organisations and highly contributes to high business performances. Employees feel at home, are above average involved and are often willing to go the extra mile for the organisation.

Research shows that the family culture also has a downside. It's often less common to address each other in companies with a family culture. The 'friendly working environment' is often seen as a barrier to address each other about for instance the way people work together or sticking to agreements. Addressing each other is regarded as something that could endanger 'the nice cooperation' or 'the good bond'. *Not addressing colleagues* actually leads – in the long run – to worse cooperation, a more unpleasant atmosphere and worse performance (Businesswise, 2017).

Managers frequently encounter situations in daily practice in which colleagues find it difficult to address each other or make difficult issues discussable, especially when other colleagues are involved. Why do we *not* address others?

According to Overbeek (2011) multiple limiting principles exist in addressing people or making situations discussable.

- The *social* principle. In short: not wanting to hurt the other person.
- The *modesty* principle. People think to themselves: who am I to address the other person? Who says I am right about this?
- The *hierarchy* principle. People feel that not they, but a manager should address a colleague.
- The *fear* principle. People are afraid of the response of a colleague after having addressed them. Think for instance of retaliations and harassments.
- The *conflict avoidance* principle. People are afraid they will end up arguing if they address their colleague.
- The *seniority* principle. Someone has been working at the company longer than you. You therefore believe you 'don't have the right' to address the person.
- The *history* principle. Your relationship with a colleague has developed in a way that suddenly addressing each other would be 'awkward'.
- The *loyalty* principle. Some people believe that you should support a colleague at all times. You protect and 'cover' each other. You do not betray your colleague.

SPREEKPLICHT

**ALS TRANSPARANTIE
JE INTEGRITEIT
AANTAST**

**ZWIJG IN
ALLE TALEN**

Loesje

(obligation to speak

When transparency affects your integrity

Remain silent in all languages)

Graduation research

This graduation research was conducted as part of the programme Non-verbal communication. Reading the body language can provide support when conducting the right interviews to stimulate addressing people and making issues discussable. In order to do this, being able to recognise the corresponding body language is required. Emotions always leak via body language. Literature refers to this as hotspots. Hotspots are visible when tension occurs between what we think and what we feel. This is the case when we don't tell the truth.

Source research

A source research showed that there much literature, research reports, (scientific) articles and websites exist that elaborate on people's body language who keep something to themselves for social or psychological reasons. The sources refer to this group of people as 'liars'. Since the term liar mostly has a negative connotation, this research used the term 'deceiver' instead.

No research was found on the body language of people who are *aware* of secrets, lies, or concealed thoughts of others.

Definitions

A deceiver is someone who makes an intentional attempt, successful or not, to verbally or non-verbally conceal, develop and/or manipulate factual and/or emotional information in order to create or maintain an opinion in another person that will be considered incorrect by the communicator (Masip, Garrido & Herrero, 2004, p.148).

A loyalist is someone who makes unconscious or intentional attempt to verbally or non-verbally conceal factual and/or emotional information to prevent another person from being snitched on (definition formed for the purpose of this research).

An ignorant is someone who is not involved in the information from a loyalist or a deceiver (definition formed for the purpose of this research).

Hypotheses

The following hypotheses were formulated for this research:

Hypothesis 1.

Loyalists display an equal number of hotspots as deceivers.

Hypothesis 2.

Ignorants display a lower number of hotspots than deceivers and loyalists.

Fictitious example:

Kees and Marie work on a project together, with a deadline approaching. Marie is regularly playing a game on her computer and leaves every afternoon at 4:30 on the dot. Kees is bothered by this. He often has to finish work that didn't get done and has the impression he's doing more work than she is. He doesn't dare to address her, because Marie is a sensitive person. He complained to the manager about the working pressure, but – out of loyalty – won't tell his manager that Marie wastes an hour a day playing computer games. He doesn't want to snitch on her. The manager tries to uncover the core of the problem during the conversation with Kees.

Reading guide

First, the problem statement, objective and research question will be addressed, followed by the research methods. Next, a theoretical framework is presented from the literature, after which the experiment is described and the results, conclusions and finally the recommendations are presented.

2. Research

Problem statement

It is insufficiently known whether loyalists or witnesses can be identified based on their body language and differ in this from deceivers.

Objective

The objective of this research is to determine whether loyalists and deceivers show differences in the type and number of hotspots.

Research question

Are the hotspots that could unmask deceivers similar in frequency and type as the hotspots of loyalists or witnesses?

Research methods

Design

A qualitative analysis was conducted for this research.

1. Literature research
2. Experiment with observation of 19 people who obtained the role of Ignorant, Loyalist and Deceiver
 - 2a. How many items that point to hotspots do the people in the different roles make?
 - 2b. What stands out?

Out of the different research methods such as interviews, literature research, content analysis, case study and observational research, literature research and observational research was chosen for this research.

Observation is the systematic perception of certain behaviours of people. Different forms exist, such as:

- Observing in the field of everyday situations
- Observational research in specially designed rooms
- Structured versus unstructured methods
- Direct versus indirect methods
- Blinded versus unblinded observation
- Participating (researcher participates in all activities of the examined person) versus 'regular' observation.

The following research characteristics were chosen:

- In a separate room;
- With a structured, direct method;
- The researcher asks questions, arranges the interview, observes during the interview and records the interview on videotape to allow analysis of the interview at a later time.

There are three observation methods:

1. Time sampling: method in which something or someone is observed for a short period of time
2. Event sampling: method in which the observation takes place during a number of minutes and the frequency of the observed behaviour is counted
3. Triangulation: observation in combination with other research methods.

The event sampling method was chosen for this research.

Based on (scientific) research, various body language items exist that imply deceiving (hotspots). During the observational research a selection of a number of hotspots was made. These are mentioned later.

Experiment set-up.

Four people participate in the interview.
Three people have a specific role and I am the interviewer.

The three people are asked a question in turns they can answer. The question was sent to them via Whatsapp beforehand.

The three people also receive instructions through Whatsapp with the request to read these.

Person 1: the deceiver
Person 2: the loyalist (witness)
Person 3: the ignorant

The deceiver is a person who provides a made up answer to the question. He/She does not give a sincere answer.

The loyalist is a person who provides a sincere answer to the same question and he/she is aware of the insincere answer of the deceiver.

The ignorant is a person who is not aware of the fact that a deceiver and a loyalist are present.

Person 1 was asked to pass on his/her made up answer to person 2 through Whatsapp. The participants were asked to not have any other communication with each other.

The three people received the following question:

What is the most impressive thing you've ever seen on television, in the movie theatre or on the internet?

The deceiver had to give an answer that was not sincere. The loyalist and the ignorant had to provide a sincere answer. Furthermore, the loyalist was told in advance by the deceiver which insincere answer he/she would be giving. In this way, the loyalist was aware of the insincere answer of the deceiver. The ignorant is thus not aware.

Location

The research will take place in Groningen, in a room where four people will have a conversation. The three aforementioned roles and the interviewer.

Video recording

The interviews were recorded on video.

Consent

All participants filled in a consent form in which they declare to give permission for the use of the film.


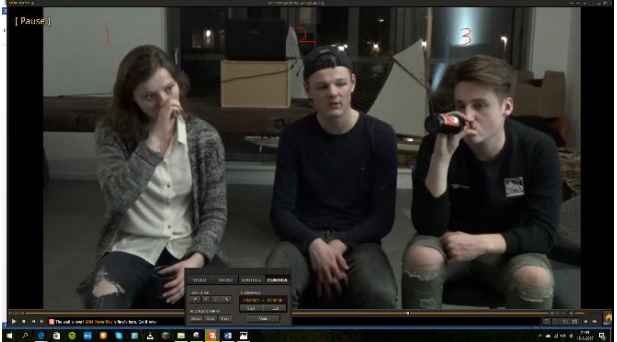
Research group

In order to generate a research group with optimal homogeneity, a research population with the same age group was selected. All people in the research group were between 15 and 22 years old.

Reporting

Each interview with the three people was recorded on film. The body language was analysed in detail based on the recordings. A detailed observation report was drawn up for each of the analysed subjects. These reports are added to this document as appendices. The selected items that's show discomfort, tense or hotspots are then marked in the observation reports with a red flag.

A passage from one of the research reports is presented below for the purpose of illustration.

Time	T/L	T	Y	S	Item	Microexpression	Verbal	Photo/Video moment
5.44	L				N20P2 			

Explanation of the table.

T / L means talking or listening

T means Tense

S means Speed

Y means Body makes a Y movement

Item means that 1 specific body movement is made

Micro-expression means that a face-to-face movement takes between 0.25 and 0.50 seconds

Verbal means the spoken words.

The mentioned indicators are based on the method of Bodysystemics.
(<http://www.bodysystemics.ch>)

Sigmund Freud in 1905: 'He that has eyes to see and ears to hear may convince himself that no mortal can keep a secret. If his lips are silent, he chatters with his fingertips; betrayal oozes out of him at every pore.'

(Salem, 2009)

3.Theory

Definition

Literature uses terms such as lying, deception and betrayal (Ekman, 2000; DePaulo, 2003).

Ekman (2000) states that lies are intentional and that the person who is lied to is unaware of the deceptive intention of the liar.

Deception is defined as 'the intentional attempt, successful or not, to verbally or non-verbally conceal, develop and/or manipulate factual and/or emotional information in order to create or maintain an opinion in another person that will be considered incorrect by the communicator' (Masip, Garrido & Herrero, 2004, p.148).

Most researchers define lying as: 'an action with the intention to provide another with an impression, of which the liar assumes is incorrect' (Vrij, 1998).

Three approaches

Three different approaches are distinguished in science (Bockstaele, 2007). The biological approach that assumes biological processes that make people predestined to lie, the psychiatric/psychological approach that concentrates on the 'deceitful brain' and the socio-psychological/sociological approach that seeks the foundation of lying in social relationships and communication processes.

The first two approaches focus on the individual; on his or her biological traits such as self-control, introversion/extroversion, psychopathy, and so on. The socio-psychological/sociological approach, or the collectivist approach has another starting point: it states that lies arise in society and therefore fulfil an important role. Lies are supposedly one of the important mechanisms of human communication and societal processes.

This research assumes the socio-psychological/sociological approach.

Socio-psychological/sociological approach

Elchardus (1994) argues that expectations are the fundamental raw material of things social. The mutual expectations interconnect people and give shape to society. We expect our partner to greet us, we expect the coffeemaker to start working when we press the button, the waiter expects us to pay for dinner. Expectations can also be bound to time, roles or places. Expectations can also draw on the past. Elchardus (1994) distinguishes two types of expectations. The normative ones, which are about behavioural codes that prescribe how people should behave. And the cognitive ones. Cognitive expectations are based on regularities in life. When we press a bell, we expect it to ring.

In the interaction with each other people use many mechanisms to deal with frustrated expectations without having to decide to break the rules or depreciate their expectations (Goffman, 1974).

Mechanisms that can be distinguished are humour, acting tactfully, turning a blind eye, pretending the violated expectations didn't really take place, trying to explain things, pretending others didn't understand, confessing, and so on.

Another mechanism we possess is lying. When we try to differentiate between right and wrong based on the costs and benefits of our fellow men, lying is sometimes the best alternative (Bergsma, 2000).

Lying as part of communication

Lying is therefore a fundamental part of human communication. It is thus not by definition bad to lie. Many problems, conflicts and much friction would arise if everyone always had to tell the 'hard' truth (Peterson, 1996).

When speaking of lying, one often thinks of a spoken (verbal) falsehood; a lie is often 'told' or written down. Concealing certain actions can however also be considered lying (Bockstaele, 2007).

The liar uses symbols (often language) but also body and facial expressions. Much research has been done on interaction between a sender and a receiver. According to Burgoon and others, lying always occurs in an interpersonal context; there is reciprocity between the actors. The communication is always transactional and presumes feedback and mutual influencing (Burgoon, 1994).

Burgoon distinguishes four important communication strategies: impression management, relational communication, emotion management and conversation management. Impression management and relational communication cover the images someone produces toward a present audience. Emotion management concerns the way people manage their emotional experiences and expressions in the interaction with others. Conversation management is the way the interacting people manage the conversation through elements such as initiating certain themes, generating conversation twists. These communication strategies hold facets that encompass movements, use of voice and word choices. The verbal and non-verbal combinations are therefore significant, which makes unmasking a liar a complex issue. Additionally complex because the idea of lying occurring can cause emotional, cognitive and behavioural changes, just like the eventual deceit. Intercultural differences also have to be taken into account.

As indicated before, the concept of 'liar' or the verb 'lying' has a negative connotation. It was described earlier that – from a socio-psychological approach – lying can be socially desirable. That's why 'lying' as a process of the loyalist will be worded with the concept 'deception'.

Psychophysiological processes while lying

Humans possess reptile brains. This brain is configured for vigilance and warns whenever important information comes in. In addition, it controls the basic functions to survive, such as respiration and heartbeat. The reptile brain consists of the hindbrain and the cerebellum (little brain). Five hundred million years ago the spinal cord of primitive vertebrate animals lengthened and bulged, which formed the reptile brain. Two hundred million years ago the midbrain and diencephalon formed on those outgrown stumps of the spinal cord of low mammals. The limbic system is housed here (Van den Berk, 2001).

The limbic system, also known as Papez circuit controls basic necessities among other things. These are emotions, sexuality, thirst, sleep, and so forth. LeDoux (1996) pointed out the area where emotions take place in the limbic system. This is an almond-shaped spot called the amygdala. The amygdala consists of three parts. Stimulation of one part

leads to anger outbursts, the other to friendly behaviour and the third one to feelings of panic.

Factors that influence physiological responses.

People can react differently to the same responses. This is called the individual response stereotype (Van den Berk, 2001).

The concrete situation is a determinant, as well as the nature of the stimuli.

Physiological responses can be registered.

- Electrodermal activity (perspiration etc.)
- Cardiovascular activity (heartbeat, blood pressure etc.)
- Respiratory system (breathing, etc.)
- Neuromuscular system (muscle tension, blinking etc.)
- Other: brain activity, lacrimal glands, pupil reaction, blushing, biochemical such as blood clotting

There is no **specific** autonomous physiological response for lying (Bockstaele, 2007).

Psychological processes

Three psychological processes can be distinguished during lying. Emotional, cognitive and control processes (Bockstaele, 2007).

Emotional processes

If you're trained in identifying emotions and discovering microexpressions of emotions, you are more capable of reading the person's true feelings and noticing his or her signals of deception. Perceiving emotions is a rather complicated issue.

Emotions determine the quality of our lives. Signals of emotions provided by others often determine how we interpret their words and actions. Their expression also triggers our own emotional response which in turn provides colour to the interpretations of what the person says, what we think his motives, attitudes and intentions are (Bockstaele, 2007)

Emotions

According to Lintsen (2005) over 100 definitions of emotions circulate among psychologists. The definition that is often used: Emotions are coordinated and steering motivational systems, formed by natural (and sexual) selection, to in a sufficient way handle the demands of the environment in which we have evolved as a species (Lintsen, 2005).

When we focus on the physical side of emotions, we can refine the definition of (basic) emotions: They are physical reaction patterns summoned by stimuli, managed by the limbic system and expressed in effective behaviour (attitudes, facial expressions) (Lintsen, 2005)

Leakage

Lies come to light because of a bad preparation of the lie or under the influence of emotions (Ekman, 2000). In his neurocultural theory, Ekman (1972) states that the surge of an emotion, unconsciously, causes changes in non-verbal behaviour, called leakage. And the stronger the experienced emotion, the larger the change in perceived non-verbal behaviour. He furthermore believes that each emotion produces a number of distinctive behaviours in the face, body and voice (Ekman, 2000).

Microexpressions

Microexpressions form an important source of 'leakage' in which an emotion an individual tries to conceal is revealed. A faked expression can betray itself in different ways: it is often slightly asymmetrical and when appearing and disappearing on the face smoothness and evenness are lacking (Ekman, 2003)

A microexpression lasts between 1/25 to 1/5 of a second.

Ekman states it can either be intentionally concealed emotions or concealed emotions. The same microexpressions are often shown in both cases.

Ekman (2003) says context has to prove which type it is.

He distinguishes four types of context:

1. The nature of the conversation (first meeting, interrogation, etc.)
2. History of the relationship
3. Change of speaker (does the microexpression appear when he/she is speaking or when he/she is silent)
4. Congruence (does the microexpression fit the voice, or the content, the gestures, etc.)

Ekman defined the following microexpressions for six emotions (Ekman, 2003).

Happiness:

- Both corners of the mouth go up equally far and at the same time
- The lower eyelids are raised
- Crow's feet
- Eyebrows and upper eyelids are slightly lowered

Contempt:

- One corner of the mouth goes up sooner and/or further

Aversion:

- Wrinkles around the nose
- The middle of the upper lip goes up towards the nose

Anger:

- One or both eyelids tense up
- Eyelids are raised
- The eyebrows go down
- The lips are pressed together
- The jaw is shortly moved forwards

Sadness:

- The inside of the eyebrows go up and towards each other
- The corners of the mouth go down
- The chin is pressed upwards
- The lower lip is shortly brought forward, like pouting

Fear:

- The upper eyelids move up (high and longer than in case of surprise)
- The entire eyebrow moves up and are possibly brought inwards (towards each other), creating wrinkles on the forehead
- The upper eyelids are raised and tense up
- The corners of the mouth pull outwards
- The bottom teeth are visible

Surprise:

- The upper eyelids shortly move up
- The eyebrows are raised in a round shape (with less tension than in case of fear)
- The mouth opens in a relaxed manner

Ekman (2003) states not all behavioural clues for deceit are emotional. He believes they can also arise from thoughts (cognition).

As described earlier, Bockstaele (2007) distinguishes, in addition to emotional processes that contribute to deceit and betrayal, cognitive and control processes.

Cognitive processes

Someone who wants to keep a thought to himself, wants to deceive, lie or does not tell the truth because of social consideration undergoes an intensive cognitive process. Liars don't always know in advance when they have to lie. They don't always have the time to rehearse their story and memorise it. Even when the liar is warned well in advance and carefully thought of an untrue story, he is not always smart enough to foresee all possible questions and already have answers to all of these in advance (Ekman, 2000). Lying can therefore be mentally strenuous. It showed that people who wait longer to answer a question during a high level of mental effort speak more slowly and have more disturbances in their speech (Ekman, 1972). Furthermore, major mental effort leads to a decrease in mobility and to looking away more often.

Reaction speed is thus decisive. When people have to create information or try to mislead, words and thoughts have to be carefully determined. It's furthermore possible that liars don't refer to themselves as often during fabricated stories, simply because they can't draw upon personal experience (Vrij, 1998).

Control processes

People will be more aware of their behaviour when lying. They will try harder to come across as normal or credible than when speaking the truth (Vrij, 1998).

Control processes have three noticeable consequences for behaviour (Bockstaele, 2007). First: showing alternatives, called masks. For instance a friendly smile to the hostess who serves a dish you find disgusting. Second, the reaction time. This increases when an answer requires more of the cognitive process. A third phenomenon is that liars check themselves in order to come across as credible. They therefore like to give sufficient information. If they don't have it, because of the lie, they will provide information that doesn't really matter and thereby prevent the conversation partner from thinking he/she is being deceitful (Bockstaele, 2007).

We can never see lying

The three aforementioned approaches predict different, sometimes conflicting behaviour. The emotional approach for instance predicts an increase of movements while lying, whereas the control and cognitive approaches predict a decrease in mobility. A number of researchers such as De Paulo, Lindsay, Vrij and others (Vrij, 1998) mapped the results of

deception research. They discussed the results of more than 100 studies. This shows that no signal specifically indicates a lie. Some behaviours are however displayed more or less often than by people who speak the truth (Bockstaele, 2007). Ekman calls these behavioural signals hotspots (Ekman, 2003). They mark the moment where you have to start to look for more information.

Lie detection.

Lies can be detected along four roads:

- Non-verbal lie detection: by looking at the behaviour of the supposed liar: the motions, the smiling, the movements, looking away, and so on.
- Verbal and para-verbal lie detection. Through the content of the words and the way they are said.
- By studying written texts.
- By measuring physical physiological characteristics.

This research is targeted at the first way only. The non-verbal aspect.

20 principles of the non-verbal

As described earlier we can always consciously show socially desirable behaviour through our neo-cortex, but real emotions always non-verbally leak out the body through the limbic system in our brain. In his neurocultural theory (Ekman, 1972) uses the term leakage to explain this phenomenon.

The limbic system gives us disposal of the freeze, fight and flight response system. This system makes sure our body gives a lot of information to the external world. We roughly show comfort or discomfort Ekman (2003).

R. Jacobs presents in a clear way the twenty principles of non-verbal communication in his book 'Ik zie, ik zie wat jij niet zegt' (I see I see what you don't say) (Jacobs, 2013).

1. We can never see lying
2. The first reaction is the most honest one
3. Our extremities (arms, legs) show the most honest limbic behaviour, and the quickest
4. We instantly block what we don't want to see or hear
5. We keep things we don't like or consider dangerous at a distance
6. We turn away from unsafe situations or people
7. In comfortable situations we move against gravity with our body
8. We turn our vulnerable parts towards the pleasant person
9. We touch ourselves to ease the pain
10. The neck and lips contain many superficial nerves
11. People have erectile tissue in their nose and ears and touch this in case of stress
12. Expressions in the face are universal and can be intentionally faked
13. Power poses lower the cortisol level and increase the adrenaline level
14. The body language is mainly perceived and edited by the right hemisphere
15. The non-verbal part tells us more about thoughts and feelings than the verbal part
16. When under tension, our body moves less and we show less of ourselves
17. What you don't see is at least as meaningful
18. The one emotion covers the other emotion; laughter as camouflage
19. Emotions that asymmetrically express themselves in the face is often a signal for infidelity or played expression
20. Move towards your guest is a friendly gesture

Hotspots

Hotspots are visible when tension occurs between what we think and feel. This is the case when we're not telling the truth. Hotspots are hypotheses that need to be tested. In order to identify hotspots five channels of communication are continuously scanned:

Facial expressions (sometimes only a fraction visible);

The body language;

Use of voice;

Style of speaking;

Content.

When the truth isn't spoken, the aforementioned channels are visible as a deviation from the *baseline*. The baseline is the normal behaviour of a person in a certain situation (Ekman, 2000). Hotspots are behavioural signals that differ from the baseline.

Contradictions in a story or hesitations are also hotspots. They mark moments you should start looking for more information. You have to dismiss other explanations for the behaviour of the persons involved before you can conclude that the hotspot or behavioural change is proof of the fact the other person is lying.

Reliability of signals

Distinctions can be made in the reliability of signals:

Reliable:

- Changes that are controlled by the autonomous nervous system, such as sweating, breathing, etc.
- Multiple items displaying deception
- Microexpressions
- Masks
- Tension that wasn't present at baseline
- Muscles that are difficult to consciously flex. Corners of the mouth going down without moving the chin, insides of the eyebrows going up, eyebrows going up and towards each other
- Absence of unintentional movements (such as a fake laugh, simulated sadness or despair)
- Timing of the expression: very abruptly or gradually have to fit the context
- Voice. Higher/lower pitch, quieter, louder, faster, slower
- Displaying fewer illustrators (movements that complement words)
- The use of emblems (symbolic actions that have a specific verbal meaning and are recognised in the own culture) increases
- Asymmetrical behaviours that should normally be symmetrical
- Signals that indicate fear of getting caught/
- Signals that indicate a feeling of guilt
- Signals that indicate a joy in deceiving
(Ekman, 2000)

Focus areas

Othello error: We have to be careful to not draw a conclusion too quickly that a perceived emotion has to do with lying without considering other factors that could have caused this emotion.

- Not everyone who suppresses or represses an emotion shows microexpression that related to that emotion. Research has shown that microexpressions were observed in about half of the research group that consciously lied.
- Impressions and judgements are easily created based on a thin slice of behaviour (such as a microexpression). You have to be able to see more behaviour. Behaviour that provides context.
- Emotions can have more causes than lying. For instance the fear of an innocent person of not being believed (Ekman, 2003).

Manipulators

In addition to emblems and illustrators, Ekman distinguishes manipulators. These are for instance hand movements to the face. He explains:

Manipulators are most often performed by the hands but it can also be the recipient. Other common recipients are the ears, crotch, nose and hair. The foot can even be a manipulator. A manipulator includes all of the movements that a person may use to scratch, pick, rub, groom, etc. another part of the body. There are times that a manipulator is a sign of discomfort, not necessarily deceit. Studies have shown that they tend to increase as a sign of discomfort, in occasions where the person performing the manipulator act is comfortable and around friends. Unlike emblems, they are much like illustrators in that they alone do not necessarily have a specific meaning. It's the frequency that should be noticed in comparison to the subjects typical body behaviour that the 'lie catcher' should try to define a base for before deciding that a manipulator shown is a clue to deceit.

(Ekman, 2009)

4. Experiment

Based on the hotspots and their reliability (see earlier) a selection of items that would be observed for this research was made. Despite Ekman's warning about the use of manipulators, a number was actually included in the experiment because they are a signal of discomfort.

For this experiment, 'tension somewhere in the body' was chosen, along with the following items:

1. Asymmetrical gestures
2. Tensely crossing arms
3. Dissimilation of the hands
4. Blockages (for instance hands in front of the mouth or eyes)
5. Microexpressions
6. Touching the nose
7. Swallowing
8. Pulling something
9. Wiggling
10. Breathing or gasping for air
11. Movements of the tongue in the mouth
12. Oystermouth
13. Twisted eyes
14. Engram

Detailed observation reports of the interviews were drawn up. These are added to this research as appendices. Subsequently, the hotspots were marked with a red flag. The following hypotheses were based on this.

Hypotheses

Through this experiment I want to confirm the following hypotheses:

Hypothesis 1.

Loyalists display a similar number of hotspots as deceivers.

Hypothesis 2.

Ignorants display a lower number of hotspots than deceivers and loyalists.

5.Results

Table 1. Number of hotspots displayed during the interview

	Deceiver (9)	Loyalist (5)	ignorant (5)
Tense/items absolute	258	123	127
Average	28,7	24,6	25,4

Deceivers on average displayed more hotspots than loyalists and ignorants. The differences are however not significant.

There is also no difference in the number of displayed hotspots between ignorants and loyalists.

Other things that stood out:

1. The conversations started with chit chat in order to make the respondents feel comfortable and to see whether after the chit chat, during the interview, other signals were being displayed. Almost all participants showed signs of discomfort during the chit chat and during the interview. Generally, these were signals that could indicate nervousness and in a number of cases impatience.
2. The loyalists smiled more than the ignorants when the deceivers were speaking. We can't conclude whether this is a logical connection, because this experiment was conducted with friends.
3. The ignorants moved their heads down more often than the deceivers and loyalists.
4. There is no difference in the number of movements to the right or left.
5. Women touched their hair more often than men. All women had long hair. Do women touch their hair more often than men and do women (or men) with long hair touch their hair more often than those with short hair?
6. Deceivers wiggle more and change seating position more often than loyalists and ignorants.
7. Deceivers swallowed more often than loyalists and ignorants.
8. All three roles displayed many movements of the mouth. Is this a general item or is this often the case in young adults?
9. Men blocked their mouth more often than women.
10. When men touched their face this often concerned courser movements (rubbing), whereas women displayed more subtle movements (scratching).
11. Coding and definitions by Bodysystemics were used to write down the body language. However, no standard coding or definition could be found for a number of items.

6. Research limitations

Validity

Various factors of the design of this research restrict the validity.

- 1: Test effect. People possibly behave differently because of the test environment.
- 2: There's no guarantee that there was no contact between the interviewees, causing the ignorants to possess the information.
- 3: Some interviews were longer than others, increasing the chance of displaying more items.
- 4: Homogeneity: The target group was young adults. Age-effects of this group were not included in this research. One person filled in and did not belong to the target group.
- 5: Most of the participants are somehow related. Dating, friendship, family. The research did not include the effect of this.
- 6: The recordings took place in a house where a move recently took place. The dogs sometimes walked through the shot and the other participants were located one floor lower. The effect of all these factors is unknown.
- 7: The deceivers were asked beforehand to give an insincere answer to the question which video clip made the biggest impression on them. It's not known whether they, in their 'fabricated' answer, mentioned a clip they actually saw but found less impressive than a different one, or that they made up a clip of video.
- 8: The number of respondents was too low.
- 9: Hotspots were indicated in the observation reports with a red flag. In some occasions a hotspot occurred a single time with a very short duration, whereas some hotspots occurred repeatedly. For instance pulling the skin on the inside of a hand. These repeats were counted as separate hotspots.

Reliability

A single researcher analysed the recordings. No internal assessment reliability, peer-examination or test-retest took place.

Other

This research focused on the body language of a loyalist. A characteristic of a loyalist is that he/she doesn't say something about another person. He/She doesn't want to betray the other. The loyalist wasn't challenged to betray the other during the experiment, and only the body language in presence of the deceiver was observed.

Furthermore, factors of social interaction are highly relevant. People shape their own identity in their interaction with each other (Goffman, 2016). These were not included because they exceeded the scope of this research.

7. Conclusions and recommendations

This research tried to answer the question: is the body language that can unmask deceivers similar to the body language of loyalists or witnesses?

Literature research shows that extensive research was done on the body language of liars. No studies or literature was found on the body language of loyalists/witnesses.

When people keep something to themselves for whatever reason or distort the truth they show body signals of discomfort.

The experiment showed that there were no significant differences in the number of displayed hotspots (signals of deceiving) between the three roles: deceiver, ignorant and loyalist (witnesses).

Loyalists show fewer hotspots than deceivers and the ignorants don't show substantially fewer hotspots than the deceivers and more hotspots than the loyalists.

Because of the experimental nature of the research and the low reliability and validity, both the first and second hypothesis could neither be rejected nor confirmed.

More detailed research is needed for this.

The research showed that no prior research was done on the body language of witnesses.

Research on the body language of witnesses is recommended. The information is possibly valuable for detection, justice and other aspects of society.

This research raised a number of other questions.

1. Do women touch their hair more often than men and do women (or men) with long hair touch their hair more often than those with short hair?
2. Are many different movements of the mouth a general item or does this occur more frequently in young adults?
3. Men covered their mouth more often than women. Is this generally the case?
4. When men touched their face this often concerned coarser movements (rubbing), whereas women displayed more subtle movements (scratching). Is this generally the case?
5. Coding and definitions by Bodysystemics were used to write down the body language. However, no standard coding or definition could be found for a number of items. Is future research on this topic useful?

It is recommended to start research on the aforementioned questions.

The research question about whether the hotspots that can unmask deceivers are similar in frequency and type as in loyalists/witnesses was not answered by this research. Additional research is recommended for this purpose.

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Appendices.

19 observation reports