



When and how are lies told? And the role of culture and intentions in intelligence-gathering interviews

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Purpose. Lie-tellers tend to tell embedded lies within interviews. In the context of intelligence-gathering interviews, human sources may disclose information about multiple events, some of which may be false. In two studies, we examined when lie-tellers from low- and high-context cultures start reporting false events in interviews and to what extent they provide a similar amount of detail for the false and truthful events. Study 1 focused on lie-tellers' intentions, and Study 2 focused on their actual responses.

Methods. Participants were asked to think of one false event and three truthful events. Study 1 ($N = 100$) was an online study in which participants responded to a questionnaire about where they would position the false event when interviewed and they rated the amount of detail they would provide for the events. Study 2 ($N = 126$) was an experimental study that involved interviewing participants about the events.

Results. Although there was no clear preference for lie position, participants seemed to report the false event at the end rather than at the beginning of the interview. Also, participants provided a similar amount of detail across events. Results on intentions (Study 1) partially overlapped with results on actual responses (Study 2). No differences emerged between low- and high-context cultures.

Conclusions. This research is a first step towards understanding verbal cues that assist investigative practitioners in saving their cognitive and time resources when detecting deception regardless of interviewees' cultural background. More research on similar cues is encouraged.

Rafid Ahmed Alwan al-Janabi, codenamed 'Curveball', is an Iraqi defector who gave intelligence about clandestine biological weapons in Iraq to German and American Intelligence Services, after which a war was waged on Iraq (Chulov & Pidd, 2011). It was later discovered that Curveball gave fabricated intelligence. He claimed that he was hoping that, based on his fabrications, the West would end the dictatorship regime of Saddam Hussein (Chulov & Pidd, 2011).

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There are many similar cases in which human sources lie to handling officers motivated by a desire to receive rewards, obtain settlement status, and/or protect one's network (Miller, 2011; Stabile, 2014). In many instances, to convince their handlers they are telling the truth, sources may use embedded lies: incorporating false details within a truthful narrative (Leins, Fisher & Ross, 2013; Nahari, 2018). In contrast to outright lies that are primarily based on fabrications, embedded lies require fewer cognitive resources on the part of lie-tellers, enabling them to make their account more convincing and to present it with greater detail and consistency (Deeb *et al.*, 2018; Verigin, Meijer, Vrij, & Zauzig, 2019).

Sources often work for a long time with practitioners (Maguire & John, 1995; U.S. Department of Justice, 2006) and hereby often discuss multiple events, some of which may be false. The current research examined false events embedded within truthful events, simulating intelligence-gathering interviews. Across two studies, we compared lie-tellers' intentions and actual responses concerning where they would position the false event in relation to three truthful events and the extent to which they provide a similar amount of detail when reporting the truthful and false events. Study 1 is pre-registered on <https://osf.io/5eubs> and Study 2 on <https://osf.io/q84au>; the data and Appendix S1 can also be found on these links.

Lie position as an indicator of deception

To our knowledge, there is only one study (Leal, Vrij, Nahari, & Mann, 2016) that tested when lie-tellers start lying. In an insurance claim setting, participants freely claimed eight items either genuinely or falsely. The average first falsely claimed item was reported in the third position ($M_{\text{first lie}} = 3.17$). Participants reported they wanted to make the falsely claimed items less detectable by mixing them with the genuine items. Their strategy was to start the claim by providing verifiable information (e.g., presenting a receipt) to appear honest and to gain trust before starting to lie. The current research attempted to extend these findings, examining when lie-tellers start lying in interviews involving multiple events. We expected our results to match those of Leal and colleagues, with participants embedding the lie later in the interview.

Detail as an indicator of deception

We were interested in examining whether participants would provide a similar amount of detail for the truthful and false events. We are aware of only a few studies that examined a similar research question (Deeb *et al.*, 2017; Palena, Caso, & Vrij, 2019; Verigin *et al.*, 2019), but they used different designs and dependent variables and reached different conclusions. The study by Palena *et al.* (2019) most closely resembled ours. The study involved truth-tellers reporting two events genuinely and lie-tellers lying about one of the events. Truth-tellers provided a similar amount of detail for the two events, but lie-tellers provided more details for the truthful event than the false event. The authors speculated that lie-tellers may have found it easier to report and remember truthful details, thus unknowingly enhancing opportunities of detecting their deception. In line with these findings, we expected lie-tellers in the current research to report more details for the truthful events than the false event.

Cross-cultural research on deception

We examined cross-cultural differences in deception and focused on two communication styles, high- and low-context cultural dimensions. Although there are different ways in which cross-cultural differences can be examined (such as collectivism vs. individualism; Hofstede, Hofstede, & Minkov, 2010; independence vs. interdependence; Kim, Kam, Sharkey, & Singelis, 2008), we chose communication style because we were interested in verbal cues to deception. High-context and low-context cultures may be interpreted on a continuum, and cultures may show a mix of these communication styles; however, each culture tends to have a dominant communication style (Hall, 1976). High-context cultures (e.g., Middle East, Latin America) communicate via implicit messages that rely on context, whereas low-context cultures (e.g., United States, Norway) are more explicit during communication with the meaning of the message derived from the content of the message itself (Hall, 1976). To illustrate, a person from a high-context culture may say s/he agrees with you when in fact s/he does not but wants to display what s/he believes is polite behaviour. In contrast, a person from a low-context culture would be more confrontational and is likely to explicitly disagree with you (Copeland & Griggs, 1986).

We are aware of three deception studies that looked at cross-cultural communication styles but they examined different cues, used different designs, and reached different conclusions which make it difficult to reconcile the findings. Two studies found that interviewees displayed behaviour manifested in their culture regardless of whether they were lying or not (Leal, Vrij, Vernham, *et al.*, 2018; Rotman, 2012), but a third study found cues to deception regardless of whether interviewees came from high- or low-context cultures (Van der Zee, Poppe, Taylor, & Anderson, 2019). In the current research, we explored differences between the two cultural groups for lie position and for the amount of truthful and false details. In Study 1, we did not predict cultural differences *a priori* but we conducted post-hoc exploratory analyses given the variety in the cultural background of our sample. However, we systematically examined cultural differences in Study 2.

Deceptive intentions

In Study 1, we examined lie-tellers' intentions concerning the order of truthful and false events within the same interview and the amount of detail they planned to provide for each event. Study 2 was an experimental study that involved an interview to test actual lie position and amount of detail, thus measuring actual responses. To what extent would the intentions in Study 1 and actual responses in Study 2 show overlap which each other?

According to the theory of planned behaviour, attitudes, subjective norms, and perceived behavioural control predict intentions and the overall model predicts behaviours (Ajzen, 2011; Stone, Jawahar, & Kisamore, 2010). When individuals are confronted with constraints in a setting, perceived behavioural control is low which weakens the intention-behaviour correlation (Ajzen, 2011). On the one hand, in an investigative interview context where the stakes are high, particularly for lie-tellers, the cognitive load induced by probing questions and the act of lying diminishes lie-tellers' cognitive resources (Vrij, 2008; Vrij, Granhag, Mann, & Leal, 2011). Thus, intentions to lie and to control one's behaviour to provide a convincing statement may not predict actual behaviour (Vrij, Semin, & Bull, 1996). On the other hand, the propensity of lie-tellers to prepare for interviews and to stick to their cover story (Hartwig, Granhag, Strömwall, & Doering, 2010) enables them to have more control during the interview, and thus, their intentions to provide a convincing statement are more likely to be fulfilled. Similarly, the

act of placing a false event in a certain position when multiple events are reported and the amount of detail to be provided may be prepared in advance. Thus, intentions concerning lie position and amount of detail are likely to align with actual behaviour (responses) if lie-tellers perceive and possess control over such behaviour in the interview.

STUDY 1

Study 1 was an online study that examined lie-tellers' intentions on where they would position a false event if they are asked to report four events of which one is false and three are truthful. The false event could be reported at the beginning of the interview (first position), in the middle of the interview (second or third position), or at the end of the interview (fourth position). We were also interested in the amount of detail lie-tellers intend to provide for the false and truthful events.

Hypotheses

Hypothesis 1. Lie-tellers will report that they would place the false event in the second or third position as opposed to the first or fourth position.

Hypothesis 2. Lie-tellers will report that they would provide more details for the truthful events than the false event.

Method

Recruitment of participants

The study was posted on Amazon Mechanical Turk (MTurk) and on social media platforms (Facebook, Twitter) in different countries (e.g., Netherlands, Lebanon). We also announced the study to individuals who previously expressed interest in taking part in studies conducted at the university's Department of Psychology. In addition, we used a snowballing procedure. MTurk participants were paid \$0.50; other participants did not receive any reward. Participants were eligible to participate in the study if they were able to understand and write English at an advanced level. Self-reports were used as the study did not involve an interview and participants needed to have basic knowledge of English to comprehend instructions. More details can be found in the Appendix S1.

Participants' demographics

A total of 100 participants (61 females and 35 males) were recruited. One participant selected 'other' for gender, another preferred not to mention gender, and two did not indicate their gender. Approximately half of the sample was recruited on MTurk ($n = 54$) and the remaining half through snowballing ($n = 22$), via the Department's database ($n = 13$), and on social media platforms ($n = 11$). Age ranged between 18 and 71 years, $M_{\text{age}} = 36.32$ years, $SD_{\text{age}} = 13.13$. Thirteen participants did not indicate their age. Participants' ethnicity was Caucasian ($n = 58$), Arab ($n = 25$), Asian ($n = 7$), Hispanic ($n = 6$), African ($n = 2$), and Mixed ($n = 2$).

Procedure

The online study involved participants choosing from a list of social and personal events (e.g., went on a trip abroad, met a famous person) three events that happened to them in the past 6 months. They were then asked to fabricate an event which does not include any truthful details and claim they have experienced it in the past 6 months. They were led to believe that they will be interviewed online by one of the six lie detection experts, of whom two are available at all times. To motivate participants, they were instructed that if they are not convincing, they will have to write a statement about the events. Participants were then directed to another page to complete a questionnaire prior to the supposed interview on which they rated on 7-point scales (1 = *not at all* and 7 = *extremely*) their intentions and strategies and elaborated on them (see Appendix S1 for more details on the procedure).

Coding

Remaining blind to the veracity of events, the first author coded open responses justifying the (1) planned order of events, (2) planned amount of detail for events, and (3) preparation strategies. The first author has been manually coding verbal statements for cues to deception for many years and is thus experienced in coding. The author formulated categories based on participants' responses to open questions. Similar responses were grouped together in a single category, with each category describing the theme of responses. For example, the responses 'Make details similar to the lie' and 'I want to use the same level of detail for everything if at all possible to help obfuscate the lie' came under the category 'to match the other events' (see Table 5), because they showed that the participant planned to provide the same amount of detail for the events. Also, the same response from the same participant could fit into more than one category. For example, this response from one participant 'I think adding detail adds to the believability of the story. Also, I want the level of detail to be sort of similar across stories' falls under the categories 'more details indicate more honesty' and 'to match the other events' (see Table 4).

A second coder, blind to the hypotheses and veracity of events, assigned participants' responses to the formulated categories. Inter-rater reliability was calculated using Cohen's kappa, $\kappa = .68$, and suggested substantial agreement between coders (Hallgren, 2012).

Results

Results from the questionnaire that are not directly related to hypotheses testing (e.g., participants' motivation, preparation strategies) can be found in the Appendix S1. In general, participants were motivated to appear honest, believed they will have to write a statement, were confident they will be believed, were genuine about the truthful events, and used embedded details when reporting the false event.

Intentions: lie position

A one-sample chi-square test that examined whether the reported position of the false event was significantly more likely for one of the four positions than would be expected by chance revealed no significant differences, $\chi^2(3) = 7.76$, $p = .051$, $M_{\text{lie position}} = 2.76$, $SD = 1.08$. Thus, Hypothesis 1 was not supported.

Despite the rejection of Hypothesis 1, the frequencies in Table 1 show that relatively few participants planned to start the interview with a lie. We conducted further exploratory analyses to compare the proportion of participants who reported the false event in the first position and the proportion of participants who reported the false event in each of the other positions. We adjusted the p -value to .017 (.05/3) to avoid alpha level inflation. Participants were as likely to plan to start the interview with the false event (placing it in the first position) as they were to plan to place it in the second, $\chi^2(1) = 3.93$, $p = .047$, and third positions, $\chi^2(1) = 1.68$, $p = .194$. However, they were significantly less likely to plan to start than to end (fourth position) the interview with the false event, $\chi^2(1) = 7.37$, $p = .007$.

Given the cultural diversity of our sample (see Appendix S1), we explored potential cultural differences. A chi-square test between lie position (first, second, third, fourth) and culture (low-context, high-context) revealed no significant differences in lie position between high-context, $M = 3.00$, $SD = 1.10$, 95% CI [2.66, 3.34], and low-context participants, $M = 2.59$, $SD = 1.04$, 95% CI [2.31, 2.86], $\chi^2(3) = 6.06$, $p = .109$, Cramer's $V = 0.25$. Refer to Table 1 for frequencies.

The most common reasons for the planned lie position (Table 2) were to be done with lying (if first position), to mix truthful and false events (if second and third positions), and to adjust to the interview (if fourth position). However, the planned order of truthful events (Table 3) was random or based on the chronological order of events.

Intentions: detail

A 2 (event: truthful, deceptive) \times 4 (lie position: first, second, third, fourth) \times 2 (culture: low-context, high-context) mixed ANOVA with event as within-subject factor, culture and lie position as between-subject factors, and planned details for the truthful and false events as dependent variable revealed a significant effect for event, $F(1, 92) = 4.36$, $p = .040$, $\eta^2 = .05$. Participants planned providing more details for the truthful events ($M = 5.27$, $SD = 1.36$, 95% CI [5.00, 5.54]) than the false event ($M = 4.92$, $SD = 1.45$, 95% CI [4.63, 5.20]). No other significant differences emerged (all $ps > .124$). These results supported Hypothesis 2 that lie-tellers will plan to provide more details for the truthful events than the false event.

The reasons given by participants for the planned amount of detail for the false event are provided in Table 4. Participants who chose a rating of 4 or 5 on the 7-point scale wanted to provide a moderate amount of detail to appear truthful (i.e., not too vague and not too detailed). Participants who chose a higher rating (6 or 7) mostly thought that more details indicated more honesty, and those who chose a lower rating (1–3) mostly wanted to provide a simple story. As for the truthful events (Table 5), participants who gave a rating of 4 or higher wanted to be detailed because they experienced or remembered the events. Further, the content or nature of the event did not seem to affect the amount of detail participants provided. Tables 4 and 5 show that very few participants decided the amount of detail based on the events' content or significance.

STUDY 2

Study 2 was an experimental replication of Study 1, with a few differences between the studies. Whereas Study 1 examined participants' intentions in an online survey, Study 2 examined actual responses in an interview – with a similar focus on lie position and

Table 1. Frequency and percentages of planned lie position (Study 1) and actual lie position (Study 2)

| Lie position | Study 1 | | | Study 2 | | |
|-----------------|-------------------------|--------------------------|--------------------|-------------------------|--------------------------|--------------------|
| | Low-context (n = 58) | High-context (n = 42) | Total (N = 100) | Low-context (n = 66) | High-context (n = 60) | Total (N = 126) |
| First position | 9 (16%) | 6 (14%) | 15 (15%) | 10 (15%) | 9 (15%) | 19 (15%) |
| Second position | 21 (36%) | 7 (17%) | 28 (28%) | 17 (26%) | 20 (33%) | 37 (29%) |
| Third position | 13 (22%) | 10 (24%) | 23 (23%) | 20 (30%) | 13 (22%) | 33 (27%) |
| Fourth position | 15 (26%) | 19 (45%) | 34 (34%) | 19 (29%) | 18 (30%) | 37 (29%) |

Table 2. Frequency of participants in Study 1 reporting the reasons for the chosen position of the false event as a function of culture

| Why do you choose to lie at that point during the interview? | Low-context | High-context |
|---|-------------|--------------|
| First position | | |
| To be done with the lie | 3 | 2 |
| The interviewer would not expect me to lie then or would not remember the lie | 1 | 1 |
| To look like I have not prepared for it | 1 | 0 |
| To be/remain enthusiastic during the interview | 1 | 0 |
| Before the interviewer knows much about me | 1 | 0 |
| It was an easy topic | 0 | 1 |
| Based on the sequence/content of events | 0 | 1 |
| Second position | | |
| To mix the deceptive and truthful events | 6 | 3 |
| Based on the sequence/content of events | 4 | 3 |
| To adjust to the interview (questions) | 4 | 1 |
| Lying at the beginning or end would be too obvious | 4 | 0 |
| To be/remain enthusiastic during the interview | 4 | 0 |
| Before the interviewer knows much about me | 2 | 0 |
| I am not comfortable with lying so I prefer to postpone it | 2 | 0 |
| The interviewer wouldn't expect me to lie then or would not remember the lie | 2 | 0 |
| To be done with the lie | 1 | 1 |
| To match the truthful events | 0 | 3 |
| Third position | | |
| To mix the deceptive and truthful events | 7 | 6 |
| Based on the sequence/content of events | 5 | 2 |
| Lying at the beginning or end would be too obvious | 4 | 0 |
| To adjust to the interview (questions) | 2 | 2 |
| To establish trust with the interviewer | 2 | 0 |
| I am not comfortable with lying so I prefer to postpone it | 1 | 2 |
| To match the truthful events | 1 | 1 |
| Fourth position | | |
| To adjust to the interview (questions) | 5 | 5 |
| I am not comfortable with lying so I prefer to postpone the lie | 3 | 4 |
| To allow myself time to think and to organise my thoughts | 2 | 3 |
| To establish trust with the interviewer | 2 | 1 |
| To match the truthful events | 1 | 2 |
| To not be detailed because I never experienced the lie | 0 | 2 |
| Based on the sequence/content of events | 0 | 2 |

Table 3. Frequency of participants in Study 1 and Study 2 reporting the reasons for the chosen order of the truthful events as a function of culture

| On what basis do/did you choose the order of the truthful events? | Study 1 | | Study 2 | |
|---|-------------|--------------|-------------|--------------|
| | Low-context | High-context | Low-context | High-context |
| Randomly | 24 | 8 | 17 | 20 |
| Chronological order | 11 | 18 | 14 | 15 |
| The chosen order makes the statement more believable | 8 | 1 | 0 | 0 |
| I started with the most exciting/significant event | 7 | 7 | 1 | 3 |
| I started with the events I remember most | 5 | 5 | 35 | 11 |
| The interviewer is more likely to recall the last reported events | 3 | 0 | 0 | 0 |
| I placed the most exciting event in the middle | 2 | 1 | 0 | 0 |
| I started with the events about which I can talk most/least | 0 | 2 | 0 | 2 |

amount of detail. Recruitment of cultural groups was not systematic in Study 1, so we addressed this methodological limitation in Study 2 by actively recruiting individuals from low- and high-context groups residing in the United Kingdom. Participants were recruited at the University of Portsmouth. As in Study 1, participants self-reported their English proficiency, but we expected all participants to have at least a good proficiency in English given that knowledge of English was a requirement at the university. Previous research has shown that verbal statements of lie-tellers with a high level of proficiency in English do not differ from those of native speakers (Evans, Pimentel, Pena, & Michael, 2017); hence, it is likely that conducting the interview in English would not have affected the results. To avoid any order effects, the instructions given about choosing the three truthful events and the false event were counterbalanced such that in one version, the paragraph on choosing the truthful events would come first followed by the paragraph on fabricating the false event, and vice versa in the other version.

Hypotheses

Hypothesis 3. Lie-tellers will report the false event in the second or third position as opposed to the first or fourth position, irrespective of culture.

Hypothesis 4. Lie-tellers will be more detailed about the truthful events than the false event, irrespective of culture.

Method

Participants

The study was advertised on university online platforms, to the Department's database, and in university buildings. A total of 126 participants took part, of which 83 (66%) were

females and 42 (33%) were males (one participant preferred not to mention gender). Age ranged between 18 and 53 years ($M_{\text{age}} = 23.79$, $SD_{\text{age}} = 7.56$). The sample included 76 Caucasians (60%), 26 Asians (20%), 11 Latin Americans (9%), seven Africans (6%), and six of mixed ethnicity (5%). Participants received one course credit or £5 for taking part in the study.

Participants were allocated to the low-context or high-context culture based on their nationality. When participants had more than one nationality, they were asked about the nationality they identified with the most and this was used to classify them. Sixty-six participants were allocated to the low-context culture and 60 participants to the high-context culture.

Procedure

Participants first read instructions on a computer at the Department of Psychology that they had to select three events they experienced in the past 6 months and to report one false event they have never experienced. The instructions (about the three truthful events and the false event) were counterbalanced. Participants read the same instructions as in Study 1, in addition to an instruction that the interviewer is completely blind to the veracity of events. Also, the false event that participants had to report was given to them by the experimenter and was one of the listed events that participants first saw on the computer (the list from which they selected the three truthful events). The false event was matched to a previously reported truthful event, such that participants were asked to lie about a truthful event that a previous participant had reported. Participants were asked to lie about the event only if they have never experienced that event or a similar event. For example, if Participant 1 mentioned genuinely adopting a pet in the past 6 months, Participant 2 would be asked to lie about adopting a pet in the past 6 months, but only if s/he has never adopted a pet before.

Participants were given as much time as needed to prepare for the interview. Next, they completed a pre-interview questionnaire on their motivation, strategies, and demographics. Then, one of two research assistants, blind to the hypotheses and to the veracity of events, asked participants for a free recall of the events. Lastly, participants completed a post-interview questionnaire (see Appendix S1 for more details on the Procedure).

Coding

Interviews were recorded, transcribed, and manually coded for the number of details (one score given for each event). This frequency count coding method is commonly used in deception research and has shown to be accurate and reliable (Nahari, 2016). All nouns, verbs, adjectives, and adverbs were coded as details. Repeated details within the same event were coded only once. For example, the statement “For my graduation, my father brought me to the university with his car. On the way to university, my father stopped for coffee” includes eight details.

The first author and a second coder, both blind to the veracity of events, first coded two interviews to agree on the coding scheme. They then coded two other interviews and discussed any disagreements. Afterwards, the second coder coded 20% of the interviews and the first author coded all the interviews. Inter-rater reliability was excellent, ICC = .93.

Table 4. Frequency of participants in Study 1 and Study 2 reporting the reasons for providing the rated amount of detail for the false event as a function of culture

| Scale rating | Why do/did you choose to be that detailed about the false event? | Study 1 | | Study 2 | |
|--------------|--|-------------|--------------|-------------|--------------|
| | | Low-context | High-context | Low-context | High-context |
| 7 | More details indicate more honesty | 4 | 1 | 1 | 1 |
| | I am using an embedded lie | 2 | 0 | 0 | 0 |
| | Based on the content/nature of the event | 1 | 1 | 0 | 0 |
| 6 | To match the truthful events | 1 | 0 | 0 | 1 |
| | To confuse the interviewer | 1 | 0 | 0 | 0 |
| | More details indicate more honesty | 7 | 2 | 6 | 8 |
| | To match the truthful events | 2 | 2 | 5 | 6 |
| | Include enough details (not too many or too few) | 2 | 1 | 0 | 0 |
| | Based on the content/nature of the event | 2 | 0 | 0 | 0 |
| 5 | I am using an embedded lie | 1 | 1 | 0 | 0 |
| | Include enough details (not too many or too few) | 14 | 7 | 8 | 5 |
| | To match the truthful events | 1 | 3 | 9 | 6 |
| | Based on the content/nature of the event | 1 | 0 | 0 | 0 |
| | I am using an embedded lie | 1 | 0 | 0 | 0 |
| 4 | To be simple in my account | 0 | 1 | 0 | 0 |
| | More details indicate more honesty | 0 | 0 | 12 | 18 |
| | Include enough details (not too many or too few) | 5 | 10 | 7 | 3 |
| | To be simple in my account | 3 | 1 | 3 | 3 |
| | To match the truthful events | 1 | 1 | 8 | 3 |
| | Based on the content/nature of the event | 1 | 0 | 0 | 0 |
| 3 | I am using an embedded lie | 1 | 0 | 0 | 0 |
| | More details indicate more honesty | 0 | 0 | 4 | 3 |
| | To be simple in my account | 0 | 2 | 4 | 2 |
| | Include enough details (not too many or too few) | 0 | 1 | 7 | 3 |
| | Based on the content/nature of the event | 0 | 1 | 0 | 0 |
| | To match the truthful events | 0 | 0 | 2 | 1 |
| | To gain the interviewer's trust | 0 | 0 | 0 | 1 |

Continued

Table 4. (Continued)

| Scale rating | Why do/did you choose to be that detailed about the false event? | Study 1 | | Study 2 | |
|--------------|--|-------------|--------------|-------------|--------------|
| | | Low-context | High-context | Low-context | High-context |
| 2 | To be simple in my account | 3 | 3 | 0 | 0 |
| | Based on the content/nature of the event | 3 | 0 | 0 | 0 |
| | Easier to report few deceptive details | 0 | 0 | 2 | 1 |
| | Appear believable | 0 | 0 | 2 | 0 |
| 1 | To match the truthful events | 1 | 0 | 0 | 0 |

Note. This question is a follow-up to the question 'How detailed do you plan to be/were you when reporting the false event'.

Table 5. Frequency of participants in Study 1 and Study 2 reporting the reasons for providing the rated amount of detail for the truthful events as a function of culture

| Scale rating | Why do you choose to be that detailed about the truthful events? | Study 1 | | Study 2 | |
|--------------|--|-------------|--------------|-------------|--------------|
| | | Low-context | High-context | Low-context | High-context |
| 7 | I experienced the events and/or can remember them | 8 | 4 | 2 | 2 |
| | To match the other events | 4 | 2 | 1 | 1 |
| 6 | More details indicate more honesty | 0 | 0 | 2 | 2 |
| | Based on the content/significance of the events | 0 | 0 | 0 | 2 |
| 5 | I experienced the events and/or can remember them | 9 | 10 | 8 | 5 |
| | To match the other events | 7 | 1 | 9 | 4 |
| 4 | More details indicate more honesty | 0 | 0 | 6 | 18 |
| | To be simple in my account | 1 | 1 | 0 | 0 |
| 3 | Based on the content/significance of the events | 0 | 1 | 2 | 2 |
| | Include enough details (not too many or too few) | 0 | 0 | 6 | 0 |
| 2 | To match the other events | 14 | 5 | 13 | 5 |
| | I experienced the events and/or can remember them | 1 | 6 | 4 | 6 |
| 1 | To be simple in my account | 1 | 1 | 0 | 0 |
| | Based on the content/significance of the events | 0 | 2 | 0 | 0 |
| 0 | Include enough details (not too many or too few) | 0 | 0 | 7 | 1 |
| | More details indicate more honesty | 0 | 0 | 2 | 5 |
| 0 | To match the other events | 5 | 4 | 9 | 2 |
| | To be simple in my account | 4 | 0 | 1 | 3 |
| 0 | I experienced the events and/or can remember them | 3 | 1 | 4 | 2 |
| | Based on the content/significance of the events | 1 | 0 | 0 | 0 |
| 0 | Include enough details (not too many or too few) | 0 | 0 | 1 | 2 |
| | Based on the content/significance of the events | 1 | 0 | 0 | 0 |
| 0 | To be simple in my account | 1 | 0 | 0 | 0 |
| | To match the other events | 0 | 0 | 2 | 3 |
| 0 | To match the other events | 1 | 0 | 1 | 0 |
| | I experienced the events and/or can remember them | 0 | 1 | 0 | 0 |
| 0 | To match the other events | 2 | 0 | 0 | 0 |
| | To be simple in my account | 1 | 0 | 0 | 0 |

Note. This question is a follow-up to the question 'How detailed do you plan to be/were you when reporting the truthful events'.

As in Study 1, thematic coding was used whereby the first author classified participants' open responses into categories, and the second coder allocated participants' responses to these categories. Inter-rater reliability was substantial, $\kappa = .68$.

Results

The questionnaires' results (see Appendix S1) suggested that participants were motivated to appear convincing and were genuine about the truthful events. High-context participants were more likely than low-context participants to think they would be believed by the interviewer, explained by the finding that they included more truthful details in the false event.

Actual responses: lie position

A chi-square test between lie position (first, second, third, fourth) and culture (low-context, high-context) revealed no significant differences, $\chi^2(3) = 1.53$, $p = .676$, Cramer's $V = 0.11$, meaning that the positioning of the false event did not differ between low-context ($M = 2.73$, $SD = 1.05$, 95% CI [2.47, 2.98]) and high-context participants ($M = 2.67$, $SD = 1.07$, 95% CI [2.39, 2.94]). As in Study 1, relatively few participants seemed to start the interview with the false event (Table 1). An exploratory analysis on the whole sample did not reveal significant differences across positions, $\chi^2(3) = 6.95$, $p = .073$. Thus, Hypothesis 3 was not supported.

We compared the occurrence of the first position with each of the other positions after adjusting the p -value to .017 (.05/3) to avoid alpha level inflation. Participants were significantly less likely to start the interview with the false event than to place it in the second, $\chi^2(1) = 5.79$, $p = .016$, or fourth position, $\chi^2(1) = 5.79$, $p = .016$. Participants were as likely to place the false event in the first as in the third position, $\chi^2(1) = 3.77$, $p = .052$.

The most frequently cited reasons that participants provided for the order of truthful events (Table 3) were random order, chronological order, or memory-based (event they remembered the most). As for the false event (Table 6), participants who started the interview with the false event reported that this strategy would not be expected by the interviewer or that they wanted to be done with the lie. Those who reported the false event in the middle positions wanted to mix events so that the false event is less detectable. Participants who lied at the end needed time to adjust to the interview before they started lying.

Actual responses: detail

We classified the truthful events into those that were reported first, second, and third in the interview. The first reported truthful event included an average of 27.73 details ($SD = 19.62$), the second an average of 26.17 details ($SD = 23.08$), and the third an average of 26.42 details ($SD = 22.62$). A repeated measures analysis revealed no significant difference between the three means, $F(2, 250) = 0.61$, $p = .546$, $\eta^2 = .01$. Thus, we computed a detail mean score for the three truthful events, $M = 26.78$, $SD = 19.47$. The detail mean score for the false event was 30.20 details ($SD = 23.46$).

A 2 (event: truthful, deceptive) \times 4 (lie position: first, second, third, fourth) \times 2 (culture: low-context, high-context) mixed ANOVA, with event as within-subject factor,

Table 6. Frequency of participants in Study 2 reporting the reasons for the chosen position of the false event as a function of culture

| Why did you choose to lie at that point during the interview? | Low-context | High-context |
|--|-------------|--------------|
| First position | | |
| Interviewer overlooks/does not expect interviewee to lie at the beginning of the interview | 7 | 5 |
| I wanted to be done with the lie | 6 | 3 |
| Second position | | |
| I wanted to mix the truths and lies | 10 | 8 |
| I did not want to forget details of the lie | 7 | 2 |
| That depended on the sequence/content of the events | 1 | 8 |
| I wanted time to adjust to the interview | 5 | 3 |
| I wanted to be done with the lie | 1 | 1 |
| I wanted to gain the interviewer's trust | 0 | 1 |
| Third position | | |
| I wanted to mix the truths and lies | 15 | 7 |
| I wanted time to adjust to the interview | 6 | 4 |
| If I lie at the beginning or end, that would make the lie too obvious | 6 | 2 |
| Fourth position | | |
| I wanted time to adjust to the interview | 8 | 4 |
| That depended on the sequence/content of the events | 4 | 3 |
| That gave me time to think about the deceptive details | 5 | 1 |
| I wanted to gain the interviewer's trust | 2 | 2 |
| The interviewer would not expect me to lie at the end | 2 | 2 |

culture and lie position as between-subject factors, and number of details for the false and truthful events as dependent variable did not reveal any significant effects (all $ps > .050$). These results were not consistent with Study 1 results and Hypothesis 4, which postulated that participants will provide more details for the truthful events than the false event.

Intentions: detail

We examined participants' planned amount of detail (pre-interview). A 2 (event: truthful, deceptive) \times 4 (lie position: first, second, third, fourth) \times 2 (culture: low-context, high-context) mixed ANOVA with event as within-subject factor, culture and lie position as between-subject factors, and planned amount of false and truthful details as dependent variable revealed a significant effect for event, $F(1, 118) = 47.01, p < .001, \eta^2 = .29$, with participants planning more details for the truthful events, $M = 5.28, SD = 1.12, 95\% CI [5.08, 5.48]$, than the false event, $M = 4.74, SD = 1.09, 95\% CI [4.55, 4.93]$. No other significant effects emerged (all $ps > .15$). These results replicated Study 1 results.

Post-interview self-reports: detail

We conducted another mixed ANOVA with the same factors but with perceived amount of detail provided (post-interview) as dependent variable. Participants thought they provided significantly more details for the truthful events, $M = 5.23, SD = 1.08, 95\% CI [5.04, 5.42]$, than the false event, $M = 4.71, SD = 1.04, 95\% CI [4.52, 4.89]$, $F(1,$

Table 7. Correlations between pre-interview planned truthful and false details and actual truthful and false details provided during the interview in Study 2

| | Planned truthful details | Planned false details | Actual truthful details | Actual false details |
|--------------------------|--------------------------------|-----------------------------|-------------------------------|----------------------------|
| Planned truthful details | | .622** | .267* | .144 |
| Planned false details | .622** | | .231* | .116 |
| Actual truthful details | .267* | .231* | | .817** |
| Actual false details | .144 | .116 | .817** | |

* $p < .01$; ** $p < .001$.

118) = 29.46, $p < .001$, $\eta^2 = .20$. There was also a significant effect of culture, $F(1, 118) = 4.54$, $p = .035$, $\eta^2 = .04$, with high-context participants believing they provided more details for the truthful events, $M = 5.40$, $SD = 1.05$, 95% CI [5.13, 5.67], than low-context participants, $M = 5.08$, $SD = 1.09$, 95% CI [4.81, 5.34], and high-context participants believing they provided more details for the false event, $M = 4.88$, $SD = 1.04$, 95% CI [4.61, 5.15], than low-context participants, $M = 4.55$, $SD = 1.01$, 95% CI [4.30, 4.79]. All other effects were non-significant ($ps > .18$).

Tables 4 and 5, which illustrate participants' justifications for the rated amount of detail, show that many low- and high-context participants wanted to be detailed about the events and also tried to provide a similar amount of detail for the events. This implies that participants aimed to provide many details for both the truthful and false events. These results were further corroborated by responses to a post-interview closed question that explicitly asked participants if they tried (or not) to match the amount of detail for the events. At least 71% of participants indicated that they tried to match the amount of detail for the truthful and false events. Low- and high-context participants were equally likely to provide a similar amount of detail, $\chi^2(1) = 3.33$, $p = .068$. Further, <6% of the participants wanted to provide more truthful than false details, and 8% wanted to provide fewer truthful than false details.

Correlations between planned and actual details

To better understand the results, we ran a correlational analysis between pre-interview planned truthful and false details and the actual number of truthful and false details (see Table 7). Participants who planned to report more truthful details also planned to report more false details, and those who reported more truthful details in the interview also reported more false details. Intentions correlated with actual details only when the actual details provided were truthful. That is, participants who provided more truthful details in the interview also planned to provide more truthful and false details. The provision of actual false details was not correlated with intentions.

GENERAL DISCUSSION

When are lies told?

The overall findings show that lie-tellers differ in when they start lying in interviews, with some data in Study 1 and Study 2 suggesting that they are less likely to lie at the beginning

than at the end of the interview. These results applied to lie-tellers from both low- and high-context cultures which implies that culture does not affect lie position. It may be – as shown in Tables 1, 2, and 6 – that participants preferred to adjust to the interview and to gain time to structure the lie in a convincing manner before they start lying. These results are similar to those by Leal *et al.* (2016) who showed that lie-tellers are less likely to lie at the outset (in an insurance claim in their study).

The theory of planned behaviour (Ajzen, 2011; Armitage & Conner, 2001) posits that lie-tellers' intentions will likely predict their behaviour if they perceive that they have the skills required to lie and that they possess control over the decision of when to lie. However, if they lack the requisite skills and control over the decision environment, there will be an intention–behaviour gap. In this case, they may plan when to lie in the interview, but may end up lying at a different stage than intended. In our research, the findings in Study 1 and Study 2 showed considerable overlap between planning and behaviour. In both studies, 15% of the participants (lowest percentage) preferred to lie at the beginning of the interview. In addition, participants in both studies were less likely to lie in the first than in the fourth position and no difference in preference emerged between the first and third positions. We did not ask participants in Study 2 about their intentions on lie position as we did not want them to know the study purpose before the interview. Future research may examine in a single study the extent to which lie-tellers' intentions on lie position predict actual behaviour.

How are lies told?

Study 1 showed that lie-tellers from low- and high-context cultures planned to provide more details for the truthful events than the false event, a finding replicated in Study 2 in the pre-interview and post-interview questionnaires, but these results emerged only when rating scales were used. Contradictory findings emerged in the actual interviews in Study 2 when participants (regardless of culture) provided a similar amount of detail for the truthful and false events. At first glance, this discrepancy in the results of Study 2 may seem to stem from a discrepancy between self-reports and actual responses. However, participants' responses to questions other than rating scales (i.e., open and closed responses) implied that they planned to provide a similar amount of detail for the events (pre-interview questionnaire) and that they thought that they did indeed provide a similar amount of detail (post-interview questionnaire). Also, the ratings for planned/perceived amount of truthful and false details clustered around an average of 5 (on a 7-point scale), and participants who chose this rating mentioned in their open responses that they were keen on providing a similar amount of detail for the events (see Tables 4 and 5). We can only speculate about these seemingly contradictory results. Perhaps the rating scales which focused exclusively on planned/perceived amount of detail cannot be used to infer the planned/perceived provision of a similar amount of detail as a strategy to appear truthful.

The correlational analysis in Study 2 suggested that participants tried to provide a similar amount of detail across events. Participants who planned to and who provided more truthful details in the interview did the same for false details. The results from this analysis also spoke to the intention–behaviour correlation. Participants who provided more truthful details in the interview were the ones who planned to provide more truthful and false details. However, providing false details in the interview was not correlated with planned amount of detail but only with providing truthful details in the interview. Perhaps participants have planned to provide the same amount of detail for the truthful and false

events but ended up matching their intentions for truthful details only. According to the theory of planned behaviour, participants may have found it more difficult to provide false details in the interview as they had originally envisaged and planned.

The finding that lie-tellers provided a similar amount of detail across truthful and false events (Study 2) did not support our hypotheses and previous findings by Palena *et al.* (2019). The results can be explained by lie-tellers' countermeasures. Lie-tellers are aware that appearing consistent is commonly associated with honesty, so they try to maintain consistency to make an honest impression (Granhag & Strömwall, 1999). Deeb *et al.* (2017) speculated that lie-tellers know they cannot be as detailed about a false event as they can be about a truthful event, so they may try to reduce the amount of detail (repeated details in their study) for the truthful event(s) so that it matches the amount of detail for the false event. Verigin *et al.* (2019) found that lie-tellers reported more details for the false event so that the amount of detail matched that of the truthful event. Thus, lie-tellers in their study used embedded lies to enrich the false event and to match it to the truthful event. These two interpretations can be complementary such that lie-tellers reduce the amount of detail they report about a truthful event while at the same time embedding truthful aspects in a false event to make it more detailed. In our studies, we found that lie-tellers used embedded lies as a convincing strategy (see Appendix S1) but we cannot know from the current data if they tried to reduce the amount of detail for the truthful events. Nonetheless, both interpretations imply that lie-tellers prioritize matching the amount of detail across events.

Limitations

Participants were free to report events they experienced, and self-reports were the only way to determine whether the truthful events were genuine. Similar procedures were used in previous deception research (e.g., Leal, Vrij, Deeb, & Jupe, 2018; Taylor, Larner, Conchie, & Menacere, 2017). We anticipate that participants adhered to instructions and when they did not, they were open about that (e.g., reporting using an embedded lie when they were instructed to use an outright lie). Also, some participants indicated they were not 100% truthful about the truthful events, possibly because they did not remember all the details of the experienced events so they tried to add details to fill in memory gaps and form a coherent narrative (Chabris & Simons, 2011). Participants reported in the post-interview questionnaire of Study 2 that for the truthful events, 93% of the reported details were truthful, and for the false event, 76% of the reported details were deceptive.

As shown in the Appendix S1, MTurk participants in Study 1 were more motivated than non-MTurk participants, which may be the result of the payment incentive offered to MTurks but not to non-MTurks. However, both groups were highly motivated (average scores were above the scale midpoint of 4).

Also, participants did not experience a real-world intelligence interview which may have diminished the study's ecological validity. However, previous research found that inmates reported that they generally try to display similar behaviour when telling lies and truths (Strömwall & Willén, 2011) – the same strategy used by student samples (Leins, Fisher, & Vrij, 2012). Therefore, with regard to matching the amount of detail, it seems unlikely this counter-interrogation strategy would differ across settings.

In Study 1 and Study 2, the low-context sample was more homogeneous (coming predominantly from the United States in Study 1 or the United Kingdom in Study 2) than the high-context sample (coming from different cultures) which may have confounded the results. Participants from a heterogeneous group are more likely to vary on the cultural

dimensions' continuum than a homogeneous group. Nonetheless, it was interesting to find that we reached similar results in both studies despite the heterogeneity of the high-context sample.

Further, the high-context group had a lower English proficiency than the low-context group in Study 2. This implies that the high-context group may have struggled more in the interview than the low-context group. Nonetheless, the analysis of the number of truthful and false details in Study 2 showed that the two groups did not differ in the extent to which they reported details, so it can be inferred that language proficiency was not a barrier during the interview.

In the experimental study (Study 2), an extensive rapport-building phase was not introduced. Future research could examine the impact of rapport-building on lie position. Would rapport-building make lie-tellers more confident so that they decide to lie earlier?

Conclusions

The current research implicates that lie-tellers seem to be less likely to lie at the beginning than at the end of an interview. In addition, lie-tellers are likely to provide the same amount of detail for false and truthful events in a single interview. This research is a first step towards establishing research that assists practitioners in knowing when to start using their time and cognitive resources within interviews. We encourage future research to examine diagnostic cues to deception that are not restricted by cultural nuances.

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Conflicts of interest

All authors declare no conflict of interest.

Author contributions

Haneen Deeb, PhD (Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Validation; Visualization; Writing – original draft; Writing – review & editing); Aldert Vrij (Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Resources; Supervision; Validation; Writing – review & editing); Sharon Leal (Conceptualization; Methodology; Writing – review & editing); Brianna L. Verigin (Data curation; Investigation; Methodology; Writing – review & editing); Steven M. Kleinman (Conceptualization; Writing – review & editing).

Data availability statement

The data that support the findings are openly available in Open Science Framework repository at <https://osf.io/6v3q7/> for Study 1 and <https://osf.io/28m9u/> for Study 2.

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Supporting Information

The following supporting information may be found in the online edition of the article:

Appendix S1. Additional information on the procedures and results of Study 1 and Study 2.