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The provenance of émigrés: the validity of measuring knowledge of places

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ABSTRACT

Establishing the origin of those seeking asylum is essential but difficult as asylum seekers often cannot corroborate their origin claim with documents. The aim of the present study was to assess whether asking knowledge questions, sketch questions and impossible questions are valid methods to determine the veracity of an origin claim. Participants ($N = 105$) from Tilburg (truth-tellers), Maastricht (partial liars) and Gothenburg (full liars) were asked to convince an interviewer that they originated from Tilburg. Half of them prepared and half of them did not prepare themselves for the interview. They were asked 10 knowledge questions typically asked to assess the credibility of origin claims, 4 impossible questions and 1 sketch question. Participants from Tilburg answered more questions correctly than participants from Maastricht and Gothenburg. Performance also improved with preparation. Even though the results did provide some support for the validity of assessing claims about origin by asking knowledge questions, the differences between the groups were modest, and it was impossible to correctly identify all truth-tellers and liars. Changing the output modality from verbal answering to sketching contributed to the credibility assessment of origin claims, whereas impossible questions were not discriminatory.

Immigration boards have to assess each asylum claim individually (Qualification Directive, 2011). They have to find answers to questions, such as 'Is this man truly gay, and was he therefore persecuted in Senegal?', and 'Could not the Afghan government protect this family from being terrorized by the Taliban?' Note that besides a question about flight motives another element is enclosed: the nationality of the applicant. Origin, referring to both the applicant's nationality and home town, is an essential element in all asylum cases (Consterdine, Pendry, & McKinlay, 2013). In order to establish whether the asylum seeker has a genuine fear of persecution, the applicant's origin has to be established.

Only then can the asylum story be tested against what is known about the political and human rights situation in the country of origin.

In some cases, origin itself may even constitute a reason for asylum (EASO, 2015). If mere presence in a country may put someone in life-threatening situations, for example, due to indiscriminate violence and armed conflicts, EU countries may decide to temporarily grant a protection status to all asylum seekers from that country (Article 15C; Qualification Directive, 2011). Examples of countries to which such policies have been applied are Afghanistan, Iraq, Somalia and Syria (EASO, 2015). In other countries, such as Eritrea, the flight itself may impose a threat on the asylum seeker upon return, because fleeing the country is considered a crime (UK Home Office, 2013).

Proving or disproving claims about origin is not always easy. Determining the country of origin of an applicant is relatively straightforward when someone has a passport or other identity documents. If the documents are authentic, the nationality of the applicant can be established with a reasonable degree of certainty (IND-Werkinstructie nr. 2010/14, 2010). However, many asylum seekers cannot provide proof of who they are and where they came from (European Migration Network [EMN], 2013). A lack of proof may be due to several reasons. Asylum seekers may have never possessed identity documents, they may have handed over their documents to smugglers, their documents may be lost or destroyed during the flight, or their documents are forged (Doornbos, 2004; van Liempt & Doomernik, 2006; Noll, 2005). Between 2007 and 2011 the proportion of undocumented asylum seekers ranged from 25% in Latvia to 94% in Sweden and Norway (EMN, 2013). For these asylum seekers a credibility assessment of their claim about origin is inevitable.

To establish the credibility of an origin claim, immigration boards pose a set of questions to the asylum seeker about the country and region of origin (Doornbos, 2006; EMN, 2013). Two recent studies showed that, in order to assess the veracity of origin claims, asylum officials ask questions about the applicant's immediate living environment, flight, identity documents, personal background and country of origin (van Veldhuizen, Horselenberg, Landström, Granhag, & van Koppen, 2016; van Veldhuizen, Maas, Horselenberg, & Van Koppen, 2016). Applicants may, for example, be asked to name certain landmarks in their city of origin, to describe the route from one place to another, how identity documents can be acquired and what they look like, and what events took place in the country of origin prior to their flight. The applicant's answers to those questions are compared to available information about the country of origin that the authorities assemble in country of origin information (COI) reports (Doornbos, 2006; EMN, 2013; United Nations High Commissioner for Refugees [UNHCR], 2013). If the applicant is able to answer most of the questions, and if the answers are consistent with COI, the origin claim will likely be deemed credible (UNHCR, 2013).

Asylum officials seem to hold the assumption that somebody who truly originates from a specific country or area should also hold ample knowledge about that environment, its customs, and frequently encountered objects (van Veldhuizen, Horselenberg, Landström, et al., 2016; van Veldhuizen, Maas, et al., 2016). This assumption is related to two indicators often used to assess the credibility of statements in the asylum procedure, namely *sufficiency of detail* and *consistency with available specific and general information* (UNHCR, 2013).

When considering the capacities of human memory, it is questionable whether this assumption is valid. If the assumption is valid, you would expect truthful applicants to be able to answer a large proportion of the knowledge questions accurately and in detail. In

contrast, applicants who lie about their origin should not be able to provide equally accurate and detailed answers. Several memory limitations may conceal this difference between truth-tellers and liars (van Veldhuizen, Horselenberg, & Van Koppen, 2016). First, questions may address knowledge that the applicant does not have because the information was never attended to, or stored, in the first place. People have to pay attention to information in order to store it in memory (Chun & Turk-Browne, 2007; Conway & Pleydell-Pearce, 2000; Cowan, 1988; Knudsen, 2007). Hence, asking questions about a specific church, river or village in the environment is only sensible if the applicant has memories about those locations. Similarly, in order to be able to provide a statement about the local currency, an applicant has to have used that money. Even if the applicant has used money in his or her home country, it is questionable how much attention has been paid to its lay-out, and thus how detailed the description of the money would be (Nickerson & Adams, 1979). Second, questions may address episodic knowledge which, despite previously being held by the applicant, has faded by the time of questioning. Memory becomes weaker over time, and the more time passes between the formation of memory and the retrieval, the less likely it is that the applicant will be able to provide a rich statement (Janssen, Rubin, & St. Jacques, 2011; Nørby, 2015; Wagenaar, 1986). Third, there may be factors hindering retrieval at the time of the interview. If the used retrieval cues diverge from how the information was stored in memory, it may be difficult for the applicant to provide an answer (Smith & Vela, 2001; Tulving & Thomson, 1973). For example, an applicant who was a store owner in his country of origin probably stored a mental image of the store from the owner's perspective. As a result, a more comprehensive description of the store may be obtained by asking 'Standing behind the counter and looking into the store, what did you see?' than by asking 'What would I see if I entered your store?' In addition, the stress induced by the interview setting and high stake situation may also hinder a truth-teller to provide a detailed account, since stress impairs memory retrieval (Buss, Wolf, Witt, & Hellhammer, 2004; Deffenbacher, Bornstein, Penrod, & McGorty, 2004; Smeets, 2011).

The differences between truth-tellers and liars may be further reduced if liars prepare for the interview. Liars who know that they are expected to have knowledge about their country and area of origin may search for information beforehand, thereby accumulating their knowledge about the alleged country of origin and closing in on truth-tellers.

These factors together will make it more difficult to find questions that truth-tellers, but not liars, will be able to answer. Because of these concerns, we tested the validity of the assumption that somebody who truly originates from a specific town also has ample knowledge about that town. Our aim was to examine to what extent truth-tellers can be expected to answer questions about their home town correctly, and to what extent liars are able to improve their performance by preparing for the interview. Correspondingly, our main research question was whether the questions typically used to assess claims about origin are valid, in the sense that they help to distinguish truth-tellers from liars, even when liars prepare for the interview. Despite hypothesizing truth-tellers to be comparatively more knowledgeable about the alleged home town, we did not expect the currently employed method of credibility assessment to be sufficiently sensitive and specific. Hence, we examined whether a decision criterion could be formulated on the basis of which most genuine applicants would be correctly identified (high sensitivity), whereas few of the lying applicants would be mistakenly identified as genuine (high specificity) (Altman & Bland, 1994). An additional aim was to develop a new experimental

paradigm to evaluate the validity of knowledge questions to assess the veracity of an origin claim.

A secondary purpose was to explore whether lie detection tools that have been found to be effective in law enforcement settings could also be effective in the context of assessing origin claims. In recent years, a cognitive approach to lie detection has been developed (Vrij, Fisher, Mann, & Leal, 2008; Vrij, Granhag, Mann, & Leal, 2011). The basic idea behind the approach is that lying is more cognitively demanding than telling the truth, and that liars and truth-tellers use different strategies when being interviewed. Many different techniques can be used to exploit these differences between truth-tellers and liars, and to improve the detection of deception. Examples are increasing cognitive load, encouraging interviewees to say more, and asking unanticipated questions (e.g. Nahari, Vrij, & Fisher, 2014a; Vrij et al., 2009; Vrij, Fisher, Mann, & Leal, 2006; Vrij, Granhag, et al., 2011; Vrij & Granhag, 2012; Vrij, Mann, et al., 2008; Vrij, Mann, Leal, & Fisher, 2010).

We explored the effectiveness of two different techniques in the assessment of the veracity of origin claims. First, we changed the output modality from providing a verbal answer to drawing a sketch. Previous research has shown that liars and truth-tellers tend to provide an equal number of details when verbally describing an event or the lay-out of a location. In contrast, when asked to draw or sketch the situation or location, liars provide fewer details in the sketch than truth-tellers (Roos af Hjelmsäter, Öhman, Granhag, & Vrij, 2014; Vrij, Mann, Leal, & Fisher, 2011). The rationale behind changing the output modality is that liars normally anticipate to answer verbally; asking them to make a sketch is therefore unexpected. The benefit of asking unexpected questions is that liars rehearse a story, in which they anticipate to be asked certain questions. They include enough details in their story to appear credible. As long as the questions are expected, this strategy helps liars. When they are asked something unexpected, however, they are less flexible than truth-tellers. Whereas truth-tellers can rely on their memory, liars have to improvise, resulting in less accurate and less detailed answers (Leins, Fisher, & Vrij, 2012; Leins, Fisher, Vrij, Leal, & Mann, 2011; Roos af Hjelmsäter et al., 2014). Hence, we hypothesized that changing the output modality would be effective to assess the veracity of origin claims, because truth-tellers can rely on their memory for a place in their home town, whereas liars probably do not anticipate a sketch question, and therefore may not focus on the lay-out of places during preparation.

Second, we included impossible questions in the interview. In addition to being unexpected, these questions would also be irrelevant, resulting in even truth-tellers not being expected to know the answers. The technique was inspired by a study from Liu et al. (2010), who asked lying and truth-telling children event-irrelevant questions that were difficult – but not impossible – to answer. They asked, for example, 'What did you have in your pocket when you were stung by a bee?' The results showed that lying participants tried to answer these questions more often than truth-tellers. The reasoning behind this is that truth-tellers hold a so-called illusion of transparency (Granhag & Hartwig, 2008; Kassin, 2005). They think that everybody can read their inner state, and will consequently know that they are telling the truth. As such, truth-tellers feel confident enough to admit that they do not know the answer to a question. Liars, in contrast, employ different strategies to maintain their image (Hartwig, Granhag, Stromwall, & Doering, 2010). They do not want to appear avoidant, and may therefore be inclined to answer even very difficult

questions. We explored the merit of this theory in the context of assessing credibility of origin claims, by posing knowledge questions that are practically impossible to answer correctly (e.g. 'What are the geographical coordinates of Tilburg?'). It was hypothesized that truth-tellers would dare to indicate that they could not answer an impossible question more often than liars.

Method

Participants and design

A total of 105 participants (52 male; 53 female) were allocated over a 3 (origin: Tilburg vs. Maastricht vs. Gothenburg) × 2 (preparation: prepared vs. unprepared) quasi-experimental design. All participants had to convince the interviewer that they originated from Tilburg in the Netherlands. Participants from Maastricht and Gothenburg had never visited Tilburg before participating in the study, which was important to preclude that their answers to questions about Tilburg were based on a genuine memory trace. Hence, participants from Tilburg were truth-tellers ($N = 42$), participants from Maastricht in the Netherlands were partial liars because they could rely on their memory for questions about the Netherlands, but not for questions about Tilburg ($N = 24$), and participants from Gothenburg in Sweden were full liars ($N = 39$). Within each origin condition, participants were randomly assigned to a preparation condition. Participants from Tilburg had been living there for at least a full year (*max* = 27 years, *mode* = 3 years, *Mdn* = 5 years). One participant from Tilburg was excluded from the analyses because he did not have the Dutch nationality.

Participants from Tilburg ($M = 21.90$, SD = 2.29) were younger than participants from Gothenburg ($M = 26.82$, SD = 5.67) and Maastricht ($M = 28.54$, SD = 15.1). Age was therefore included in the main analyses as a covariate, but it had no influence on any of the analyses reported in the result section. Most participants had finished their secondary education (64.42%) and were enrolled in a bachelor university programme, 7.69% of the participants had finished a vocational training, 3.85% had a diploma from a university of applied sciences, 14.42% had a BA university degree, and 7.69% had a MA university degree. The participants rated their English proficiency as good with a mean of 7.13 (SD = 1.15) on a scale from 1 (very poor) to 9 (excellent), and there were no group differences in self-reported English proficiency, $ps > .18$.

Rewards and motivation

We used different rewards at the three locations in order to comply with university rules. Participants in Gothenburg were all included in a raffle to win an Asus Tablet 8.0. Participants in Maastricht and Tilburg could choose between being included in a raffle for an Asus Tablet 8.0, receiving a monetary compensation in the form of a €7.50 gift voucher, or earning a partial course credit. Despite the different rewards, all participants were equally motivated to convince the interviewer, $H(2) = 0.43$, $p > .80$, with a score of 6.80 (SD = 1.63) on a scale from 1 (not at all motivated) to 9 (very motivated). Nevertheless, we decided to include motivation as a covariate because of the unequal variances across the origin groups. Motivation did not affect any of the findings reported in the result section.

Procedure and materials

Participants were recruited in Tilburg, Maastricht and Gothenburg to participate in a study about persuasiveness. They were informed that their main task would be to convince an interviewer about their origin and that they might be asked to lie during the study. Participants signed a consent form and chose a reward for their participation. The study was conducted in English to ensure that all the participants had the same disadvantage of speaking a second language. We also believed that, compared to interviewing the participants in their native language, this would improve external validity of the study, because when interviewed through an interpreter (as is done in asylum interviews) or in a second language, people provide less detailed answers than in their mother tongue (Ewens et al., 2014).

Next, the participants were told that they had to convince an interviewer that they originated from Tilburg in the Netherlands, where they had lived until recently. The principle investigator also explicated whether the participant had to lie or tell the truth. The participants were reinforced by explaining that, depending on their performance in the interview their reward would be doubled (i.e. they were told that if they were persuasive either their monetary reward would be doubled, their chances of winning the tablet would be doubled, or they would receive a double course credit), or they would have to write an additional statement about their origin. They were asked to fill out their demographic variables and to rate their own English proficiency before continuing.

All participants were told that the interview would be about Dutch habits and traditions, the history of Tilburg and the landmarks in and around the city, and the street plan and geography of Tilburg. Participants in the preparation condition then prepared for the interview with the help of the internet. Google Chrome history viewer showed that they mostly used Wikipedia, Google Maps, and the municipality's website for preparation. The participants in the control condition played computer games (Super Mario, Sudoku, Tetris or Space Bubbles). There was an effect of origin on the extent to which the participants who prepared tried to find as much information as possible during the preparation phase, $F (2, 49) = 3.83$, $p < .03$, $\eta_p^2 = .14$. Participants from Tilburg ($M = 6.24$, SD $= 1.45$) reported trying less hard than participants from Maastricht ($M = 7.55$, SD $= 1.44$), $p < .05$, but tried equally hard as participants from Gothenburg ($M = 7.10$, SD $= 1.25$), $p = .15$. People from Maastricht and Gothenburg did not differ in their self-reported efforts to search for information, $p = 1$. With the means ranging from 6.24 to 7.55 on a 9-point Likert scale, regardless of their origin, all participants in the preparation condition reported that they had tried relatively hard to find as much information as possible during the preparation time.

After 20 minutes of preparation or playing games, the principle investigator asked participants to fill out a short questionnaire with four questions about the extent to which participants felt *ready for the interview* (Cronbach's $a = 0.81$). Participants were then escorted to the interview room (in Gothenburg and Maastricht), or the interviewer was asked to enter the room, and the principle investigator left (in Tilburg).

The interviewers (three different interviewers at each location) followed a strict protocol. They never probed and were given strict instructions about how to respond to questions from the interviewee. The interview consisted of 10 questions typically asked to

assess origin claims in the asylum procedure (van Veldhuizen, Horselenberg, Landström, et al., 2016; van Veldhuizen, Maas, et al., 2016), and were therefore considered to be *typical questions*. Four questions were *impossible questions*, and for one question we changed the output modality from verbal answering to *sketching*. An overview of the questions and the order in which they were asked can be found in Table 1.

Participants returned to the principle investigator to complete the final parts of the study. Participants in the preparation condition filled out the *preparation questionnaire*, consisting of four questions measuring the satisfaction with their preparation. All participants were asked to fill out the *post interviewing questionnaire*, which started off with questions about their experiences in the interview, motivation and estimations of their own success. For all interview questions, they were then asked to rate to what extent they had anticipated them before the interview, and to what extent they felt the questions were relevant to assess the veracity of an origin claim. Participants were thanked for their participation and debriefed.

Ethics

The study was approved by the Ethical Review Committee Psychology and Neuroscience (ERCPN) of Maastricht University. In line with ERCPN policies, participants were debriefed orally and in writing.

Coding and scoring of interview questions

All questions were coded by two coders.[1] The inter-rater reliability was calculated by computing Cohen's Kappa (κ) for dichotomous interview items and intraclass correlations (ICC) for continuous variables. A third coder clarified differential outcomes.

Table 1. A listing of the questions that were included in the interview in order of appearance in the interview. Behind each question the question type can be found.

No.	Question	Type
1	What is the primary religious affiliation in the Netherlands? Please do not take into account atheists or non-religious people?	Typical
2	Historically, which industry is Tilburg famous for?	Typical
3A	Do you possess a Dutch passport or identification card?	Typical
3B	Please describe in as much detail as possible your Dutch passport to me	Typical
4	What are the three largest cities surrounding Tilburg?	Typical
5	What are the geographical coordinates of Tilburg?	Impossible
6	Please describe as precisely as possible the flag of Tilburg	Typical
7	Which famous Dutch painter was educated in Tilburg?	Typical
8	Imagine that you are standing at City Hall Square, in Dutch called Stadhuisplein. Someone asks directions by foot to Hill Square, in Dutch called De Heuvel, how would you explain the route to them?	Typical
9	How much do the inhabitants of Tilburg on average appreciate the landscape in their neighbourhoods on a scale from 1, very poor, to 10, excellent?	Impossible
10	Please name as many city districts of the municipality of Tilburg as you know	Typical
11	Please describe as precisely as possible a 20-Euro note	Typical
12	How many inhabitants of 80 years and older did Tilburg have at the 1st of January 2014?	Impossible
13	Which important landmark of Tilburg borders directly at the City Hall Square (Stadhuisplein)?	Typical
14	Hill square, or in Dutch: the Heuvel, is an important landmark of Tilburg. Please make a sketch of the square on this form	Sketch
15	Now please with this pen, add all the lampposts in the sketch	Impossible

Typical questions

For all the typical questions a score between 0 and 1 was awarded. Answers to questions 1, 2, 7, 8 and 13 could be either correct (score = 1) or incorrect (score = 0). The average inter-rater agreement for these items was $K = 0.85$. Answers to questions 4, 6 and 10 could also be partially correct. To compute a relative score for questions 3 and 4, the number of detail that Dutch people can normally provide in their descriptions of these objects was taken into account. We conducted a pilot study in which 46 Dutch participants described a 20-euro note and their identity documents; 33 participants described their passport and 12 participants described their ID card. The number of details given in the current study was divided by the maximum number of reported details in the pilot study, which was 9 details for the 20-euro note ($M = 3.76$, SD = 1.92), 13 details for the passport ($M = 6.18$, SD = 2.93) and 7 details for the ID card ($M = 3.83$, SD = 1.80). The average ICC for the questions with a continuous score was 0.94.

While coding, we realized that the participants in Tilburg often confused *Stadhuisplein* (Town Hall Square) with *Willemsplein* (*William's square*), which is adjacent to *Stadhuisplein*. They tried to provide directions from there (question 8) or named a landmark bordering that square (question 13). An independent coder also coded questions with a more lenient approach. As such each participant was awarded both a regular score and a lenient score. The total performance was computed with the regular scores, but the analyses were also conducted with the lenient scores.

Impossible questions

For the impossible questions we coded whether or not the participants tried to answer the question or guess, and whether any doubt about the usefulness of the question was voiced. For each impossible question we therefore had an *answering* score of 0 (no answer) or 1 (answer given) and an *expressed doubt* score of 0 (no doubt) or 1 (expressed doubt). For the *answering score,* the average inter-rater agreement was substantial with $K = 0.68$. Because *expressed doubt* turned out to be an unreliable measure with $K = 0.51$, we could not interpret those scores and did not analyse them further.

Sketch question

For the sketch question the number of correct details in each sketch was counted. The count comprised the score for that question. The ICC for the two coders was 0.99.

Results

Validity of typical questions

Manipulation checks

An ANOVA on readiness for the interview was conducted to assess whether prepared participants would also feel more ready for the interview. The analysis yielded a main effect of origin, $F (2, 97) = 39.55$, $p < .001$, $\eta_p^2 = .45$. Participants from Tilburg felt more ready for the interview ($M = 5.98$, SD = 1.06) than participants from Maastricht ($M = 4.08$, SD = 1.65), $p < .001$, and Gothenburg ($M = 3.54$, SD = 1.16), $p < .001$. Preparation did not affect readiness for the interview, nor was there an interaction between preparation and origin for interview readiness, $ps > .25$.
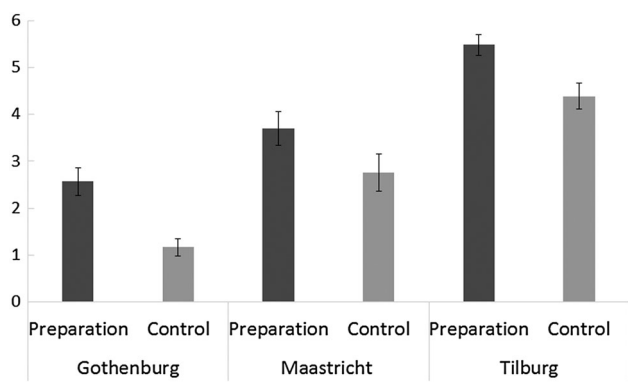
Figure 1. Mean performance scores disaggregated by origin and preparation conditions. Total scores could range from 0.00 to 10.00. Error bars represent standard errors corresponding to the group means.

Performance on the interview

An ANCOVA on the overall performance in terms of correct answers during the interview, with origin and preparation as independent variables and age and motivation as covariates, yielded a significant main effect of origin, F (2, 95) = 64.36, $p < .001$, $\eta_p^2 = .58$, and a main effect of preparation, F (1, 95) = 22.70, $p < .001$, $\eta_p^2 = .19$, but no interaction effect, $p = .73$. The results are displayed in Figure 1. Participants who prepared for the interview provided more correct answers, resulting in higher interview scores ($M = 3.97$, SD = 1.75) than participants in the control condition ($M = 2.77$, SD = 1.80). Independent of preparation, participants from Gothenburg scored lower ($M = 1.88$, SD = 1.31) on the interview than participants from Maastricht ($M = 3.27$, SD = 1.37), $p < .001$, who in turn scored lower than participants from Tilburg ($M = 4.96$, SD = 1.87), $p < .001$. The effects did not change after conducting the same analyses with the sum score that included the lenient scores for the questions related to Town Hall Square. Truth-tellers seem to have more knowledge about the town they claim to be from than liars. Liars can, however, enhance their performance on the interview by preparing.

Sensitivity and specificity of the interview. In an actual interview, the veracity of an individual claim has to be assessed. The percentages of applicants who would be identified as truthful are given for different cut-off values in Table 2. It is not possible to adopt a cut-off

Table 2. Percentages of participants in each condition who would 'pass' the origin interview for different cut-off performance scores on the interview.

Cut-off value	Gothenburg		Maastricht		Tilburg	
	Control (%)	Preparation (%)	Control (%)	Preparation (%)	Control (%)	Preparation (%)
8						0.0
7					0.0	9.5
6			0.0	0.0	5.3	28.6
5		0.0	9.1	15.4	36.9	66.7
4	0.0	15.0	18.2	38.5	63.2	95.2
3	5.3	35.0	36.4	76.9	78.9	100.0
2	10.6	70.0	72.7	84.6	100.0	100.0
1	57.9	90.0	100.0	100.0	100.0	100.0

value that results in a 100% correct classification of both truth-tellers and liars. With a cut-off value of two correct answers perfect sensitivity is reached, but 70% of the prepared liars would also pass the test, resulting in a specificity of only 30%. In contrast, a cut-off score of five correct answers results in perfect specificity, but then 63% of the unprepared truth-tellers would be falsely identified as liars, resulting in a sensitivity of only 37%. Thus, accurately differentiating between individual truth-tellers and liars based on knowledge about the home town seems difficult.

Performance on individual questions. It was also explored whether certain questions in the interview were more discriminatory than others. Since there were no significant interaction effects between origin and preparation for any of the questions, all $ps > .05$, the focus will be on the main effects.

For the questions with a continuous outcome, ANOVAs or – if the assumption of equal variances across groups was violated – Kruskal-Wallis and Mann–Whitney U-tests were conducted. The results, as can be seen in Table 3, show that even though questions 6 (description of the Tilburg flag) and 10 (the naming of town districts) did discriminate between people from Gothenburg and Tilburg, they could not discriminate between people from Maastricht and Tilburg. Furthermore, preparation enhanced performance on these questions. Therefore, these questions do not seem to be valid.

Question 11 (naming three surrounding cities) seems valid. Most participants in Tilburg could name all three cities correctly, and their score on this question was significantly higher than the scores of people from Maastricht and Gothenburg. Preparation did not enhance performance on this question.

Since questions 3 (describing identity documents) and 4 (describing the 20-Euro note) were about Dutch objects, people from Maastricht should have been able to rely on their memory for these questions and answer these questions truthfully. Indeed, people from Maastricht and Tilburg could describe the 20-Euro note in equal detail, and their descriptions were significantly more detailed than those from people from Gothenburg, where the local currency is the Swedish Krona. Contrary to expectations, participants in Tilburg gave a more detailed description of their identity documents than people from both Maastricht and Gothenburg. Thus, in the description of the identity documents, an unexpected difference between the participants from Tilburg and Maastricht emerged.

For questions with dichotomous outcomes, logistic regression analyses were conducted in which participants from Tilburg were compared to participants from Gothenburg (GOT vs. TIL) and Maastricht (MAAS vs. TIL). The results (see Table 4) showed that performance on the questions about religion and history could be predicted by preparation. Correct answers on the other questions could not be predicted by preparation, and were more valid to distinguish between truth-tellers and liars. The odds that participants from Gothenburg and Maastricht would correctly name Van Gogh as the painter who was educated in Tilburg were respectively 82% and 79% lower than the odds that participants from Tilburg would answer that question correctly. Similarly, with the lenient coding scheme described in the method section, the odds that participants from Tilburg would provide correct directions in response to question 8 were approximately 95% higher than for participants from Maastricht and Gothenburg. The scores obtained with the strict coding scheme were analysed with chi-squared analyses and followed a similar pattern. Accurate directions were more often than expected given by

Table 3. Means, standard deviations, and test outcomes of the scores on the questions with a continuous score between 0 and 1 broken down for origin and preparation.

Question No.	Type	Gothenburg M	SD	Maastricht M	SD	Tilburg M	SD	Origin	Control M	SD	Preparation M	SD	Prep.
3	ID documents	0.16[a]	0.11	0.25[a]	0.1	0.43[a]	0.12	$p < .001$	0.26	0.14	0.25	0.13	n.s.
4	20 Euro	0.19[a,b]	0.16	0.31[a]	0.15	0.34[b]	0.14	$p < .001$	0.30	0.17	0.25	0.16	n.s.
6	Flag*	0.09[a]	0.28	0.08	0.15	0.21[a]	0.31	$p < .04$	0.05	0.14	0.21	0.33	$p < .005$
10	Districts*	0.13[a]	0.18	0.23	0.24	0.33[a]	0.21	$p < .001$	0.15	0.22	0.30	0.18	$p < .001$
11	Cities*	0.03[a]	0.13	0.65[a]	0.33	0.94[a]	0.15	$p < .001$	0.51	0.45	0.56	0.45	n.s.

Note: Superscripts in rows indicate which origin groups scored significantly differently from each other. Means with the same superscript differ. Asterisks indicate that for these variables Levene's test was significant. For these variables we used Kruskal-Wallis tests to assess the effect of origin, and followed up with three Mann–Whitney U-tests. For the follow-up we used a Bonferroni correction. The effects of origin were assessed with a Mann–Whitney U-test.

Table 4. Percentages of correct answers and corresponding odd ratios on the dichotomous questions for the origin groups and preparation groups.

Question		Origin			Exp (B)		Preparation condition		Exp (B)
No.	Type	GOT (%)	MAAS (%)	TIL	GOT vs. TIL	MAAS vs. TIL	Control (%)	Preparation (%)	Preparation vs. control
1	Religion	36	63	59	0.26	n.s.	38	63	2.96
2	History	56	67	88	0.11	0.18	51	89	9.77
7	Painter	33	38	66	0.17	0.20	40	54	n.s.
8	Dir_strict	0	0	51	$p < .001$, $V = .62*$		20	20	n.s.*
	Dir_lenient	8	8	68	0.05	0.05	34	30	n.s.
13	LM_strict	3	8	15	n.s.	n.s.	4	13	n.s.
	LM_lenient	18	33	68	0.10	0.24	46	63	n.s.

Note: GOT stands for Gothenburg, MAAS stands for Maastricht, and TIL stands for Tilburg. The asterisk indicates that a chi-squared analysis was conducted to assess group differences, because complete separation prevented the use of logistic regression analyses.

people from Tilburg, $z = 4.40$, $p < .001$, and less often than expected by people from Gothenburg, $z = -2.80$, $p < .01$, and Maastricht, $z = -2.20$, $p < .05$. Question 13 (naming a landmark) did not result in any significant differences between the origin groups when a strict coding scheme was used. With a more lenient coding scheme, the odds that participants from Gothenburg and Maastricht named a correct landmark were 99% and 76% lower than the odds that participants from Tilburg gave a correct answer.

Alternative lie detection techniques

Manipulation checks

An ANOVA on self-rated cognitive demand with preparation and origin as independent variables yielded no effects, all $ps > .38$. Truth-teller and liars found the interview equally demanding with a mean score of 6.05 (SD = 1.90) on a scale from 1 (not at all) to 9 (very much).

As intended, unanticipated questions were truly experienced as unanticipated. A mixed measures ANOVA with question type (typical vs. unanticipated questions) as a within-subjects variable and origin and preparation as between-subject variables yielded a significant interaction effect between question type and preparation $F (1, 96) = 4.41, p = .038, \eta_p^2 = .04$. The typical questions were somewhat anticipated, regardless of whether participants were prepared (M = 5.10, SD = 0.15) or unprepared (M = 5.38, SD = 0.16), $F (1, 96) = 1.69, p = .18$. Unanticipated questions were always less expected than the typical questions, but even less expected for participants who prepared (M = 2.95, SD = 0.17) than for participants who did not prepare (M = 3.76, SD = 0.18), $F(1, 96) = 11.25, p = .001, \eta_p^2 = .11$. Thus, it is unlikely that participants prepared for the questions that were intended to be unanticipated.

A mixed measures ANOVA with question type as a within-subjects variable and origin and preparation as between-subjects variables only yielded a significant main effect of question type, $F(1, 98) = 225.56, p < .001, \eta_p^2 = .70$, indicating that questions intended as typical were rated to be more relevant to assess truthfulness of an origin claim (M = 6.43, SD = 0,93) than impossible questions (M = 3.68, SD = 1.76). The mean of 3.68 on a 9-point scale shows that, as intended, people perceived the impossible questions as moderately irrelevant.

Changing output modality

Because the assumption of equal variances was violated, a Kruskal-Wallis test was used to assess the relation between group membership and number of details in the drawing of Hill Square. Origin was significantly related to the number of correct details in the sketch, $H(2) = 67.31$, $p < .001$. Mann–Whitney U-tests with a Bonferroni correction (criterion: $\alpha = .017$) yielded that participants from Tilburg drew more details in the sketch ($M = 5.63$, $SD = 3.27$) compared to participants from Gothenburg ($M = 0.13$, $SD = 0.47$), $U = 113.00$, $z = -7.11$, $p < .001$, $r = -.79$, and participants from Maastricht ($M = 0.25$, $SD = 0.68$), $U = 79.00$, $z = -5.80$, $p < .001$, $r = -.72$. The drawings of people from Gothenburg and Maastricht were equally detailed, $U = 427.50$, $p = .29$. Preparation had no effect on the number of detail in the sketches, $U = 1324.00$, $p = .85$. Based on the drawings, the origin groups could be accurately distinguished from each other.

Impossible questions

An ANOVA with origin and preparation as independent variables on the eagerness to answer impossible questions showed that, contrary to our expectations, there were no differences between truth-tellers and liars in the eagerness to answer impossible questions. All participants were equally eager to answer the impossible questions, regardless of their origin, preparation or their interaction, $ps > .17$. On average participants tried to answer 70% ($SD = 15\%$) of the impossible questions. Most participants ($n = 71$, 68%) tried to answer three of the four impossible questions.

Discussion

We found some support for the validity of asking knowledge questions about the home town and country as a tool for credibility assessment of origin claims. Truthful participants had more knowledge about the alleged home town than lying participants. These results seem promising, but there are several reasons to be cautious to conclude that the questions typically asked in asylum interviews can help to determine whether an individual applicant is veracious. The number of questions that truth-tellers are able to answer correctly is modest, and liars can come close to truth-tellers by preparing for the interview.

Validity of typical questions

Overall, people from Tilburg (truth-tellers) performed better on the interview than people from Maastricht (partial liars), who in turn outperformed people from Gothenburg (full liars). At first sight, the assumption that individuals who truly originate from a specific town or area have ample knowledge about that place seems to be valid. Despite the group differences, however, the unprepared truth-tellers had only limited knowledge about their home town. On average, they only answered less than half of the questions correctly. In addition, unprepared truth-tellers only gave one or two correct answers more than prepared liars. It is questionable whether this difference is sufficient to be able to recognize a truth-telling or lying applicant in an asylum interview.

This problem is further illustrated by closing in on the specificity and sensitivity of the interview in relation to the relative importance attached to the prevention of Type I and Type II errors (see Figure 2). In the asylum context, falsely concluding that an origin

Truth about origin claim

	Veracious	Fabricated
Credible	Hit	Miss *Type II Error*
Not credible	False Alarm *Type I error*	Correct Rejection

Credibility assessment of origin claim

Figure 2. An illustration of possible outcomes in the credibility assessment of a claim about origin in terms of signal detection theory.

claim is fabricated (also called false alarms in signal detection theory; MacMillan, 2002) could lead to the return of asylum seekers to a country where they are at risk of persecution, or inhumane or degrading treatment (i.e. refoulement). This is forbidden for state authorities endorsing the Geneva Convention (United Nations, 1951). From that perspective, correctly identifying truth-tellers (i.e. maximizing the number of hits) is to be prioritized over correctly identifying liars (i.e. maximizing the number of correct rejections), and Type I errors (i.e. falsely expulsing a genuine asylum seeker) are worse than Type II errors (i.e. granting access to an illegitimate applicant). In other words, small percentages of misses may be acceptable, as long as they are compensated with a substantial decrease in the proportion of false alarms. There are, however, also negative consequences associated with misses. Failing to identify illegitimate asylum seekers may place a burden on the receiving society (e.g. Bond, 2012; Martin, Schoenholtz, & Fisher, 2005), but may also negatively affect genuine refugees. For example, the perception that many asylum seekers with economic motives gain access to the country could lead to distrust among the public about the deservingness of refugees (Verkuyten, 2004). Thus, even though the emphasis in asylum interviews should lie with truth-detection, misses should also be minimized. In the current experiment, the proportion of misses associated with acceptable levels of sensitivity was high, and probably unacceptable for state authorities.

A remedy could be to eliminate ineffective questions and to focus on the most discriminatory questions. For example, the ability to describe a 20-euro note was unaffected by preparation for the interview, and as intended people from Tilburg and Maastricht were able to provide more detailed answers than people from Gothenburg. The question thereby seems to be a relatively effective question to detect truthfulness. Yet, the descriptions from participants in both Tilburg and Gothenburg were neither very detailed, nor were they very far apart. It will be hard to correctly identify an individual as a truth-teller or a liar based on the little information in the answers, and taking into consideration the small difference between them. Truth-tellers did not give very detailed descriptions. They would for example state that the 20-euro note is rectangular, blue and has the number 20 on it. Of these three details, the rectangular shape and the fact that the number 20 is on the banknote may also be logically inferred by people who have never seen the 20-euro note (Nickerson & Adams, 1979). Thus even the questions that were

statistically speaking discriminatory, may not always be effective for individual decision-making.

Besides only knowing the answer to a modest number of questions, truth-telling participants also did not give a particularly detailed description of common Dutch objects. The low number of details could indicate that people have limited knowledge about these objects, or that they do not recall or report all the knowledge that they have. A limited knowledge about common objects is not too surprising, because people probably only pay attention to and remember characteristics that are relevant when using the object (Chun & Turk-Browne, 2007; Nickerson & Adams, 1979), such as the colour blue to quickly distinguish a 20-euro note from other banknotes.

Moreover, people may not report all the knowledge that they have in an interview setting. In the pilot study, people gave a slightly more detailed description of a 20-euro note and their identification documents than in the current study. Possible explanations for underreporting in the present study may be that, even for truthful participants, the interview was quite stressful, and that the stress induced by the interview impaired memory recall (Deffenbacher et al., 2004; Smeets, 2011). The stress experienced by applicants in real asylum interviews may be even higher (e.g. Bögner, Brewin, & Herlihy, 2009). Hence, stress is a factor that should be taken into account when evaluating the detail in asylum seekers' statements. An alternative explanation for underreporting is that the instructions about how much detail was required were unclear, and that the detail of the descriptions would improve with clear instructions to report everything (e.g. Memon, Meissner, & Fraser, 2010).

People may also appear less knowledgeable than they are when there is a misunderstanding about concepts. In the interview, two questions were asked in relation to *Stadhuisplein*. We realized that people from Tilburg often thought that the interviewer was referring to *Willemsplein*. In common parlance, those squares are often considered one square. The answers to the questions about *Stadhuisplein* may therefore strictly speaking be incorrect, even though the participant does have knowledge about the environment. Terminological misunderstandings can easily occur and could potentially lead to an incorrect assessment of the knowledge of an applicant about his home town.

Unclear instructions or terminological misunderstandings should be avoided as much as possible, as they may obscure the differences in knowledge about the alleged home town that exist between truth-tellers and liars. To correctly assess how knowledgeable a person is about his home town and commonly used objects, it may be beneficial to provide clear instructions about the comprehensiveness that is expected of answers, and to include a free recall phase in the interview about origin. Instructions that encourage the interviewee to report everything they know may help to obtain more information by reinforcing the memory of truth-tellers (Memon et al., 2010). It could also magnify differences between truth-tellers and liars, because truth-tellers want to be forthcoming whereas liars may want to keep their story concise (Granhag, Hartwig, Giolla, & Clemens, 2014). Explicitly communicating that the goal of the interview is to elicit as much verifiable information as possible prompts truth-tellers to provide more verifiable details, whereas liars tend to be unable to do so (Nahari et al., 2014a; Nahari, Vrij, & Fisher, 2014b). Future research could examine the effectiveness of such instructions in the context of assessing the veracity of origin claims.

A free recall phase could also reinforce truth-telling applicants to say more. A free recall allows the interviewee to identify topics that he or she has knowledge of and is able to talk about. This will provide the interviewer with topics that can be questioned further. In current asylum interviews, questions are mainly asked about places and objects that the interviewer deems relevant. It is uncertain whether truth-telling applicants have knowledge about these places and objects, and too little information is elicited to assess the credibility of their origin claim. A free recall phase helps the interviewer to adjust the questions asked to the applicants' experiences and life in the country of origin. Moreover, the terms provided by the interviewee in the free recall phase can be used in the remainder of the interview, thereby reducing the chances of terminological misunderstandings.

Truth-tellers may also be identified more easily with recognition tasks rather than recall tasks. Recognition is generally easier for people than recall, because it requires less depth of processing of the information (e.g. Yonelinas, 2001). Correspondingly, it may be easier for truthful asylum applicants to pick the correct banknote from five different notes, than to describe that banknote in detail from memory (Nickerson & Adams, 1979). For a lying applicant, who has never seen the banknote, this may be more difficult. In order for the recognition task to be valid, the task has to be unbiased just like line-up procedures for eye-witness identifications (e.g. Brewer & Palmer, 2010; Wells & Olson, 2003). Consider, for example, a recognition task with the 20-euro banknote. In a valid recognition task, there should be at least 5 alternatives, such that an identification of the real 20-euro note due to chance is highly unlikely (Brewer & Palmer, 2010). The alternatives should also be plausible alternatives, meaning that none of the banknotes should stand out (Brewer & Palmer, 2010). In addition, a lying applicant should never have seen the actual 20-euro note, because vague familiarity with the object may lead to a correct identification that is not indicative of truthfulness (Brewer & Palmer, 2010). Other conditions for a valid recognition task include that the instructions are unbiased (i.e. not steering the interviewee into a particular direction) and that the test-taker does not know the correct answer (Brewer & Palmer, 2010). Meeting all these conditions may not always be feasible in an asylum interview. Yet, if conducted properly, recognition tasks could potentially be a useful tool for a credibility assessment. Whether or not it is possible to distinguish between truthful and fabricated origin claims based on recognition tasks should be tested in future research.

Effectiveness of other lie detection techniques

In line with previous research (Leins et al., 2012; Roos af Hjelmsäter et al., 2014), changing the output modality was an effective technique to exploit differences between truth-tellers and liars. The participants from Tilburg drew more detailed sketches than participants from Maastricht and Gothenburg, who mostly produced sketches without a single correct detail. The benefits of using drawings in asylums interviews can be twofold. Besides aiding the recognition of fabricated origin claims, drawings may also help truth-tellers to remember more correct details (Dando, Wilcock, Behnkle, & Milne, 2010; Dando, Wilcock, & Milne, 2009).

On a cautious note, it must be acknowledged that all of our participants were from Northern Europe and relatively highly educated. There is some evidence suggesting that ecological and cultural differences influence the development of spatial awareness

(Berry, 1971; Segall, Campbell, & Herskovits, 1963). Before using drawings as a tool in the credibility assessment in asylum cases, it should be examined whether people from non-western cultures have an equal ability to draw a 2D visual representation of a physical environment as our western participants.

The use of impossible questions did not help to distinguish truth-tellers from liars. In contrast with prior research (Liu et al., 2010), all participants seemed to be eager to answer and give an estimation or guess. It should be noted that our impossible questions differed from the questions used by Liu and colleagues in one important respect: the accuracy or truthfulness of the answers to the questions that Liu et al. (2010) used could not be validated, whereas the answers to the questions we used were, in principle, verifiable. As a consequence, truthful participants in Liu et al.'s study may have felt more confident to admit not knowing the answer compared to our participants, because the interviewer could not know the answer either. Truth-tellers in the current study might have felt that admitting to lack this publicly available knowledge would infringe on their persuasiveness. Speaking against this reasoning is the finding that the impossible question of which the answer could in principal most easily be checked, that is, 'What are the geographical coordinates of Tilburg?', was the question to which most truthful participants admitted not knowing the answer. In contrast, the questions to which the answers were less easily accessible (e.g. 'How do the inhabitants of Tilburg on average appreciate the landscaping in their neighbourhood?') more often elicited an answer or a guess. Nevertheless, it might be worthwhile to test the validity of different kinds of impossible questions in the context of credibility assessments of origin claims in future studies.

Alternatively, the impossible questions may not have elicited differential responses from truth-tellers and liars in the current study because our truth-tellers experienced a high cognitive load. Whereas liars are normally thought to be higher mentally taxed than truth-tellers (Vrij, Fisher, et al., 2008; Vrij, Granhag, et al., 2011), our truth-tellers and liars found the interview equally cognitively demanding. Due to the difficulty that truth-tellers experienced in the interview, they may have been as eager to show off their knowledge as our lying participants. Although the high cognitive demand experienced by the truth-tellers is atypical compared to other lie detection studies, it may correspond to the factual situation in the asylum procedure. Truthful asylum seekers probably experience a high cognitive demand, due to cultural differences, language differences, and the high stakes associated with the outcomes of the interview (UNHCR, 2013). Combined with the burden of proof, that lies with asylum seekers rather than with authorities (Qualification Directive, 2011), this may instigate truthful asylum seekers to answer each question and guess if they can. It should therefore be emphasized in asylum interviews that it is better to admit to not know an answer than to guess.

Strengths and limitations

The present study was the first experimental study to assess the validity of questions typically asked in asylum interviews. One advantage of using a quasi-experimental paradigm was that we could approach the ground truth about origin. In order to test what people who rely on genuine memory know about their home town, we used participants whose origin could be established with a reasonable degree of certainty. Another advantage was that we could control for the fact that liars may prepare. In a

natural setting, there is no way of knowing to what extent asylum seekers have prepared for the interview.

Being the first study of its kind there were also some methodological limitations. First, we relied on self-reports to establish the origin of the participants. As such, we cannot be completely certain about their origin. We dealt with this limitation by already asking participants about their origin during their recruitment, before they knew that origin had a central place in the study. At that time, participants had no obvious reason to lie about their origin. In a replication of the study, participants could be asked to bring identification documents to the study to establish the ground truth with complete certainty.

Similarly, we used self-reports to establish whether our lying participants had ever visited Tilburg. Participants could potentially have lied. To minimize the chance of lying, participants were asked whether they had ever visited Tilburg prior to informing them about the purpose of the study. In Maastricht, we asked potential participants to fill out a pre-study questionnaire on which they had to indicate which of the 10 largest Dutch cities they had ever visited. Only those who did not tick the box next to Tilburg were invited for participation in the study. There was no reason to lie about a visit to Tilburg, and we assume that our participants were truthful about this matter. Still, the results should be interpreted with this limitation in mind.

Second, the interviewers and the coders were not blind to the origin condition. It could be the case that coders were more lenient or stricter if they knew that a participant was lying. A difficulty with blind coding was that coders could have inferred from the videos where the interview was conducted, for example, due to the fact that the interview rooms were different at the different test-locations, but also because of differences in English accents of people from Gothenburg, Maastricht and Tilburg. We used strict coding schemes to account for this issue and believe that this minimized the potential influence of the coders' knowledge on the scores as much as possible.

A third limitation of the current study was that we conducted it among populations who do not share a language. In real asylum interviews, someone who would claim to be from the Netherlands without speaking a word of Dutch, would not be very credible. Our Swedish participants would therefore not be very credible in a real asylum interview. As we used strict coding schemes, we do not think that the scoring of the participants' answers was in any way influenced by the language differences. However, future studies may design a more realistic setting by using truth-tellers and liars who share a language, for instance Spanish-speaking Chileans and Spanish-speaking Ecuadorians. If interviewees share a mother tongue, an interpreter may also be introduced to the experiment to translate the interviews. With an interpreter, the ecological validity of the study can be further increased.

Fourth, it proved difficult to find people in Maastricht who had never visited Tilburg. As a result we only had a limited number of participants in the partial liars' condition. Because of the small sample of partial liars, we checked whether the results would change without this group. The results were similar if the group was excluded from the analyses, but the results regarding partial liars should nevertheless be interpreted with caution.

Finally, the process of preparation was simplified. Preparation did not make people feel more ready for the interview. Delving into the preparation experiences, it was revealed that especially liars found preparation difficult, and they indicated that they had too little time to prepare. Perhaps the preparation phase confronted liars with all the

information that they did not have, and overwhelmed them rather than making them feel more prepared. In real life, liars may prepare for a longer period of time. Yet even with the limited preparation time, preparation did improve performance on the interview.

Conclusion

In conclusion, asylum officials seem to rightfully assume that truth-tellers have more knowledge about their home town than liars. However, even though truth-tellers may be able to outperform liars in an interview, they generally seem to have limited knowledge about their surroundings and they sometimes report less than they know. In addition, the difference between liars and truthful applicants can be reduced by the liars preparing for the interview. As such, it seems very difficult to determine whether or not individual applicants are veracious about their origin, based on the questions that we evaluated. Note that this was the first study to examine the validity of knowledge questions for the purpose of credibility assessments and to explore the possible application of cognitive lie detection techniques to the asylum context. More research with more culturally diverse samples is necessary to support the conclusions drawn above. Future research should also look into ways in which the sensitivity and specificity of the credibility assessment of claims about origin can be improved. Nevertheless, the results show that there is some merit in the currently employed techniques, but that immigration boards should be careful to equate limited knowledge about one's home town to lying. Even people who are veracious about where they came from, do not have a perfect memory about their country and town of origin.

Note

1. The specific coding schemes can be provided by the first author upon request.

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