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BODY LANGUAGE IN POLICE INTERROGATIONS: A LITERATURE-BASED STUDY ON THE INTERPRETATION OF INDICATORS OF LYING

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Abstract. *This article analyses the role of body language as a means of non-verbal communication in detecting deception in police interrogations. Starting from the extent to which the analysis of non-verbal indicators can enrich the substantive evaluation of statements, a systematic classification of lies and a differentiation from other forms of non-truth is first carried out. The various means of communication – verbal, paraverbal and non-verbal – are explained, and their significance for detecting deception is presented. A special focus is on the distinction between credibility and the influence of suggestive questions. The methodology is based on a comprehensive literary-theoretical analysis of current scientific findings and empirical studies. Various theoretical approaches to lie detection – including arousal, control, cognitive and affective models – are compared, and their practical relevance for police interrogation practice is critically examined. The article also sheds light on the possibilities and limits of applying artificial intelligence as a potential lie detector. The results show that non-verbal cues such as facial expressions, gestures and physiological reactions can provide indications of deception. Still, their significance is limited by individual, situational and motivational factors. Non-verbal communication analysis can complement statements' content analysis, but should always be considered in the context of other assessment criteria. Finally, the implications for police practice are discussed, and open research questions are highlighted.*

Keywords: *Body Language, Police Interrogation, Indicators of lying*

Introduction

"A lie keeps growing until it is as big as the nose in your face," says the Italian cult fairy tale "Pinocchio" by Carlo Collodi, which describes a physical reaction to lying. It would be easier to catch a person responding to a deception. Such a noticeable feature does not exist in reality, but every person has hundreds of muscles, which reflect emotions and thoughts to the outside world in context. In the complex interaction between the interrogator and the person being heard, not only do the spoken words play a role, but also the often underestimated but significant body language. The question, therefore, arises as to whether deception can be detected by reading body language and whether this is an avoidable method of convicting suspects. This article examines body language as a means of communication and its significance for the detection of deception during police interrogations about the following scientific question:

- To what extent can an external analysis of non-verbal indicators of body language enrich the substantive analysis of a statement in the context of an interrogation?

First, a systematic classification of lies is carried out to identify and understand different deceptions. Furthermore, it is explained which means of communication are available and which can result in a pattern of deception in combination. In addition, a distinction is made between credibility and credibility. In the further course, the concept of suggestion is determined. The central part of the article is dedicated to lie recognition. Aspects such as non-verbal lying characteristics and the psychological assessment of testimony are analysed in

detail. Furthermore, the scientifically established credibility criteria are discussed. In addition, the application of artificial intelligence (AI) as a potential lie detector is examined.

Methodology

This article analyses the importance of non-verbal communication, especially body language, in detecting deception in police interrogations. The methodology is based on a literary theoretical approach, supplemented by analysing existing scientific approaches and empirical findings. To this end, the methodology is divided into the following steps:

1. Systematic literature research on the theoretical foundations of lie classification, means of communication and the distinction between credibility and credibility.
2. Analysis and comparison of scientific models for lie detection, especially regarding non-verbal indicators.
3. Critical evaluation of current research results and empirical studies on the significance of non-verbal communication in the police context.
4. Reflection on the applicability of these findings to the practice of police interrogations.

The article is based on a comprehensive evaluation of scientific literature, including monographs, specialist articles and current studies on body language, lie recognition and police interrogation. In addition, practice-oriented handouts and guidelines from police training are used. The choice of a literature-based methodology is justified by the objective of the thesis: Existing scientific findings are to be systematically compiled, analysed and evaluated for their relevance for police interrogation practice. The literary theoretical approach makes it possible to compare different theoretical approaches (e.g. arousal, control, cognitive and affective approaches to lie recognition) with each other and to work out their practical implications. Since no empirical studies have been carried out, the significance of the results is limited to the evaluation and interpretation of existing literature. The transferability of the theoretical findings to police practice is critically reflected on and illustrated by examples from the specialist literature. First, the lie is classified, and the difference from other non-truths is differentiated. In addition, the various means of communication are discussed, from which indicators of lying emerge later in the article. Furthermore, the concepts of credibility and credibility are differentiated, and the idea of suggestion is explained. In this context, the lie is defined very differently in many works. Therefore, it is difficult to formulate a concrete definition of the lie. Nevertheless, it is necessary to explain what the lie is about. One way is to classify the lie through the model of categorisation. Three different basic terms are classified. The lie, the truth and the error. These three categories are examined in more detail to distinguish which basic concepts are present in a concrete situation. The first category describes the objective truth, the second what a person subjectively believes and what he or she remembers, if any. The third explains what a person says. In discrepancy with truth and error, when a person lies, he makes a statement that does not correspond to the objective truth, his memory or his belief. It is also a lie if a person makes a statement that does not conform to his memory or belief, but is objectively true because the person has previously fallen into error (Shibles, 2000). Table 1 can be used to illustrate the categorisation. This clarifies the relationship between a jacket colour specified by the test person, the actual truth and his conviction.

Table 1. Category overview: Lies, Truth and Error.

Row	Category 1: What is true	Category 2: What to do remember/s believes	Category 3: What you say	
1	Red jacket	Red jacket	Blue jacket	Lie
2	Red jacket	Red jacket	Red Jacket	Truth
3	Red jacket	Blue jacket	Blue jacket	Error
4	Red jacket	Blu jacket	Red jacket	Error/Lie

A distinction is made between verbal, paraverbal and non-verbal communication behaviour in human communication. These identify themselves using communication that can be physically recognised. Verbal communication describes communication with words. This includes all verbal and written communication. In addition, sign language is also considered an integral part, despite its form of being expressed through gestures and visual signs (Ellgring, 2020). The term "non-verbal behaviour" refers to the part of human communication that uses non-verbal means to exchange information. These include vocal characteristics such as voice pitch, aspects of speech-break behaviour, and paralinguistic elements such as laughter. These means of communication thus have a paraverbal character. On the visible level, non-verbal communication includes facial expressions, gaze behaviour, gestures, posture, body movement, and spatial aspects such as proxemics. Proxemics describes the sitting position and the distance between people (Ellgring, 2020). Another nonverbal behaviour element includes psychophysiological side effects such as breathing, blood pressure, heart rate and skin conductance. However, the perception and analysis of these effects are less obvious and require specific measuring instruments. An example of this is the polygraph ("prolific writer"), which aims to measure these physical processes and their intensity during an interrogation depending on various stimuli (Posch, 2023).

The two terms credibility and credibility are often used synonymously. However, the terms do not explain the same thing. Credibility describes the propensity of people to tell the truth by striving to wholly and accurately reflect what they perceive. Colloquially, terms such as love of truth or honesty of statements are also associated with it. However, there is no mandatory rule that says that a witness generally gives false testimony just because he has a criminal record or have previously told untruths on certain points. In contrast, "privileged witnesses" such as police officers, complainants or victim witnesses often receive a bonus of trust (Pocket-TIPPS, 2020). In addition, there is the ability to make statements, which can influence credibility. The question relates to whether a testimony person has the necessary prerequisites for a testimony that can be used in court or whether the testimony may be unusable. This is about whether a person's cognitive abilities, such as observation, memory and expression, are sufficient under the given conditions to generate a testimony that can be used in court, or whether he or she is subject to possible errors in perception or memory (Greuel et al., 1998). This would be important for clarification if the person questioned has physical or mental limitations. For example, a blind person might only make very limited descriptions of a suspect. Only when the validity of the statement is confirmed does it make sense to ask about the experiential relevance of the statement (Hermanutz & Litzcke, 2012). In ongoing proceedings, it is possible for the court to call in expert help in such a case in accordance with § 261 StPO (Jahn, 2001). Rather, it depends exclusively on the "intrinsic value" of the statement in order to determine whether it has weight. Derived from this is credibility, which concentrates exclusively on the content of a statement. Credibility describes the truthfulness of a concrete

statement and, in this context, ignores personal credibility (Jahn, 2001). According to specialist literature, this is necessary in interrogations, since the probability of a truthful concrete statement is not necessarily related to previous statements, whereby the testimony-related credibility should take precedence over personal credibility (Hermanutz & Litzcke, 2012).

Suggestion, on the other hand, describes a question accompanied by a pre-attitude on the interviewer's part. Such a biased attitude proves problematic, especially because information that contradicts the previous assumptions is not followed up. There is no targeted search for information that could support the alternative assumption, and inconsistent information is either ignored or interpreted in line with the original hypothesis. Often, closed (suggestive) questions are preferred over open-ended ones, which continues in repeated surveys (Jansen, 2021).

Results

The ability to understand and interpret human testimony is essential in many fields, whether in legal matters, social interactions, or investigative processes. This chapter is dedicated to the in-depth findings of the analysis of so-called lie indicators. There are many assumptions about the extent to which lies can be detected on the basis of nonverbal signals. Non-verbal behaviour in the context of interaction is defined as the part of human communication that uses linguistic means for the exchange of information. The indicators that comprise non-verbal communication have already been comprehensively described in Chapter. 2.2. These nonverbal communication elements are generally considered to be more authentic and less controllable than the opposite verbal behaviour (Zuckerman et al., 1981). According to Posch (2023), the assumption that lies also manifest themselves nonverbally is based on the theory that various processes underlie lying, which then manifest themselves in behaviour. According to the arousal approach, liars show an increased autonomous reaction, which can indicate an increased expression of nervous behaviour. In contrast, the control approach assumes that liars actively try to control or even suppress specific behaviours. They classify them as signs of a lie and fear that they will also be interpreted as such by listeners. These aspects, for example, result in a reduction in movement activity. The cognitive approach emphasises the increased strain on working memory during the formulation of complex, made-up statements compared to true statements (Sporer & Schwandt, 2006). This approach argues that this can lead to delayed responses and increased pauses. The affective approach emphasises that lying is accompanied by feelings of guilt, fear or even joy about a successful deception (duping delight). Each of these approaches results in different behavioural changes (Zuckerman et al., 1981). The limited significance of nonverbal cues can be attributed to different types of lying in different contexts. The motivation, the chances of preparation and the content of the testimony were identified as significant factors. In studies with motivational incentives, DePaulo et al. (2003) found generally more pronounced effects. Only when highly motivated did liars show signs of tension and speak in a higher pitch compared to the people who were telling the truth. In contrast, no significant differences were found with lower motivation. Compared to truth-telling people, liars showed less eye contact in situations with high motivation, and their statements contained shorter pauses. The term motivation can be used here to refer to the subjective meaning for the person. For example, a statement could have a high motivation for the interviewee if it contains significant clues that could have an impact on a sentence and thus represent an important criterion for the further course of life. With low motivation, on the other hand, a reverse pattern emerged. However, these studies are contradicted by research that excludes a significant difference in gaze behaviour and nervousness between lying and truthful testimony (Volbert & Dahle, 2010). The following

behaviours are to be mentioned as warning and lying signals, which are considered rather unsafe because they exhibit a very ambiguous behaviour:

- Perspire
- Blush (colour change on the face)
- Avoidance of eye contact
- Lowering your head
- Change in voice pitch
- Self-contact by touching the face with hands
- Increase in lateral movement on chairs
- Gestures
- Hand rubbing, finger drumming

However, this should be viewed with caution (Pocket-TIPPS, 2020). All of the previously mentioned assumptions and theories about nonverbal indicators of lying come to similarly disturbing factors. They describe behaviour that is limited to a specific situation within an interrogation. But every person uses individual behaviours. To take this into account, reference is made to the so-called "baseline approach". This approach first includes an assessment of a person's basic behaviour at the beginning of an interrogation by setting up a conversation outside of the content of the interrogation that is relevant to the offence, in which the person to be interrogated is very likely to answer truthfully. In everyday life, it would be classified as "small talk". This process is intended to distinguish a person's normal behaviour from conspicuous behaviours, which can be interpreted as warning signals due to significant deviations (Litzcke et al., 2006). A study was able to prove that the ability to recognise lies increases in interviewees if they are aware of the basic behaviour of the person being interviewed. The evaluation of non-verbal signals, therefore, requires careful observation of the respective person. A detailed understanding of the individual basic behavioural patterns enables a more precise evaluation of the nonverbal signals (Vrij, 1994). Vrij et al. (2019) later revised this statement and described the baseline approach as "pseudoscientific". They justify this with the fact that there is not enough empirical research and evidence that an initial part of the speech outside the factual content can be used to calculate a concrete indication of a lie, as the situation and the climate of discussion also change. As a result, a change in behaviour is not absurd. The following approach to recognising lies through nonverbal indicators is dedicated to the so-called "microexpressions". Microexpressions are fleeting facial expressions that last only fractions of a second. These expressions can be fragments of a suppressed, neutralised, or masked facial expression. People cannot control their emotions for a short period of time, a fraction of a second. Fine movements of the facial muscles are supposed to make visible the emotions that are basically to be hidden, in that each of the seven basic emotions (joy, contempt, disgust, anger/annoyance, sadness, fear and surprise) is based on specific movements of the facial muscles (Ekman & Friesen, 1969). The "Facial Action Coding System" (FACS), developed by Ekman and Friesen (1978), enables the coding of such fine movements of the facial muscles and allows conclusions to be drawn about the seven basic emotions (Kaiser & Wehrle, 2016). It is assumed that liars try to hide their true emotions, so this is reflected in the microexpressions. Intentionally manipulating facial expressions can lead to an incongruity between true and shown emotion. On the one hand, a facial expression can be simulated, or an existing emotion can be masked, e.g. when a person is angry in a situation, but covers it up with joy. On the other hand, a facial expression can be neutralised by suppressing an existing emotion (Ekman, 2003). The formation of a statement goes through several stages. In addition to the situation experienced, the first statement and its course within an interrogation are also

important. How a statement is made is controlled by criteria such as the motivation to make a statement. The question must therefore be clarified as to what the intention of the statement is (Pocket-TIPPS, 2020). In this context, it must be clarified whether the person being examined has a personal interest in a "certain" truth or what relationship he or she has to the complex facts. According to Hermanutz & Litzcke (2012), it is important from the above-mentioned points of view to reconstruct the motivation of a person to be examined with regard to the initial statement and, if necessary, subsequent changes within it. The assessment of the extent to which a statement corresponds to what was actually experienced and how high the truth content is can be explained by handling the "null hypothesis". This hypothesis consists of first declaring a person's statement to be untrue and then evaluating it and, at best, rejecting it by defining substantive criteria in the form of credibility features. Consequently, the search is on for sufficient qualitative real characteristics. The statement would therefore be checked for its truthfulness (Jansen, 2021). The basis for the null hypothesis is the Undeutsch hypothesis, which postulates that a true statement based on experienced events has certain characteristics that distinguish it from an invented, i.e. lied, statement. Undeutsch has developed these distinguishing criteria into a scientific examination instrument that still claims to be empirically valid today (Steller, 1989).

The problem with the real license plate analysis is that statements can be unconsciously suggested to the interviewee. This would also be the case if a fact has been experienced but is brought into a false context with an accused person. Thus, the interviewee is subjectively of the opinion to make a truthful statement and has real characteristics, although the connection is incorrect (Jansen, 2021). Feature-oriented content analysis is based on two assumptions. On the one hand, cognitive overload is characterised by the fact that the person giving false testimony has to construct the statement based on his or her general knowledge, which means that there is a lack of quality characteristics in a concrete situation. On the other hand, strategic self-presentation involves the liar wanting to give the impression of credibility. In doing so, representations are used that achieve this effect, and those which, on the contrary, could arouse suspicions of implausibility are avoided. Steller and Köhnken (1989) set up real license plates that generate the credibility of a statement. The general characteristics are logical consistency (1), disorderly, erratic representation (2) and quantitative detail (3). The special content includes spatio-temporal connections (4), interaction description (5), reproduction of conversations (6) and the description of complications in the course of action (7). Furthermore, the peculiarities of the content, which are characterised by the description of unusual details (8), descriptions of incidental information (9), phenomenal description of elements of action that are not understood (10), indirectly action-related descriptions (11), description of one's psychological processes (12) and the description of psychological processes of the accused person (13). In addition, the motivation-related content includes the spontaneous improvement of one's own statement (14), admission of memory gaps (15), objections to the correctness of one's statement (16), self-incrimination (17), and the exoneration of an accused person (18). Finally, the crime-specific content is crime-specific testimony elements (19). These 19 characteristics, according to Steller and Koehnken, are taken up in further studies on credibility assessment and are officially listed by the Federal Court of Justice (BGH [1 StR 618/98]) as quality characteristics inherent in statements. The objectives of AI are determined in various ways. The behaviour-based approach describes AI as attempting to develop computers that mimic human intelligence, exhibiting behaviours we associate with human intelligence. Examples are the recognition and communication of speech as well as the adaptive movement of autonomous vehicles in road traffic. AI-powered lie detectors are fundamentally different from tests with polygraphs. The latter measures the physiological degree of arousal triggered by specific questions, such as an

increased pulse or increased sweating. A distinction is made between the fear that a lie will be revealed and the fear that the truth will not be believed. In contrast to AI-based lie detectors, tests with polygraphs do not assume that the polygraph can measure a false statement based on physiological characteristics (Dahle & Lehmann, 2012). One example of AI-based lie detection is the "Intelligent Portable Border Control System" project, which the European Union (EU) tested until August 2019 as part of the "Horizon 2020" research program. The aim was to improve the screening of those wishing to enter the country and to make work easier. The system works in two stages: First, travellers are voluntarily registered and their data is stored. An automated virtual inspector then interviews them, and biometric data is used to calculate the probability of whether the answers are accurate. The system achieved a hit rate of 76 to 85%, and persons classified as harmless could enter without further ado (Pocket-TIPPS, 2020). Another example is the VeriPol tool, developed by experts from Cardiff University and Carlos III University in Madrid. This intelligent tool analyses long texts so precisely that it immediately detects lies and false statements. With an accuracy of over 80%, false reports about robberies can be identified through automatic text analysis. VeriPol recognises patterns that often occur with false statements. It has been successfully tested and used throughout Spain in 2018 to support police officers and provide guidance for further investigation. The goal of using VeriPol is not limited to text analysis itself, but is intended to prevent people from making false statements by its existence (Quijano-Sánchez et al., 2018).

Discussion

AI-supported lie detectors are associated with a so-called black box effect. This means the developers cannot explain how the program converted a specific input into a particular output. Although man-made, their functioning remains opaque, which contradicts our classic understanding of technology based on transparency and traceability. This makes a clear and comprehensible assessment of these technical findings by the courts objectively impossible (Ibold, 2022).

Therefore, the question "To what extent can an external analysis of non-verbal indicators of body language enrich the substantive analysis of a statement in the context of an interrogation?" will be addressed. The author of this term paper discusses the connection between non-verbal indicators of body language and deception in the form of lies. Furthermore, non-verbal lie recognition is critically examined, and its significance for assessing the truthful content of a statement is weighed up to answer the scientific question of the present term paper. The nonverbal lying characteristics, especially the microexpressions, provide interesting approaches for detecting lies. The idea that people can't control certain emotions for a brief moment potentially offers insights into hidden emotions. However, there are also criticisms, especially regarding the diversity of human emotions and the difficulty of determining whether a microexpression indicates deception or has other reasons. The correlations and effect sizes of so-called lie characteristics are very low in studies and meta-analyses (Sporer & Köhnken, 2008). Furthermore, the behavioural structures analysed previously in this thesis cannot be associated exclusively with intentional deception. For a person who is in an interrogation situation, this is already a possible trigger for stress. This can develop from the feeling that you are not believed, or even just from the fact that outsiders could pick up on an accusation about an accusation, especially since interrogations could also bring up aspects that are irrelevant to the crime and that are embarrassing for the interrogator. This, too, would trigger a stress reaction that could be perceived by the interrogators as a non-verbal deception reaction and thus misinterpreted (Bond & Fahey, 1987). In connection with the misinterpretation of non-verbal

deception indicators, it should be critically noted that persons from professional groups that deal with the assessment of statements, especially police officers relevant to the present term paper, only achieve hit rates within the scope of the random probability (DePaulo et al., 2003). Statement psychology brings essential aspects into the discussion by emphasising that the genesis and structure of a statement are crucial for assessing its credibility. Steller and Köhnken (1989) established that considering credibility characteristics provides a framework for the critical analysis of statements. However, the challenge remains that factual statements can also be influenced by suggestive questioning or personal beliefs. The psychological assessment is again to be criticised because, due to suggestion, not only are real characteristics falsely present, but also non-verbal lying characteristics are omitted to such an extent that a false statement cannot be recognised. A central point that must be considered in the discussion is the individual differences in people's behaviour. Everyone has their way of body language, expression and reaction to emotional situations. The so-called "baseline approach", which aims to capture a person's normal behaviour, can help take into account individual differences. However, this approach is also criticised because the situation and the climate of the conversation can change during an interview and thus influence a person's behaviour outside of context. The contextual dependence of nonverbal signals and credibility features is another important factor. A specific behaviour or characteristic may indicate deception in one situation, but be completely normal in another. This requires a differentiated view and makes it clear that there can be no universally applicable rules for detecting lies.

Conclusions

This article deals with body language as a means of communication and its significance for detecting deception during police interrogations. The central question was: "To what extent can an external analysis of non-verbal indicators of body language enrich the content analysis of a statement in the context of an interrogation?" To answer this question, various aspects were examined, from the classification of lies to the application of artificial intelligence as a potential lie detector. Interpreting nonverbal signals requires careful analysis and consideration of each individual's behaviour. The so-called "baseline approach" was discussed, which aims to understand a person's normal behaviour to identify changes or abnormalities during an interrogation. However, this approach is also criticised, as research does not provide clear evidence of its effectiveness. The credibility criteria established by Steller and Köhnken provide a framework for evaluating statements, although it must be noted that factual statements can also have certain uncertainties or incongruities. Using AI as a lie detector raises ethical and legal questions. The idea of using machine learning and algorithms to identify lies is promising, but there are concerns about privacy, discrimination, and, above all, the reliability of such systems. The discussion on using AI in this context needs to be continued to develop appropriate policies and safeguards. Overall, the term paper shows that recognising deception is a complex process that requires a holistic view. Body language, as part of nonverbal communication, can provide valuable clues, but its interpretation is not free of uncertainties. The development of technologies such as artificial intelligence can potentially help improve lie detection efficiency, but this should be done with caution and considering ethical aspects. Ultimately, it can be said that recognising lies solely by observing and evaluating non-verbal indicators, which is too error-prone and uncertain to be decisive for an assessment. Nevertheless, the methods listed in this paper provide a procedure that allows at least specific non-verbal indicators to be regarded as warning signals to carry out further investigations or to ask additional questions.

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