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The Effect of Training on the Effectiveness of Deception Detection

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Abstract

The research conducted aims at determining the impact of short training on the trainee's ability to detect deception with the use of non-instrumental methods of detection of deception. As the criminal procedure permits such methods of detection of deception, the results of the research are practical. The research was carried out on a group of participants given the task to watch a video recording and conclude whether the person presented told the truth or lied. Subsequently, the participants were given a short training on both verbal and non-verbal deception cues, illustrated with examples taken from the video they had watched. In the second leg of the test, the participants watched another video and decided whether the person presented was truthful or deceptive (on the grounds of deception cues they spotted). The results showed that the training improved participants' ability to detect deception by c. 22%.

Key words: deception detection, lie, training

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1. Introduction

It is mostly desired ability to effectively distinguish the truth from lies. Moreover, such an ability is also important for the proper conduct of the criminal proceedings, due to the aim of the criminal procedure – to detect and punish the perpetrator. Determining, whether the witness' statements or the accused' explanations are true or lie, is inevitable to correctly identify the guilty ones and punish them for their acts.

During the criminal process it is also possible to use a polygraph, but with some restrictions (Grzegorczyk, 2014; Paprzycki, 2015) (e.g. it is not allowed to be used during the interrogation). However, there are no restrictions on non-instrumental methods of deception detection, like the observation of verbal and non-verbal behaviour. Therefore, it is important to improve the effectiveness of that method of deception detection due to its applicability – it cannot be done without the proper training on verbal and non-verbal behaviour for those who will be responsible for the assessment of the credibility of statements and explanations given before the court.

For the time being, no research on detection deception training has been provided in the Polish literature. Moreover, the personal experience of the Author provides that no such training is available for some vocational groups, like judges and lawyers, who are interested in deception detection during the criminal procedure.

Therefore, it is necessary to conduct a study in this area.

2. Cues of deception

Contrary to the most popular view, that there are no objective cues to deception in our behaviour (Vrij, Mann, 2001; Vrij, 2008), there are still some specific behaviours suggesting that someone is not telling the truth.

Such behaviours include micro-expressions, emblematic slips and improperly timed or asymmetric mimic expressions (Vrij, Mann, 2001: 187–203; Vrij, 2008; Ekman, Hager, Friesen, 1981; Haggard, Isaacs, 1966). Sadly, they are not always present during lying. The fact is, when they do appear in someone's behaviour, they do indicate deception. Therefore, it would be a mistake to try to detect deception, based only on these cues to deception – as they are not always present during lies. Hopefully, they are not the only known cues to deception; there are

also other symptoms of lies, but to successfully used them to detect deception, we always have to take into consideration the situational context and personal habits or manners of the potential liar (Ekman, 2013; Widacki, Mirska, Wrońska, 2012).

This is why also so-called subjective cues of deception (Ulatowska, 2009) should be used during our assessment – not only do they increase the effectiveness of deception detection, but are also involuntary for the liar. It means that widely known cues of deception (like avoiding the stare of the interlocutor) do not have to be wrong – to use them, we simply need to include the normal behaviour of the person who is possibly lying and the situational context. For example, it is true that during lying we can observe a decrease in illustrators (Ekman, 1981: 269–278; Ekman, 2013: 93–99). However, the said dependence is actual for most but not for all liars – some people will start to illustrate more than they usually do. It is caused not only by inter-individual differences but also by the fact that liars are among us and they are perfectly aware of the cues of deception, so they can mask (Ekman, 2013: 298–310) their lies. Therefore, we should become suspicious not only when we spot any of the mentioned cues of deception but also when we observe the extraordinary 'genuine' behaviour (strictly avoiding any gesture that may suggest lying) – such behaviour will look artificial and over-controlled.

To sum it up, effective deception detection is an extremely difficult task. Moreover, some studies suggest that finding clues to deception is almost impossible (Brennen, Magnussen, 2020; Vrij, Hartwig, Granhag, 2019) and we can rely on none of the known signs of deception. Despite that, some studies proved that effective deception detection, based only on behavioural observation, is possible – with an effectiveness of about 80–100% (Ekman, 2013: 290–310; Vrij, 2009: 89–96; Vrij, Mann, 2001: 187–203). The training usually increased the effectiveness of deception detection by about 10%, depending on the training method (Vrij, 2009). The described studies were conducted either on professionals, vocationally dedicated to deception detection (e.g. policemen, prosecutors) or on laymen, unmotivated in detecting deception due to no vocational need in this area. It is a potential mistake, because it is vital to conduct a study on those, who will take up such activity in their future job (like, for example, future lawyers). There are also some controversies aroused around such training, as we do not know the exact procedure of the training, which was highlighted by Charles F. Bond (2008); some Authors do even suggest that such training on non-verbal cues of deception does not improve lie-detecting skills at all (Jordan et al., 2019).

Because of that, the experiment on the effect of training on the effectiveness of deception detection has been carried out, focusing on training law students (future lawyers, potential prosecutors, and judges), about both verbal and non-verbal cues to deception. The main hypothesis was that even a short training should improve the ability of participants to detect deception and that the increase should be at least as big as it was proved in the aforementioned literature (at least by 10%).

3. Material and Methods

Participants

The research was conducted on students of the Law and Administration Department of the Adam Mickiewicz University (Poznań), 5 men, and 8 women aged 20–24. All participants volunteered for the research.

In the preparations for the research, 3 more law students from the same Department took part in recordings (these students will be referred to as 'Actors'). The Actors were not known to the participants.

All students volunteered for the research. The small number of participants was limited by the availability of students highly interested in deception detection and motivated during training; less motivated students would not be able to learn deception detection during short-time training.

Materials

In the research, 2 different recordings (audio-video recordings) were used, depicting an Actor answering questions. An Actor was standing by the desk, with his face towards the camera – he and his body language were perfectly visible from the waist up.

In each recording, the Actors were asked to choose one out of three cardboard boxes. They were informed that in the box they may find a pencil, a pen or earphones. Contrary to what the Actors were told, during the first recording ('Recording 1') every box contained earphones. The Actors' task was to convince the person asking them questions that in the box they chose was a pen or a pencil (so, in fact, they had to lie). During the second recording ('Recording 2') all the boxes were empty (which was surprising as it was not what they, potentially, could have found). Before choosing the box, the Actors were informed about their task –

they are to convince the person asking questions that in the box is a pen, a pencil or earphones, up to their liking (so they were sure that they can either lie or tell the truth, describing the real object from the box). The Actors were promised a prize for the person, who will successfully convince the person asking questions and the other two Actors (who were also present in the room during the recording).

The Actors were only to do their task (convince the person asking questions that the specific item has been found in the box) but they could either lie or tell the truth when answering the questions – some of them were possible to be answered correctly even if the main task was to lie about what is inside the box.

The task of the interviewer was not to react in any way if any cue of deception could be spotted; the interviewer had to keep a straight face and reveal no emotion.

During each of the two recordings, the Actors were answering 7 questions, about the item inside the box and their own, personal experiences, as they were to describe a similar item that is owned by them in real life:

1) What was your first thought when you opened the box?
2) What is the use of the item inside the box/ what could you associate the item from the box with?
3) Can you please describe the item from the box?
4) What is its colour/shape/pattern, how is it in touch/ is it heavy?
5) Do you have a similar item? If so, please, describe it; when did you buy it/how often do you make use of it?
6) Is the item in the box yellow/black/white?
7) Can you please describe once again, very precisely, the item from the box?

In response to each question, the Actors could, to their liking, tell the truth or lie. In practice, no Actor chose to lie in all questions; it was not also possible, to tell the truth in response to all questions, so in most cases, it was 50:50 (lie/truth), which was useful in the main part of the study when the Recordings were used.

The empty box instead of the expected item was meant to balance the experience of lying from the first part of the recording. The Actors, feeling too comfortable, might have been more relaxed in the second part and, therefore, show no or not enough cues of deception. Their surprise resulting from having an empty box was necessary to arouse some anxiety during answering questions in Recording 2 (as it increased the chances of showing cues of deception).

As a result of this part of the research, 6 one-and-half minute recordings were created – 3 coming from 'Recording 1' and 3 coming from 'Recording 2'. The said recordings were then used during the main part of the research.

Procedure

The participant, while assessing the truthfulness of the Actors on the recordings, were completing the survey concerning the words and behaviours of the Actors. Their task was not only to decide, whether each Actor told the truth or lied in response to the question (7 of them) but also to justify their choice by describing the specific behaviour of the Actor, leading to such an assessment (why was it true or false).

To assess the potential differences between 'Recording 1' and 'Recording 2', a similar survey was completed by the Actors, who were to decide whether their colleagues' behaviour in response to the questions was true or false (and why). As the Actors were not trained on the cues to deception, it was useful to find out, whether their effectiveness of deception detection during Recordings 1 and 2 will be the same or not (control group, untrained one). Moreover, the Actors were promised a small reward (university gadget) for both the most skilful liar and the most skilful lie detection, which kept them motivated during the recordings.

In the first part of the research, the participants were watching Recording 1, during which they were to assess the truthfulness of the Actors' responses to the questions and to complete the survey.

In the second part, they were given training on verbal and non-verbal cues of deception, both objective ones (like, for example, micro-expressions) and subjective ones (like avoiding eye contact).

During the training, the participants were told the most important cue of deception would be a change in someone's behaviour but that they should be also aware of the possibility of making a mistake in their judgment (and were also explained,

why they can be mistaken). Moreover, because some objective cues of deception, like the aforementioned micro-expressions, could have been skipped or omitted while watching the recording, the participants were also told to focus on other cues (like asymmetry in mimical expressions – for example, a smile – that may be a cue of deception). The participants were guided about minding the context, voice tone, number of pauses, logic and consistency of speech and body language.

All of the cues that could have been spotted on Recording 1, were demonstrated to the participants along with the information if the answer to the question was true or false. These cues of deception were found by the Author when meticulously watching the Recordings – as the Author was the interviewer and knew when the Actor was lying, it was easy to spot them on the video and present them to the participants (in slow motion video for micro-expressions; as a photo when false smile; as a recording for a verbal cue to deception). The training took about 30 minutes, with 7 minutes devoted solely to the presentation of the cues to the deception present in Recording 1.

The last part of the research consisted of presenting Recording 2 to the participants, along with the completion of the survey (just like in the first part of the research).

The effectiveness of deception detection was measured by scoring the right answers of the participants in the survey. For each correct answer (that is, marking each false Actor's answer as a false one and each true answer as a true one, with an explanation of the cue of deception used for such an answer) one point was given to the participant. In the survey concerning Recording 1, it was possible to score 21 points (7 answers from the 3 Actors). The deception detection ability is connected not only with spotting the lie but also with differentiating the truth from it – this is why the correctness of all assessments, both marking the answer as true and as a lie, was taken into account.

To statistically measure the effectiveness of deception detection, Wilcoxon's paired data test with a significance level of $\alpha = 0{,}05$ from Statistica 12 (Statsoft) software has been used. Moreover, to test the differentiation of the validity of the assessments, the coefficient of variation was also calculated.

During Recording 2 there were similar cues of deception shown by the Actors, so it was possible to do the task similarly well as in Recording 1.

4. Results

The results of the survey completed by the Actors (control group, not trained on cues of deception) did not prove any relevant changes in deception detection – it was 62% for the survey completed during Recording 1, and 64% for the second survey.

The participants' effectiveness in detecting deception was 40% in Recording 1, and 62% in Recording 2. The effectiveness in Recording 2 was statistically significant ($z = 2{,}59$; $p = 0{,}0096$; Fig. 1). The training was the only factor significantly distinguishing the two surveys (as there was no difference in the situation presented in both Recordings – what was proved by the survey completed by the Actors). Therefore, the increase in the effectiveness of detecting deception was caused by the training, conducted after Recording 1.

The result of the survey taken after each Recording showed gross interpersonal differences in detecting deception between the participants, with a standard coefficient of variation (Fig. 1, Tab. 1).

Figure 1. The number of correct assessments given by the participants in both recordings

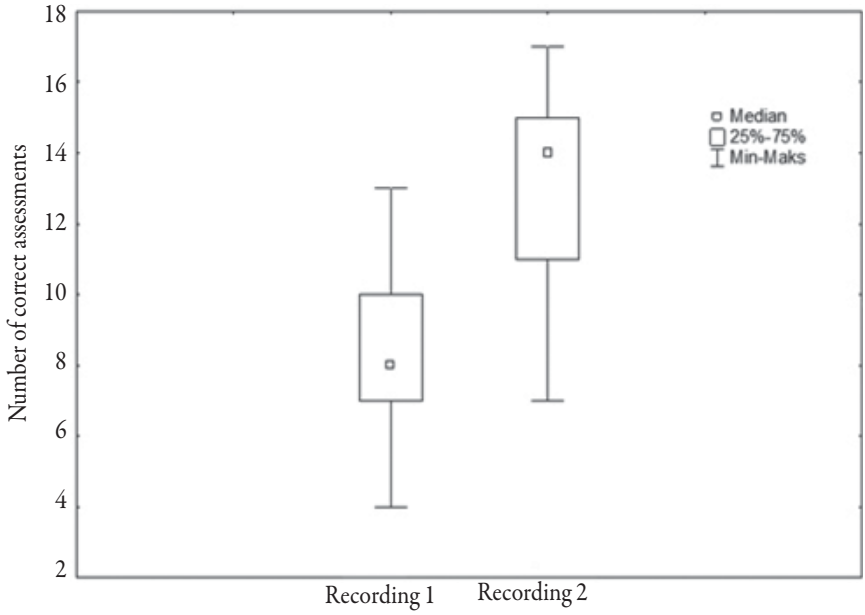


Table 1. The individual effectiveness of detecting deception of each participant

Participant	Number of correct assessments		Improvement (%)	Effectiveness of deception detection	
	Recording 1	Recording 2		Recording 1	Recording 2
1	8	14	75%	38%	67%
2	7	17	143%	33%	81%
3	10	8	-20%	48%	38%
4	11	9	-18%	52%	43%
5	11	15	36%	52%	71%
6	6	7	17%	29%	33%
7	7	15	114%	33%	71%
8	5	14	180%	24%	67%
9	7	13	86%	33%	62%
10	13	13	0%	62%	62%
11	9	11	22%	43%	52%
12	4	17	325%	19%	81%
13	10	16	60%	48%	76%
Average	8,3	13	78%	40%	62%
Range	4–13	7–17	-20% – 325%	19–62%	33–81%
Coefficient of variation	32%	26%	122%	32%	26%

5. The discussion

The study aimed to find out if the training on both verbal and non-verbal cues to deception may improve the effectiveness of detecting deception. As expected, in most cases such training may be beneficial to the effectiveness of deception detection.

In the future, it will be vital to conduct a similar study on a wider group of participants, using many recordings of more Actors than in the present study. The current results indicate that training on cues of deception should be provided – the effectiveness of detecting deception increased by about 22% thanks to such training, which verified the main hypothesis of the research. Moreover, the other researchers (de Turck, 1991: 81–89; de Turck et al., 1990: 189–199; Vrij, Graham, 1997: 144–148) on the subject also proved the increase in the effectiveness of deception detection due to training – by about 9–15%, with the initial effectiveness of detecting deception of about 42–55% (which is more than in the current research, as the students initially detected deception with the effectiveness of about 40%). The

training of the professionals (policemen) results in a decrease in the effectiveness of deception detection (Köhnken, 1897; Vrij, 1994; Vrij, Graham 1997) – therefore it is vital to provide training for non-professionals (before they start to detect deception professionally in their work and gain their own experience in the area of lie detection); it would be beneficial perhaps to propose a new subject at law school, or train the apprentices before they start their working as a prosecutor, judge or lawyer.

It is impossible to refer to the other studies (Jordan et al., 2019), showing no difference between the trained and untrained groups – as it was previously stated (Bond, 2008), we have no control over the procedure of training that was provided, so it is possible that the training in these cases was improper, or that participants were unmotivated; we can only guess.

It must be clearly stated that in the research during the training, the participants were given the chance to get to know the behavioural cues to the deception of the Actors – they were given examples of such behaviour caught on Recording 1, after completing the survey as a part of the training. It might be a disadvantage of the research, as the participants would probably be less effective without getting to know better the behaviour of the person who is going to be assessed.

Yet, it does not make the research faulty or less valuable, as in the criminal process such technique is widely used – before the main part of the interrogation (the questioning), there is time for getting to know the person who is going to be questioned – in that part of interrogation an informal conversation can be made. Similarly, the interrogator during questioning asks questions to which he already knows the answers – it allows not only to control the truthfulness of the interrogated person but also to get to know his behaviour while lying or telling the truth. The participants were, therefore, put in a similar situation – they were shown the behaviour of the Actors while they were lying or telling the truth.

However, the huge differences in the individual effectiveness of detecting deception between participants are intriguing. One of the reasons may be the interpersonal differences – not everyone is predisposed to detect deception (like, for example, not everyone is perceptive enough). Moreover, not everyone may be studious and smart enough to be able to immediately and properly use the information given to him during training. It is also impossible to predict if each participant is equally eager to learn and to participate in a study, even if they volunteered for it; the participants might be tired, stressed or get uninterested during the research – it simply cannot be controlled. The additional aspect is their personal feelings towards the

research, the training, the Actors or even the researcher – it may also affect their results of the effectiveness of detecting deception.

As for the initial effectiveness of the participants (before training) and the final one (after training), it is satisfactory – the results of the training are even better than expected (taking into account the aforementioned studies on the subject (with the increase in effectiveness exceeding 15%). Yet, it must be reminded that the said increase in effectiveness was possible because the training included the cues of deception previously recorded in Actors' behaviour. Possibly, if the participants were to assess the behaviour of other people (with whose behaviour they were not familiar), the increase would not be that significant.

The experiment proved that further research must be conducted in this area, including testing the effectiveness of deception detection with a lapse of time (long after the training). It should be verified, if the ability to detect deception remains on the same level or if the participants may forget about how to detect lies. In other words – whether such training causes some long-lasting effects or should be repeated after some time. Moreover, the research should be conducted on a larger group of participants and using a large number of Recordings (with many Actors). It could allow participants to better use their deception-detecting knowledge in practice and, at the same time, validate the results of the current study.

The results of the study are promising – the research proved that training non-professionals in deception detection may give much better and more satisfactory results than similar training, conducted on professionals. It also gives hope for further usage of non-instrumental methods of deception detection in the criminal process, which could potentially improve the detection of crimes as well as help to impose more adequate penalties and penal measures.

6. The limitations of the research

The aforementioned studies do have some limitations, which have already been mentioned before. The very first of them is a small research sample. Despite that, the participants were average students of the Faculty (the students of different years); each student has been watching several recordings; the results of the training were statistically significant.

The other limitation is using Recording 2, with the same Actors as previously seen in Recording 1. It is, then, possible, that the participants effectively detected decep-

tion only thanks to getting to know the Actors' behaviour in Recording 1. This is why further research in the area is needed, with the use of many Recordings with different Actors. However, during criminal interrogation in Poland, the policemen do have the ability to control the truthfulness of the interrogated person (as was already mentioned), so such a limitation of the research is not depreciating. Moreover, the display of the cues to deception shown by the Actors lasted for only 7 out of 30 minutes of training. Therefore, it is impossible to assume that the bigger part of the training was worthless and did not support the increase in the effectiveness of detecting deception.

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