



The effect of question expectedness and experience on lying about intentions

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ABSTRACT

In recent years researchers have started to focus on lying about intentions (Granhag, 2010). In the present experiment participants were interviewed about their forthcoming trip. We tested the hypothesis that liars ($N=43$) compared to truth tellers ($N=43$) would give fewer details to unexpected questions about planning, transportation and the core event, but an equal amount or more detail to expected questions about the purpose of the trip. We also tested the hypothesis that participants who had previously experienced the intention (i.e., they had made such a trip before) would give more detail than those who had never experienced the intended action. The unexpected question hypothesis was supported, whereas the previous experience effect only emerged in interactions. The benefit of using different types of questions for lie detection purposes is discussed.

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1. Introduction

Lie detection in criminal investigations and security operations can be of critical importance. Reviews of lie detection research has shown that, on average, laypersons and professionals obtain accuracy rates of 54% and 56% respectively, where 50% accuracy can be expected simply by flipping a coin (Bond & DePaulo, 2006; Vrij, 2008). Different tools and techniques have been developed to aid deception detection. These techniques range from measuring physiological arousal to verbal content analysis (DePaulo et al., 2003; Masip, Sporer, Garrido, & Herrero, 2005; Sporer & Schwandt, 2006, 2007; Vrij, 2005; Vrij, Granhag, & Porter, 2010). The present experiment focuses on verbal lie detection and uses the cognitive load approach (Vrij, Fisher, Mann, & Leal, 2006, 2008, 2009). The core of this approach is that lying is more cognitively demanding than telling the truth. Several factors contribute to this increased mental load. Liars have to fabricate a story, remember what really happened and remember what they said earlier in the interview to avoid contradicting themselves. In addition, liars pay more attention to their own credibility, which truth tellers tend to take more for granted (DePaulo et al., 2003; Gilovich, Savitsky, & Medvec, 1998; Kassir, 2005). Therefore, in an effort to heighten their credibility, liars monitor themselves more than truth tellers for possible cues to deceit whilst monitoring the interviewer more, looking for signs of whether or

not they are being believed (DePaulo et al., 2003). In this respect, Carrión, Keenan, and Sebanz (2010) suggested that lying is difficult because the liar has to keep two mental states in their mind; their own and that of the person they are trying to deceive. The interviewee's cognitive load can be assessed by analysing their verbal and nonverbal behaviour (Vrij, Fisher, et al., 2008; Vrij, Mann, et al., 2008). In this article we focus on the verbal cue "number of details". Research has shown that liars who experience high cognitive load provide fewer details than truth tellers (Vrij, Fisher, et al., 2008; Vrij, Mann, et al., 2008).

Liars can decrease their cognitive load by preparing themselves for a possible interview. Liars prepare themselves by contemplating which questions will come up and thinking of possible answers (Clemens, Granhag, & Strömwall, 2011). This strategy is often successful, as planned lies are more difficult to detect than spontaneous lies (DePaulo et al., 2003). However, the weakness of this strategy is that liars do not know which questions will be asked. Perhaps lie detectors can exploit this weakness by asking a combination of expected and unexpected questions, and we examine this in this experiment. Liars should fare relatively well in answering the expected questions. In fact, these questions may trigger them to give all the information they have prepared, due to their keenness to make a convincing impression or, alternatively, because they are worried that there will be no opportunity to give this information later on in the interview. Giving all information straight away would be in alignment with Hartwig, Granhag, and Strömwall's (2007) findings that liars attempt to provide detail in order to sound convincing. The result would be that liars mention more details than truth tellers when answering expected questions. A different situation occurs for unexpected

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questions, because liars cannot have prepared answers to such questions. They are therefore likely to give fewer details than truth tellers when answering such questions. In sum, this would mean that liars would give more detail than truth tellers when answering the expected questions, but would give fewer details than truth tellers when answering the unexpected questions. In the present experiment, participants told the truth or lied about a forthcoming trip they intended to make. Four categories of questions were asked in the interview. In our view, the categories combined address all facets of a trip: factual questions, questions about the core events of the trip, transportation questions, and questions about the planning of the trip. Questions about the facts of the trip (called 'general questions' hereafter) were hypothesised to be the most expected category, because most people expect factual questions (Granhag, 2010; Vrij, Fisher, Mann, & Leal, 2009; Vrij, Leal, et al., 2009). This expected category was compared to the other three categories which were different in focus, but all hypothesised to be unexpected by the participants: core event questions, transportation questions and planning questions. They ask for details about the most important event of the trip, the method of travel to the destination, and how the trip was planned. Therefore we hypothesised that liars would give just as much detail or even more detail than truth tellers when answering the general questions (Hypothesis 1) but fewer details than truth tellers about the core event, transportation and planning questions (Hypothesis 2).

Lying about a forthcoming trip implies lying about intentions. Lie detection research has traditionally examined lying about past events or opinions, but recently researchers have started to examine lying about intentions (Granhag, 2010; Granhag & Knieps, 2011). This new line of research is important. It could prevent crimes if border control or intelligence agencies could identify people before they commit a crime. Just to give one recent example, Mohammed Merah, the 23-year-old who shot dead three Jewish children and their teacher in France in March 2012, was brought in for questioning by intelligence services in November 2011. The officers who interviewed him had found him convincing and he had shown 'excellent co-operation, education and courtesy' (Willsher, 2012). We chose the subject matter of lying about a forthcoming trip because it appears to be particularly relevant in real life, since millions of passengers travel each day.

To have an intention someone must think about the future. This ability to imagine oneself in the future (or in the past) is known as mental time travel (Suddendorf & Corballis, 1997). It has been proposed that mental time travel into the past and into the future are closely related to each other (D'Argembeau & Van der Linden, 2006). However, D'Argembeau and Van der Linden (2004) and Gamboz, Brandimonte, and De Vito (2010) found that images of past events are more detailed than images of future events which suggests that thinking about the future is not as easy as remembering the past.

Research into thinking about the future has shown that the brain uses stored memories from the past to build an image of possible future events. This process is similar to that used by the brain to reconstruct events from the past (D'Argembeau & Van der Linden, 2004; Schacter, Addis, & Buckner, 2007, 2008). This implies that both memories and mental images of the future are dependent on what has been experienced in the past. Those who are familiar with the setting of the intention may give more detail than those who are not. Szpunar and McDermott (2008) found that future events that took place in surroundings familiar to the participants, e.g., their home, were rated by the participants as clearer and as more detailed than future events in novel surroundings, e.g., a jungle. They also found that when people base their future image on a familiar setting, they report the image as more clear and in more detail when they had experienced that setting recently compared to long ago. This suggests a second strategy that liars can use other than preparing answers to expected questions: pretending to have an intention they, in fact, have executed in the past. This could potentially be a good strategy for liars, because it gives them memories on which to base the image of their false intention. This would allow them to rely on their memories of a past event,

rather than having to invent an intention, which should lower their cognitive load and make it less likely that their lie would be detected. In order to test this experience effect, in the present experiment half of the truth tellers and half of the liars had previously been to the place they truthfully or falsely claimed to be going to, whilst the other half had never been there before. If participants have made the trip before we can assume that they will remember some aspects of the trip better than others. The emotion surrounding an event and the level of arousal will influence a person's memory (Burke, Heuer, & Reisberg, 1992; Kensinger, 2004). This may affect the number of details given in answer to the different question types by both truth tellers and liars that have experience of the intended trip. We hypothesised that participants who have made the trip before will give more details than those who have not made this trip before, especially on core event questions since they refer to memories that may be well remembered because they are emotive or arousing (Hypothesis 3). Since we can think of no theoretical reason as to why veracity should affect this experience main effect, we expect it to occur regardless of whether the participant is telling the truth or lying about his or her intention.

2. Method

2.1. Participants

Eighty-six participants were interviewed. Of these 65 were female, 20 male and one person did not state this information on his or her questionnaire. They were on average 27.59 years old ($SD = 12.34$ years). Fifty-seven participants were undergraduate students (in psychology, science and humanities); the other 29 participants were university employees (in administration, management, support services, etc.).

2.2. Design

We used a 2 (Veracity) \times 2 (Experience) \times 4 (Question) mixed design, with the first two factors being between-subject factors. Veracity consists of truth tellers and liars. Experience comprises those who had made the intended trip before versus those who had not. The number of participants with and without experience was equal across truth tellers and liars. Question concerns the categories of question that were asked, of which there are four: general; core event; transportation and planning, and they were always asked in that order. General questions are about the basic facts, e.g. "What is the main purpose of your trip?" Core event questions are about the main events of their trip. Participants were asked to keep in mind one image of the most important thing they will do and asked questions about that image, such as "Please tell me in as much detail as possible what you imagine you're going to do in this picture?" The third question category, transportation, relates to the trip itself, e.g. "How are you going to travel to your destination?" The fourth category, planning, is about how they planned this trip, e.g.: "What part of the trip was easiest to plan?" The general question category contained five questions and the other categories each contained seven questions.

There were three verbal cues: (i) visual details (things that could be seen), and (ii) spatial details (how things are arranged in space) and (iii) total details (the total number of details in the statement). For example, in "the tree in front of the house" "in front of" is one spatial detail, and "the tree" and "the house" are both visual details. The visual and spatial details together with other details make up the total details variable.

There were two dependent variables based on the post interview questionnaire: motivation and preparation. For motivation, the participants indicated on a seven point scale how motivated they were to convince the interviewer ranging from [1] not motivated at all to [7] extremely motivated. For preparation the participants indicated how much they prepared for the interview on a seven point scale ranging from [1] not prepared at all to [7] extremely prepared.

2.3. Procedure

The participants were recruited via an online participant pool and advertisement. The advertisement mentioned that they would be interviewed about a trip they were going to make in the near future and that they may be asked to tell the truth or to lie about that trip in the interview. After signing up, participants were sent a questionnaire that asked whether they had any travel plans in the near future and, if so, where they planned to go, when and why. This information was used to categorise the participants. Those with the intention to make a trip to a location they had not visited before were placed in the truth tellers without experience condition, whereas those with the intention to revisit a location they had been to previously and for the same reason were placed in the truth tellers with experience condition. Participant who had been to the location, but for a different reason, were excluded. Those who had no intention to make a trip received instructions to lie. Liars were given a fake destination and a fake reason for their trip. When they were given their fake destination and reason, it was checked that they had not been there before. These fake destinations and reasons matched the destinations and reasons given by the truth tellers. Liars who had been to the fake destination and were there for the same reason were placed in the “liars with experience” condition and the others were placed in the “liars without experience” condition. Liars who had been to a fake destination but for a different reason were given a different fake destination to avoid complications in the design. The matching was carried out to prevent a difference between truth tellers and liars in destinations and reasons for the trip and to allow us to test for any effect of destination and reason for the trip.

This procedure means that the participants were not randomly allocated to the conditions. Random selection was impossible since allocation depended on participants' intention to travel and their experience in making trips, two factors that were beyond the experimenter's control. Of course, it is possible that there is a systemic difference between those who intend to travel within the next few months and those who do not. However, we cannot think of any theoretically plausible reason why this would be the case.

Those who were in the *truthful* conditions were given the following instructions: “In the interview I want you to answer the questions truthfully. Some people are asked to lie during the interview. The interviewer knows that some people may lie, but doesn't know whether you are telling the truth or lying. Your goal is to convince the interviewer that you really are telling the truth. The *liars*' instructions were: “In the interview I want you to lie and pretend that you are travelling to [matched destination] and that you are going there for the purpose of [matched reason]. The interviewer knows that some people may lie, but does not know whether you are lying or telling the truth. Your goal is to convince the interviewer that you are telling the truth.” Both truth tellers and liars were given at least three days in between receiving these instructions and the interview, and were told that they could prepare for the interview in any way they considered appropriate.

When the participants arrived for the interview the experimenter asked them to sign an informed consent form. The experimenter also verified whether they understood the instructions (all participants did). They were then interviewed by a female interviewer, who was blind to the veracity and experience conditions the participants were allocated to. Neither was she aware of the hypotheses that were being tested in the experiment. The interview was audio and videotaped. The participants could see the camera and audio recorder and consented to the use of their recordings. The interview questions were always asked in the same order. It started with the expected general questions, because in an interview general factual questions are typically asked first (Fisher, 2010). In addition it makes more sense to start an interview with expected questions followed by unexpected questions than vice versa, because starting an interview with unexpected questions is most likely to be perceived as odd.

After the interview the participants completed a questionnaire that asked for their demographics, motivation level and how much they had prepared. After completing the questionnaires, the participants were debriefed and given some sweets or a credit for the university participant pool, which is a compulsory unit in an undergraduate degree in which first year psychology students need to take part in experiments in exchange for credits.

2.4. Data analysis

The interviews were transcribed and coded. The coder, blind to the veracity status of the transcript, read each answer carefully and marked every detail the interviewee gave. These details were then classified as visual, spatial or neither. First, the number of visual, spatial and total details (visual, spatial and neither combined) was calculated for each question. They were then calculated within each questions category, creating variables that indicated how many visual, spatial and overall details were present in each questions category. A second rater coded 10% of the sample. The second rater was also blind to the veracity status of the transcripts. This coder was given information about what exactly constitutes a visual detail, a spatial detail or an “other” detail. The second coder was given one interview to practise on, which was then compared with the first rater's coding. Based on this comparison the second coder received some further explanation about how each detail could be classified as visual, spatial or neither. After this, the second coder rated the other interviews independently. The correlation between the two coders was very high; for total details: $r = 0.96$ ($p = 0.001$); visual details: $r = 0.98$ ($p = 0.00003$) and spatial details: $r = .88$ ($p = 0.01$).

3. Results

3.1. Expectedness of the questions

A pilot study was conducted to test which type of question was most expected. Forty-four participants who did not participate in the main experiment were told about the interview that had been conducted in the main experiment and were asked to list which questions they would expect to be asked in the interview. For each of the questions that were actually asked during the main experiment it was calculated how many participants wrote that question on their list. To be counted as the same, the actual question used in the interview and the question that participants had written down had to ask for exactly the same information, though obviously the wording could be slightly different. E.g. “Where are you going to?” would be considered the same as “Where are you travelling to?” A significant difference was found between the general, core event, transportation and planning categories, $F(3, 22) = 4.78$, $p = 0.01$ Partial $\eta^2 = .44$. Questions from the general questions category were listed on average by the highest number of participants: 17.5 ($SD = 3.97$), indicating that on average a question in the general questions category was listed by 17.50 of the 44 participants. Questions from the other categories were expected much less (core event: $M = .33$, $SD = 3.24$; transportation: $M = 4.50$, $SD = 3.24$; planning: $M < 0.0001$ $SD = 3.24$).

3.2. Motivation

The participants rated themselves as highly motivated. On a seven point scale, with a higher score indicating more motivation, they gave themselves a mean score of 5.83 ($SD = 1.17$) for motivation, with no difference between truth tellers and liars ($t(84) = 1.36$, $p = 0.18$).

3.3. Preparation

An ANOVA with Veracity and Experience as independent variables was conducted on the preparation variable, for which the participants scored their own level of preparation on a seven point scale,

with a higher number indicating more preparation. Liars had prepared themselves more thoroughly than truth tellers (truth tellers: $M = 1.98$, $SD = 1.00$; liars: $M = 3.07$, $SD = 0.95$; $F(1, 86) = 27.63$, $p = 0.00001$ Partial $\eta^2 = .25$). Participants without experience had prepared themselves more thoroughly than participants with experience (with experience: $M = 2.27$, $SD = 1.04$; without experience: $M = 2.81$, $SD = 1.13$; $F(1, 86) = 6.28$, $p = 0.01$, Partial $\eta^2 = 0.07$). There was no significant Veracity \times Experience interaction effect ($F(1, 86) = 0.26$, $p = 0.61$).

3.4. Total details

A 2 (Veracity) \times 2 (Experience) \times 4 (Question) mixed ANOVA was conducted with the total details as dependent variable. The analysis revealed a significant three way interaction effect, $F(3, 246) = 3.58$, $p = .02$, Partial $\eta^2 = .04$. The two way analyses revealed a significant Veracity \times Question interaction effect, $F(3, 246) = 5.45$, $p = .001$, Partial $\eta^2 = .06$. The two way interaction effects that included Experience were not significant, Experience \times Question: $F(3, 246) = .63$, $p = .60$; Veracity \times Experience: $F(1, 82) = 3.51$, $p = .07$. The Veracity and Experience main effects were not significant, Veracity $F(1, 82) = .86$, $p = .36$; Experience $F(1, 82) = .77$, $p = .38$; but the Question main effect was, $F(3, 246) = 110.43$, $p < 0.0001$. Table 1 presents the means and standard deviations for each condition. The Veracity \times Question interaction effect reveals that liars mentioned significantly more details in the general section than truth tellers ($t(84) = 2.49$, $p = 0.02$), as was predicted in Hypothesis 1. In addition, liars reported significantly fewer details in the transportation section than truth tellers (one-sided $t(84) = 1.94$, $p = 0.03$), consistent with Hypothesis 2. There was no significant difference between liars and truth tellers in the core event and planning sections (all $t < 1.39$, $p > 0.17$). Hypothesis 2 is therefore partly supported. This Veracity \times Question effect is stronger for the participants with experience than for those without experience. For those without experience there was no significant difference between truth tellers and liars in any of the question categories (all $t < 1.46$, $p > 0.15$). For those with experience, liars gave significantly more detail than truth tellers in the general section ($t(84) = 2.04$, $p = 0.05$), but gave significantly fewer details in the transport and planning sections (transport: $t(84) = 2.32$, $p = 0.03$; planning: $t(84) = 2.26$, $p = 0.03$). No significant difference emerged between liars and truth tellers in the core event section (core event: $t(84) = 1.44$, $p = 0.16$).

3.5. Visual and spatial details

Mixed 2 (Veracity) \times 2 (Experience) \times 4 (Question) ANOVAs with visual and spatial details as dependent variables revealed that the results for the visual and spatial details followed the exact pattern as in the total detail analysis described above. They revealed significant three way interaction effects (visual: $F(3, 246) = 3.58$, $p = .02$, Partial $\eta^2 = .04$; spatial: $F(3, 246) = 3.74$, $p = .03$, Partial $\eta^2 = .04$); significant Veracity \times Question interaction effects (visual: $F(3, 246) = 3.28$, $p = .03$, Partial $\eta^2 = .04$; spatial: $F(3, 246) = 4.03$, $p = .02$, Partial $\eta^2 = .05$) and significant Question main effects (visual: $F(3, 246) = 92.41$, $p < 0.0001$; spatial: $F(3, 246) = 41.03$, $p < 0.001$), whereas the

Table 2

The mean and (SD) of number of visual details per question category, experience level and veracity.

	Truth, not experienced	Truth, experienced	Lie, not experienced	Lie, experienced
General	8.25 (7.91) ^a	8.05 (4.07) ^a	11.14 (6.72) ^a	15.05 (14.40) ^a
Core event	44.95 (25.28) ^b	60.68 (38.41) ^b	59.09 (37.93) ^b	47.73 (31.26) ^b
Travel	31.45 (17.14) ^c	54.82 (49.14) ^b	34.82 (26.86) ^c	29.56 (28.62) ^c
Planning	43.6 (18.25) ^b	60.27 (35.89) ^b	48.32 (29.18) ^b	41.96 (23.55) ^b

other two way interaction effects and main effects were not significant (all $F < 3.63$, all $p > 0.06$). Tables 2 and 3 show that liars mentioned significantly more spatial and visual details than truth tellers in the general section (visual: $t(84) = 2.51$, $p = 0.01$; spatial: $t(84) = 2.04$, $p = 0.045$). In addition, liars mentioned significantly fewer visual and spatial details than truth tellers in the transportation section ($t(84) = 2.55$, $p = 0.01$). No significant difference was found between liars and truth tellers in the core event and planning sections (all $t < 1.6$, all $p > 0.11$). Similar to the results for the total details, for both visual and spatial detail this Veracity \times Question interaction effect was stronger in the participants with experience than in those without experience. For the participants without experience there was no significant difference between liars and truth tellers in any of the question categories (all $t < 1.48$, all $p > 0.15$). Regarding the participants with experience, liars gave significantly more details than truth tellers in the general section (visual: $t(84) = 2.20$, $p = 0.03$; spatial: $t(84) = 2.12$, $p = 0.04$), and significantly fewer details than truth tellers in the transport section (visual: $t(84) = 2.09$, $p = 0.04$; spatial: $t(84) = 2.53$, $p = 0.02$). Liars generated marginally significantly fewer visual details than truth tellers in the planning section ($t(84) = 2.00$, $p = 0.05$), whereas no significant differences emerged between truth tellers and liars in the core events section or for spatial details in the planning section (all $t < 1.61$, all $p > 0.11$).

3.6. Ratio between the number of details given to expected and unexpected questions

As we reported, it was found that liars gave more detail (total detail) than truth tellers in the general questions category, which, for both truth tellers and liars, was the question category in which they gave the least amount of detail (see Table 1). Liars gave fewer details than truth tellers in the other categories. This means that the ratio between total amount of detail in the general category and the other categories is larger for liars than for truth tellers. To assess whether this difference could be used as a cue to deception a ratio variable was created. First, the number of total details given in the core event, transportation and planning categories was averaged for each participant. This number was then divided by the total number of details the participant gave in the general questions category. Truth tellers ($M = 8.89$, $SD = .89$) gave more details in the unexpected categories for each reported detail in the expected category than liars ($M = 5.13$, $SD = .87$); $t(84) = 3.08$, $p = 0.003$. An ROC analysis was carried out for this ratio variable. It showed that the analysis classified truth tellers and liars significantly

Table 1

The total number of details per question category, experience level and veracity N.B. In columns, only cells that do not share any superscript letter differ significantly.

	Truth, not experienced	Truth, experienced	Lie, not experienced	Lie, experienced
General	16.1 (14.91) ^a	15.73 (7.39) ^a	22.46 (13.35) ^a	29.59 (31.06) ^a
Core event	96.2 (51.13) ^b	128.32 (78.92) ^b	117.82 (73.66) ^b	98.64 (56.13) ^b
Travel	78.15 (37.49) ^c	121.5 (90.29) ^b	78.59 (54.92) ^c	69.73 (53.09) ^c
Planning	92.75 (35.16) ^b	122.77 (70.01) ^b	100.59 (60.68) ^b	83.46 (41.79) ^{bc}

Table 3

The mean and (SD) of number of spatial details per questions category, experience level and veracity.

	Truth, not experienced	Truth, experienced	Lie, not experienced	Lie, experienced
General	2.60 (2.39) ^a	1.96 (1.53) ^a	3.18 (2.75) ^a	3.58 (3.29) ^a
Core event	10.60 (6.54) ^b	17.64 (19.84) ^b	14.77 (10.93) ^b	10.46 (6.47) ^b
Travel	10.25 (7.27) ^b	16.55 (16.47) ^b	8.68 (6.83) ^c	7.00 (6.51) ^c
Planning	7.45 (3.72) ^c	9.27 (8.14) ^c	8.36 (7.01) ^c	6.86 (4.73) ^c

above the level of chance ($AUC = .75$, $SE = 0.05$, $p = 0.01$, 95% confidence interval .64–.85). The best cut off value was at a ratio of 5.73 details in unexpected categories per one detail in the expected category, at that level the positive predictive value was .69, and the negative predictive value was .75.

3. Discussion

We examined the verbal responses of participants who lied or told the truth about their forthcoming trip. Such a deception scenario is particularly ecologically valid as it could be applied to airport settings, bus stations, underground stations, train stations, etc., which are used by millions of passengers each day. A significant Veracity \times Question interaction effect was found, which showed that liars and truth tellers responded differently to the different question categories. **Liars mentioned significantly more details than truth tellers in the general category, but significantly fewer in the transportation category.** The Veracity \times Question interaction effect was more robust in those who had experienced the trip before than in those who had not.

The finding that liars mentioned more details than truth tellers in the general questions category is at odds with previous research that found that liars typically mention fewer details than truth tellers (DePaulo et al., 2003; Vrij, 2008). A difference between that previous research and our experiment is that we encouraged the participants to prepare themselves and gave them a few days in which to do so. Our results showed that liars took this opportunity to prepare more than truth tellers. Possibly, in an effort to be convincing liars may have been eager to share that prepared story and did so in response to the first question that could possibly allow it. That question was likely to be asked in the general questions section, because those are the first questions in the interview and, as the pilot study revealed, interviewees expected to be asked these questions. Of course, it makes sense to give the prepared response at the first opportunity. Interviewees cannot know whether the later questions would ask for those details that they had prepared. They may have felt that if they did not give their prepared story immediately, they would not have the chance to do so later.

It is worthwhile to examine what would happen if unexpected questions are asked first. Liars would then face the dilemma of having a prepared story but no appropriate questions (yet) to give their prepared answer. They have two options. They may wait until an expected question is asked; thereby risking the possibility that such an opportunity will not arise. Alternatively, they may give their prepared answer to an unexpected question that does not really ask for the information they have prepared, risking the possibility that their answer will come across as odd or irrelevant. This could be tested by replicating this experiment and counterbalancing the order in which the different categories of question are asked.

More in line with previous research was that liars mentioned fewer details than truth tellers in the other three sections of the interview (DePaulo et al., 2003; Vrij, 2008). However, these differences were only significant in the transportation category, whereas previous research has often found significant differences also with questions that resemble the core event questions. One possible explanation is that the substantial preparation time we gave the liars helped them to include enough details in their answers in the core event (and planning) sections to negate the differences with truth tellers. However, questions about the core event and the planning were not really expected, making it unlikely that the liars had prepared answers for them. Alternatively, the lack of a difference may be because participants told the truth or lied about intentions rather than past activities. Previous experiments regarding lying about intentions did not reveal any difference in detail between truth tellers and liars either (Vrij, Granhag, Mann, & Leal, 2011; Vrij, Leal, Mann, & Granhag, 2011). Descriptions of truthful intentions are generally not as detailed as truthful stories about past activities (Vrij et al., 2011). When truth tellers discuss their past activities, there is a wealth of perceptual

details that they have experienced during these past activities that they can recall (if they still remember them). In contrast, when discussing their intentions about a forthcoming trip, truth tellers did not yet have experience to draw on, which restricts the amount of detail they can report about their intentions. As a result, truth tellers are not so detailed when discussing their intentions, which would make it easier for liars to provide a similar amount of detail as truth tellers.

The pattern whereby liars give more details in the expected category, but fewer details in the unexpected categories was more robust in the participants with experience than in those without experience. However no interaction effect between veracity and experience or between question category and experience was found, nor was a main effect of experience found. Those who had experienced the trip before did not give more details than those who were going to make the trip for the first time. This suggests that if there is an experience effect it is subtle and may only be noticed with certain participants and when certain types of questions are asked. Another result in the experiment may explain why no main effect of experience was found. We found that those with experience prepared themselves less than those without experience. Probably, those with experience believed that using their previous experience would suffice and hence felt that no other preparation was required. This lack of preparation by those with experience may have caused the absence of an experience effect.

There are alternative explanations for the absence of a larger experience effect. Whether or not someone can use their previous experience may depend on how often they have experienced their intent, how long ago they experienced it and how well they remember it. In other words, there are many possible factors that have not yet been explored which could influence whether or not an interviewee can benefit from their previous experience. This may be worth examining in future research. The present experiment suggests that a possible experience effect is not obvious and is more subtle than one might initially think. It is also possible that interviewees did use their previous experience to their benefit, but that the present experiment did not examine the cues that would reveal evidence for it. Perhaps those with experience gave higher quality details or told a more plausible story, two aspects that have not been examined in the present experiment. Again, it would mean that a possible experience effect is subtle.

The ratio between the number of details mentioned in the expected general questions and the unexpected question categories was a diagnostic cue to deception. Truth tellers had a higher ratio, indicating that for every detail they gave to an expected question, they gave more details compared to liars to unexpected questions. The ratio indicates that truth tellers handle unexpected question with less difficulty than liars. An ROC analysis showed that the ideal cut off point was 5.73 details in unexpected categories to one detail in the expected category. This cut off had a positive predictive value of .69 and a negative predictive value of .75. These predictive values are significantly better than chance and comparable to the accuracy rates of other speech analysis techniques. CBCA classifies on average 71% of truth tellers and liars correctly, whilst a reality monitoring approach classifies on average 72% of truth tellers and 66% of liars correctly (Vrij, 2008). The predictive values are particularly relevant because they are based on a ratio of detail within a participant. Such within-subjects designs are preferred by practitioners because they control for the vast individual differences that typically occur in people's verbal (and non verbal) responses.

One aspect of the experimental set up is worth further discussion. The participants were instructed to lie, rather than choosing to lie of their own accord. This happens in the vast majority of deception research (DePaulo et al., 2003; Vrij, 2008). The reason for this is that it provides maximum experimental control and avoids creating confounds. Regarding the latter, suppose that in a free choice deception experiment examining speech characteristics, all male participants chose to lie and all female participants chose to tell the truth. Are researchers then examining veracity related or gender related speech characteristics? In many ways being forced to lie also reflects real life. In many

situations people do not lie out of free choice but out of necessity, such as when people are asked about actions (e.g., criminal actions, cheating on partners) they want to keep secret.

Of course, allocating people to veracity conditions has its problems and limitations. It forces some people to lie who do not often lie in real life, and this may affect the findings in an unknown way. In the present experiment (as well as in most other deception research) this was addressed by informing participants in the recruitment advert that they may be asked to lie in the experiment. It is thought that this has prevented those who do not wish to lie or who feel particularly uncomfortable when lying from signing up for participation. Paradigms that aim to elicit lies from participants without instructing them to lie do exist however. To give two recent examples, Da Silva and Leach (2011) induced lying in participants by getting them to commit a transgression with a confederate who asked them not to say anything about the transgression in the forthcoming interrogation. This gave the participant the choice to either confess or lie. Carrión, Keenan and Sebanz (2010) created a paradigm in which the participants saw many stimuli and were allowed to choose to tell the truth about some and to lie about others. The participants' task in Carrión et al.'s (2010) experiment was to deceive the listener as often as possible.

The findings have implications for real life. When we (the authors) travel ourselves we noticed that most questions that immigration officers ask are about the purpose of the trip. We assume that these officers pay attention to the amount of detail generated when answering such questions. Our findings indicate that this may be an ineffective strategy, as we found that liars generate more details to such questions than truth tellers. If officers would like to apply the 'less detail indicates deceit' decision rule, they would do better to ask questions that liars have not expected and not prepared themselves for, such as questions about transportation for onward travel. Or even better, they should ask a mixture of expected and unexpected questions and pay attention to the ratio in the amount of detail generated to both types of question.

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