Lie Detection in Border Crossings

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Key points of my talk

- People are poor human lie detectors
- Cues to deception are faint and unreliable
- Investigators need to elicit cues to deceit via specific interview techniques (cognitive lie detection approach)
- Lie detection in intelligence settings
- Intentions
- Undercover interviewing
- Collective interviewing

Nonverbal and verbal lie detection

- Nonverbal and verbal cues to deception are faint and unreliable (DePaulo et al., 2003). Diagnostic cues are equal to difference in height between 15 and 16 year old girls
- If cues to deceit are faint, lie detection will be difficult (Hartwig & Bond, 2011)
- Lay persons (54%) and professionals (55%) have poor lie detection skills if they observe unknown target persons with no background information available about these target persons (Bond & DePaulo, 2006; Vrij, 2008)

Nonverbal and verbal lie detection

- If cues to deceit are faint, investigators should elicit such cues through specific interview protocols
- Research into 'interviewing to detect deception' started in 2003
- In contrast, polygraph researchers acknowledged the importance of interview protocols decades ago.
 Comparison Question Technique (CGT) versus Concealed Information Technique (CIT). CQT is dominant in the field whereas CIT is preferred by scholars

Interviewing to detect deception: Cognitive approach

Ask questions that are more difficult to answer for liars than for truth tellers

- You can do this as research has shown
- Overview of the three different techniques identified so far and a meta-analysis of the findings to date

Interviewing to detect deception: Cognitive approach

- *Imposing Cognitive Load:* Make the interview more challenging
- Encourage truth tellers to say more
- *Unexpected questions*: Ask questions that liars have not anticipated

Imposing cognitive load

- Make the interview more challenging. This should particularly affect liars because they have fewer cognitive resources remaining
- Ask interviewees to recall what happened in reverse order. Demanding, it runs counter to the natural forward order of events

Vrij, Mann, Fisher, Leal, Milne, & Bull (2008)

- 40 Liars and 40 truth tellers were interviewed about an event. Liars were informed about the event the truth tellers experienced. Participants (i) were or (ii) were not instructed to recall the event in reverse order. 16 Verbal and nonverbal cues were coded
- 60 British police officers were shown a selection of these videotaped interviews and asked to indicate whether or not the person was lying

Control Condition

Differences between truth and deception: Story telling

<

Hand/finger movements

< less during deception

Reverse Order Condition

Differences between truth and deception: Story telling: Cognitive cues

Auditory details<</th>Contextual<</td>Cognitive operations>Speech hesitations>Speech errors>Speech rate<</td>

< less during deception, > more during deception

Vrij, Mann, Fisher, Leal, Milne, & Bull (2008)

Truth

Total

Control42%50%46%Reverse60%56%58%

Lie

Significant increases in lie and total accuracy rates

Other ways to impose cognitive load

- Describe the route you took in reverse order? (Vrij Leal, Mann, & Fisher, 2012)
- Maintain eye contact with the interviewer (Vrij, Mann, Fisher, & Leal, 2012)
- Carrying out a secondary task while story telling (e.g., driving a car)

Encourage truth tellers to say more

- If a truth teller says more, s/he is more likely to be believed (Bell & Loftus, 1989; Johnson, 2006)
- Liars may not be able to say more (do not know what to say) or it may not sound plausible
- Liars may not be willing to say more (afraid that details will give their lies away)

Encourage truth tellers to talk: Model interview (Leal et al., in press)

People have incorrect expectations how much detailed is required in an interview (Fisher, 2010)

- When people interact with others they do not know well, they tend not to say much (2010)
- Provide people with a model detailed answer, it may change their expectations

Model interview: (Leal et al., in press)

- Truth tellers and liars discussed their insurance claim
- Half of the participants listened to a 734 words recall for a day at the motor racing
- Primed participants said more (279 words) than non-primed participants (134 words)
- Primed liars and truth tellers increased their statement with similar number of words

CONTROL INTERVIEWS (134 words)TruthLie- PlausibilityT > L52%77%

MODEL INTERVIEWS (279 words)TruthIITruthPlausibilityT > L85%77%

More ways to encourage truth tellers to say more

- Use a supportive interviewer (Mann et al., in press; Shaw et al., in press)
- Use the Cognitive Interview (Colwell, Hiscock, & Memon, 2002; Hernandez-Fernaud & Alonso-Quecuty, 1997; Zimmerman, Veinott, Meissner, Fallon, & Mueller, 2010)
- Use drawings

Encourage truth tellers to say more: Drawings

- Truth tellers are more detailed in sketching than verbally recalling the *layout of a room* (Vrij, Mann, Leal, & Fisher, 2012), because drawings:
 (i) include more spatial information
 (ii) provide a better overview of what has been conveyed
- Also: Liars are afraid of making mistakes

Encourage truth tellers to say more: Drawings

- Truth tellers are more detailed in sketching *people* than verbally recalling people (Vrij, Leal et al., 2010: Vrij, Mann, Leal, & Fisher, 2012), because drawings:
- (i) include more idiosyncratic features (glasses, curly hair, length of hair)
- (ii) provide a better overview of what has been conveyed
- Also: Liars are afraid of mentioning witnesses

Unexpected questions approach

- Liars prepare themselves for possible interviews (Granhag et al., 2003). This benefits them as prepared lies are more difficult to detect than spontaneous lies (DePaulo et al., 2003)
- Investigators can exploit this by asking questions that the interviewee has not anticipated (in all likelihood)

Unexpected questions approach

- First ask questions that liars most likely have anticipated. Liars are willing to talk
- Then ask unanticipated questions
- Liars struggle more with unanticipated questions (no planned answer) than truth tellers

(Un)expected questions: Warmelink, Vrij, Mann, Jundi, & Granhag (in press)

- Telling the truth or lying about a forthcoming trip
- Expected questions about *purpose* of the trip
- Unexpected questions about *planning*, *transportation* and *core event*

Number of detail: Warmelink et al. (in press)





Warmelink et al.: implications

- 69% of truth tellers and 75% of liars were classified correctly based on the different pattern in answering
- Officers typically ask purpose question and listen for detail

• Liars expect such questions and prepare answers for it

Liars expect questions: The Manchester Manual

- What are the reasons for your travel?
- How did you get your money for travel?
- How long is the travel period for?
- Who will meet you in the arrival country?
- What will you be doing in the arrival country?

Two more ways of using the unexpected questions approach

- Use spatial questions (Vrij et al., 2009; Soufan, 2011)
- Ask the same question twice in different formats (Leins, Fisher, & Vrij, 2012)

Cognitive load perspective

- 38 cognitive load studies so far:
- 5 imposing cognitive load
- 20 encourage truth tellers to say more
- 13 unexpected questions

Cognitive load perspective: Meta-Analysis (Vrij, Fisher, & Blank, under review)

In CL conditions 63% of cues that were examined revealed significant differences in the expected direction between truth tellers and liars versus 33% in Standard conditions (based on N = 23studies)

	Accuracy	
	standard	CL
Truth ($N = 10$ studies)	59%	71%
Lie (N = 10 studies)	58%	72%
Total ($N = 11$ studies)	59%	71%

Threat of terrorism

- Lie detection in intelligence settings differs from police interviews and research:
- Intentions
- Undercover interviews
- Group interviews

I. Intentions

• Police are typically interested in a suspect's past activities

• Intelligence officers are often interested in someone's future activities

• Airport study I discussed earlier (Warmelink et al) is an intentions study

Lying about intentions

• Into the field: A lying about intentions experiment carried out at an international airport

Vrij, Mann, Leal, Warmelink, & Forrester (2010)

- 480 passengers in an airport departure hall told the truth or lied about their forthcoming trip in an interview that comprised 21 questions about purpose, planning, transportation and core event
- Interviewers made veracity judgements on the spot, transcripts were coded for numerous verbal cues, and videotapes were analysed for nonverbal cues

Characteristics of intentions

- Cues we examined were based on three principles:
- When intentions will take place in the near future, people often have detailed mental representations of those intentions (Trope & Liberman, 2003)
- Liars do only expect (and prepare) questions about the purpose of the trip
- Liars often follow scripts (Vrij, 2008)

 Interviewers obtained 79% truth accuracy and 83% lie accuracy rates

 Thermal imaging, tool based on anxiety and, as all anxiety tools, widely endorsed and promoted, achieved around 65% accuracy

- Verbal cues
- Real intentions were more exact and stories were more coherent

- Nonverbal cues
- Deliberate eye contact (Mann et al., 2012)

 Slightly prolonged episodes of eye contact that appear somewhat unnaturally intense (typically missed when the amount of gaze per minutes of interview is measured) Deliberate Eye Contact: An international comparison (Mann et al., 2012)



Deliberate eye contact: The reason

- Liars maintain eye contact to:
- Convince the interviewer
- Monitor the interviewer

- Measured three times to date and three times the effect was found, d = .38 (reasons), d = .49 (airport), and d = .75 (two heads) (Mann et al., 2012, 2013, in press)

II. Undercover interviewing

- (1) Maybe you do not wish someone to know that he is a suspect
- (2) Maybe you want to talk with someone 'off guard'

A possible solution

• Interview suspects undercover

The challenge

 Those interviews cannot be long. Lie detection, however, becomes easier when the interviewee says more (Vrij, 2008; Vrij, Granhag, Mann, & Leal, 2011; Vrij, Granhag, & Porter, 2010; Vrij et al., 2007)

Characteristics of intentions

 When intentions will take place in the near future, people often have detailed mental representations of those intentions (Trope & Liberman, 2003)

Liars' strategies

- Liars prefer not to be linked with incriminating evidence (e.g., avoid or escape strategy) (Granhag & Hartwig, 2008)
- Liars prepare alibis but typically do not expect and prepare for spatial questions (Soufan, 2011; Vrij et al., 2009)
- The alibis will be stereotypical (events) (Vrij, 2008)

Vrij, Mann, Jundi et al. (2012)

- *Terrorists* (N = 43) were instructed to go on a reconnaissance mission to the Isle of Wight. They were also asked to prepare a cover-up story and were given a leaflet with information about IoW
- Just before embarking the hovercraft they were approached by an undercover interviewer and asked some questions about their forthcoming trip
- Just before embarking the hovercraft *tourists* (N = 47) were approached by the same undercover interviewer and were asked the same questions
- Interviews were covertly audiotaped (and thereafter transcribed)





The questions/Hypotheses

- What are you going to do at the Isle of Wight? (events versus activities)
- At what time do you plan to catch a return hovercraft? (time mentionings)
- Can you show the places you are going to visit on this map? (spatial)
- Do you mind if I get a quick snap? (avoid)
- Throughout, hedges ('likely', 'probably', 'not sure') were coded

Undercover interviewer

- Type of cover:
- University of Portsmouth PhD student with travel survey
- Student photographer

• No significant differences in responses between the two

Hypotheses testing			
	Truth	Lie	estimated
			accuracy
Events	L > T		60%
Activities	T > L		62%
Times mentioned	T > L		74%
Map inaccuracy	L > T		64%
Hedges	L > T		64%
Agreed photo taken	T > L		60%

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Avoid or escape: Jundi, Vrij, Mann, & Hope (under review)

Participants conducted 'campaigns' involving photographing Guildhall Square

- Truth tellers (N = 27) were told this was to promote watching the 2012 Olympics on the big screen
- Liars were (N = 26) told it was to identify a suitable area to plant a decoy device. Their cover was the truth tellers' campaign



The experiment

• Truth tellers and liars were sent on their mission with a camera

• On the square a mime artist was present who interacted with the people (but not the participant)



The experiment

• When the participants were about to leave the square he asked them whether they took a picture of him

• He also asked whether he could have a look at the pictures

Hyp Gu	othesis tes ildhall stu	ting: .dy	
Did you take a picture of me?			
	Truth	Lie	
- Yes	36%	8%	
- No	32%	60%	
- I don't know	32%	32%	
(82% of 'Yes' answ	vers were truthf	n1)	

Can I have a look?

TruthLie- Yes60%20%- (75% of 'Yes' answers were truthful)

Conclusion

• Short undercover interviews can be used for lie detection purposes

 Questions should be phrased while taking (1) characteristics of intentions and (2) liar's strategies into account

III. Collective interviewing

- Suspects often carry out surveillance in groups (Soufan, 2011) or commit crimes in groups, yet deception research mainly focuses on individuals
- In streetwise situations it could be useful to interview suspects together (for example in a car)

Collective interviewing

• Collective interviewing has a potential benefit:

• It has potential cues of deceit that individuals cannot display: How do they communicate with each other?

Different strategies

- Examine truth tellers' and liars' strategies for possible cues
- Recalling shared experiences lead to many interactions (Rajaram, 2011)
- Liars prefer to keep their story simple (Hartwig et al., 2007)

Vrij, Jundi, Hope et al. (2012)

- *Liars* (N = 21 pairs) were instructed to take money out of a room and to deny this in a subsequent interview. Instead, they needed to pretend that they had lunch together
- *Truth tellers* (N = 22 pairs) had lunch together
- Both pairs of liars and truth tellers were given time to prepare themselves for the interview
- Interviewer, blind to the veracity status, asked about the experiences in the restaurant
- Videotaped and coded for communication cues



Hypothesis testing

		Estimated
		accuracy
• Interruptions	T > L	69%
 Corrections 	T > L	74%
Add information	T > L	68%
• Gaze at interviewer	L > T	66%
• Gaze at each other	T > L	62%

Park study (Jundi, Vrij, Hope, & Mann, under review)

• Participants carried out their missions in pairs and were asked to sketch a time line of their activities in the formal interview

Hypothesis testing

• Questions asked T > L 71% 87%

Turn taking (Vernham, Vrij, Leal, & Mann, in preparation)

• Making collective interviewing more difficult for liars through forced turn taking

• The interviewer determines who starts answering a question and intervenes after every 20 seconds by stopping the person who talks and asks the other to continue

Vernham, Vrij, Leal, & Mann, in preparation

- *Truth tellers* (N = 24 pairs) were real couples who had been in a relationship for at least one year and cohabiting
- Liars (N = 22 pairs) were friends and pretended to be a couple who were in a relationship for at least one year and cohabiting
- They were sent out for coffee to prepare themselves and to discuss i) how they met, ii) how they spend time together, and iii) where they live, and questions in interview addressed these issues

Vernham, Vrij, Leal, & Mann, in preparation

- Six questions were about these three issues (e.g., 'Describe in as much detail as possible how you first met'?) and were coded for:
- *waiting* after been asked to turn-take
- *continuing* with what the other person had said after turn taking
- *repeating* what the other person had said after turn taking

Hypothesis testing

		Truth Lie	Truth	Lie
•	N of forced turn tal	$\operatorname{kes} \mathbf{T} = \mathbf{L}$		
•	Waiting	T < L	79%	86%
•	Continuing	T > L	79%	73%
•	Repeating	T < L	92%	77%

Thanks to my core collaborators:

- Samantha Mann
- Sharon Leal
- Ron Fisher
- Par Anders Granhag

Interested in this work?

• Come to see me now or email me:

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