PLOS ONE

RESEARCH ARTICLE

Lie prevalence, lie characteristics and strategies of self-reported good liars

Brianna L. Verigin[1,2]*, **Ewout H. Meijer**[1], **Glynis Bogaard**[1], **Aldert Vrij**[2]

1 Forensic Psychology Section, Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands, **2** Department of Psychology, University of Portsmouth, Portsmouth, United Kingdom

* brianna.verigin@maastrichtuniversity.nl

Check for updates

OPEN ACCESS

Citation: Verigin BL, Meijer EH, Bogaard G, Vrij A (2019) Lie prevalence, lie characteristics and strategies of self-reported good liars. PLoS ONE 14 (12): e0225566. https://doi.org/10.1371/journal.pone.0225566

Editor: Giuseppe Sartori, University of Padova, ITALY

Received: August 12, 2019

Accepted: November 7, 2019

Published: December 3, 2019

Peer Review History: PLOS recognizes the benefits of transparency in the peer review process; therefore, we enable the publication of all of the content of peer review and author responses alongside final, published articles. The editorial history of this article is available here: https://doi.org/10.1371/journal.pone.0225566

Copyright: © 2019 Verigin et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Data Availability Statement: The data underlying the results presented in the study are available from https://doi.org/10.17605/OSF.IO/GB4RP.

Funding: This research was supported by a fellowship awarded from the Erasmus Mundus

Abstract

Meta-analytic findings indicate that the success of unmasking a deceptive interaction relies more on the performance of the liar than on that of the lie detector. Despite this finding, the lie characteristics and strategies of deception that enable good liars to evade detection are largely unknown. We conducted a survey ($n = 194$) to explore the association between laypeople's self-reported ability to deceive on the one hand, and their lie prevalence, characteristics, and deception strategies in daily life on the other. Higher self-reported ratings of deception ability were positively correlated with self-reports of telling more lies per day, telling inconsequential lies, lying to colleagues and friends, and communicating lies via face-to-face interactions. We also observed that self-reported good liars highly relied on verbal strategies of deception and they most commonly reported to i) embed their lies into truthful information, ii) keep the statement clear and simple, and iii) provide a plausible account. This study provides a starting point for future research exploring the meta-cognitions and patterns of skilled liars who may be most likely to evade detection.

Introduction

Despite the importance of being able to detect deception, research has consistently found that people are unable to do so. In fact, the accuracy rates vary around chance level [1, 2]. Lacking good lie detectors, a growing body of evidence indicates that the accuracy of detecting deception depends more on the characteristics of the liar and less on the lie detection ability of the judge [3–7]. The meta-analysis of Bond and DePaulo [3] provided robust evidence that liars vary in their detectability. Their analysis showed that differences in detectability from sender to sender are more reliable than differences in credulity from judge to judge, with reliability coefficients of .58 and .30, respectively. This pattern of results was replicated by other researchers [5], lending support to the proposition that liar characteristics exert a powerful influence on lie detection outcomes. Moreover, it has been shown that sender demeanour explained up to 98% of the variance in detection accuracy [7].

Yet, only a handful of studies have attempted to determine individual differences in the ability to lie credibly [8–12]. Research on what characterizes those who escape detection, i.e., good liars, would be highly beneficial in investigative settings. Thus, a focus on the liar, in

Joint Doctorate Program The House of Legal Psychology (EMJD-LP) with Framework Partnership Agreement (FPA) 2013-0036 and Specific Grant Agreement (SGA) 2016-1339 to Brianna L. Verigin. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing interests: The authors have declared that no competing interests exist.

particular the skilled liar, was the aim of this study. Specifically, the present manuscript reports an exploratory study addressing how self-reported deception ability is associated with lie prevalence and lie characteristics, and how self-reported good liars utilize strategies for deceiving.

First, we investigated the relationship between liars' self-reported lie-telling frequency and self-reported deception ability. The most widely cited research on deception prevalence estimates the frequency at an average of once or twice per day [13, 14]. More recent research, however, shows that the distribution of lies per day is considerably skewed. The majority of lies are told by only a handful of prolific liars [15–17]. Specifically, in a survey of nearly 3,000 participants, researchers found that 5% of respondents accounted for over 50% of all the lies reported within the past 24 hours, whereas the majority of subjects reported telling no lies at all [15]. Several additional studies, as well as a reanalysis of DePaulo et al.'s [13] diary study, have validated that the majority of lies are told by a minority of people [14, 16]. These few prolific liars tend to tell more serious lies that carry significant consequences if detected [15]. Also, people who self-reported to lie more often were more prone to cheating in laboratory tasks for personal profit [17]. It is possible that these prolific liars also perceive themselves as more skilled at deceiving and tell more lies that they think will stay undetected, either because they believe the receiver will not try to find out or they believe they are good enough to fool the receiver.

Second, our investigation examined whether characteristics of lies differ as a function of self-reported deception ability. The first of these characteristics is the type of lie. This can refer to the severity; at one end are white lies, which are relatively common [18] and often used to ease social interactions (e.g., telling your mother-in-law that her baking is delicious when you actually dislike sweets) [19], while at the other end are bold-faced fabrications, which are less common and typically serve to protect the liar (e.g., denying having had an affair) [20]. The latter type of lies are also encountered more by the legal system [21]. Other taxonomies of lies also exist, for example lies of omission or lies embedded into the truth; however, research has yet to explore how the types of lies could differ as a function of deception ability. Is it that, for example, good liars tend to utilize a certain type of lie which facilitates their success? The second characteristic is the receiver of the lie. Lies can be communicated to a variety of individuals ranging from family, romantic partners, and friends to strangers, colleagues, or authority figures. Previous research has shown that people lie less frequently in close relationships than in casual relationships [22]. A third characteristic we are interested in is the medium of deception, as this can also influence the success of one's lie. Some liars, for instance, prefer online communication [23]. This would fit the liars' (erroneous) belief their deception will leak out via behavioural cues [24]. It is unknown, however, if or how good liars concentrate their lies to specific individuals or communicate via certain mediums.

Finally, we examined how self-reported good liars utilize strategies for deceiving. The idea that liars adopt strategies to enhance the likelihood of successfully deceiving stems from research on impression and information management. Both forms of regulation relate to the idea that much of social behaviour is controlled for the purpose of interpersonal presentation [25, 26]. In legal contexts, both liars and truth tellers are motivated to achieve a favourable impression and attempt to do so by regulating their speech and behaviour, albeit liars more so than truth tellers [27]. The topic of deceivers' strategies has received some empirical attention [27–30]. For example, it was found that among the principal strategies of criminal offenders were "Staying close to the truth," and "Not giving away information" [31]. Researchers have also capitalized on this increased awareness of liars' and truth tellers' strategies by developing strategy-based lie detection tools. For instance, the Verifiability Approach (VA) [32, 33] exploits liars' strategy of providing detailed statements that are embellished with unverifiable information. Moreover, some researchers have speculated that good liars might use effective strategies to conduct their behaviour, by attempting to act in line with people's beliefs about

how truth tellers behave while avoiding behaviour associated with liars [10]. Still, surveying expert liars about their strategies as a source of insight into real-world deception remains a highly underdeveloped research avenue [34].

Materials and methods

This study was approved by the ethical committee of the Faculty of Psychology and Neuroscience at Maastricht University. Participants read and signed the informed consent in accordance with the Declaration of Helsinki.

Participants

The sample consisted of 194 participants (97 females; 95 males; 2 preferred not to say; M_{age} = 39.12 years, SD_{age} = 11.43) recruited via Amazon Mechanical Turk (mTurk). Most participants reported being U.S. citizens (n = 175), whereas the remainder (n = 19) reported Indian citizenship. Participants who completed the study were paid 1.75 USD. Participants could participate in the study if they reported to be able to understand and write English at an advanced level. To ensure data quality, participants were required to have the mTurk Masters Qualification that is awarded to those who have demonstrated continual excellence across a wide range of mTurk projects. An additional 133 participants began the questionnaire but did not complete it, therefore their data were discarded. Data from nine participants were also removed because of insufficient responses. We reached our sample size (n = 194) after these exclusions. The study was approved by the standing ethical committee.

Procedure

The online questionnaire was created on Qualtrics online platform. After providing informed consent, participants were provided definitions of lying and deception modelled from previous research [2, 13; see Supporting Information). Participants were asked to read these definitions carefully and to consider them while making responses throughout the questionnaire. In the first part of the questionnaire, participants reported their experience with telling lies in daily life. Participants rated on a 10-point Likert scale (1 –very poor to 10 –excellent) "How good are you at successfully deceiving others (i.e., getting away with lies)?" Next, they reported the estimated number of lies told during the past 24 hours. Participants then responded to multiple-response questions about i) the types of lies told during the past 24 hours (options: white lies, exaggerations, lies of omission/concealment, lies of commission/fabrications, embedded lies; see the Supporting Information for the definitions provided to participants); ii) the receivers of their deception (options: family, friend, employer, colleague, authority figure, or other); and iii) the mediums of their deception (options: face-to-face, over the phone, social media, text message, email, or other).

The second part of the questionnaire probed the deceiver's strategies. Participants provided an open-ended response to explain "In general, what strategy or strategies do you use when telling lies?" They were then asked to rate on a 10-point Likert scale (1 –not important to 10 –very important) how important they consider verbal strategies of deception and nonverbal strategies of deception to be for getting away with lies (for the definitions provided to participants, see the Supporting Information). Finally, participants indicated which verbal strategies they use when telling lies in general from a pre-determined set (options: reporting from previous experience, providing details the person cannot check [i.e., unverifiable details], telling a plausible story, etcetera). The options included in this list were drawn from empirical findings regarding liars' strategies and cues to deception [26, 32, 35]. Participants then provided demographic information regarding their age, sex, citizenship, ethnicity and education. We explored

the association between laypeople's self-reported deception ability and their sex and education level. Finally, an additional part of the questionnaire asked participants to recall a time in which they had told a serious lie and to report their rationale for lying and their strategies. We examined how the deception rationale influenced their motivation, preparation, strategies, and perceived success of the lie. To conserve manuscript length, the final section of the questionnaire is reported in the Supporting Information.

Qualitative analysis. To code the participants' self-reported strategies into data-driven categories, the first author performed a content analysis on the open-ended responses to the question probing their use of strategies. First, each participant's strategy or strategies was identified, then all overlapping responses were combined, and these strategies were condensed into several dominant categories with theoretical similarities (i.e., relating to behavioural control or verbal control, etcetera). The main coder completed each stage of this process and all authors approved upon the final categories. Seven categories emerged from this coding method, for example omitting certain information, relating to truthful information, or controlling behaviour (see Table 1).

To establish inter-rater reliability, the main coder and a second coder coded a randomly selected 20% of the participants' open-ended responses into the appropriate categories. A two-way mixed effects model measuring consistency [36] showed that raters were highly consistent across all categories (Single Measures *ICCs* ranged from .79 to 1.00). After confirming that the raters were consistent, the main coder (first author) completed the remaining sample of participant responses and only these scores were used in the analysis.

Results

We were interested in i) replicating previous findings regarding the distribution skewness of lie-telling frequency and exploring how these patterns relate to self-reported deception ability; ii) isolating lie characteristics as a function of deception ability; and iii) exploring the strategies of deception used by self-reported good liars.

Lie prevalence and characteristics

We investigated how laypeople lie in daily life by examining the frequency of lies, types of lies, receivers and mediums of deception within the past 24 hours. Overall, participants indicated telling a mean of 1.61 lies during the last 24 hours ($SD = 2.75$; range: 0–20 lies), but the distribution was non-normally distributed, with a skewness of 3.90 ($SE = 0.18$) and a kurtosis of 18.44 ($SE = 0.35$). The six most prolific liars, less than 1% of our participants, accounted for 38.5% of the lies told. Thirty-nine percent of our participants reported telling no lies. Fig 1 displays participants' lie-telling prevalence.

Participants' endorsement of the type, recipient, and medium of their lies are shown in Fig 2. Participants mostly reported telling white lies, to family members, and via face-to-face interactions. All lie characteristics displayed non-normal distributions (see the Supporting Information for the complete description).

Lie prevalence and characteristics as a function of deception ability. Next, we conducted correlational analyses to examine the association of our participants' lie frequency and characteristics with their self-reported deception ability. An increase in self-reported ability to deceive was positively correlated to a greater frequency of lies told per day, $r(192) = .22$, $p = .002$, and with higher endorsement of telling white lies and exaggerations within the last 24 hours ($r(192) = .16$, $p = .023$ and $r(192) = .16$, $p = .027$, respectively). There were no significant associations between self-reported deception ability and reported use of embedded lies, $r(192) = .14$, $p = .051$; lies of omission, $r(192) = .10$, $p = .171$; or lies of

Table 1. Endorsement of general qualitative deception strategies and descriptive statistics as a function of deception ability.

Interview Strategies	*N*	*M*	*SD*	X^2
Omitting certain information	76	0.39	0.49	$\chi^2(2) = 3.00$, $p = .223$, $V = .124$
Poor	25	0.49	0.51	
Neutral	**28**	**0.37**	**0.49**	
Good	23	0.34	0.48	
Providing certain information	49	0.25	0.44	$\chi^2(2) = 5.49$, $p = .064$, $V = .168$
Poor	7	0.14	0.35	
Neutral	20	0.27	0.45	
Good	**22**	**0.32**	**0.47**	
Relating to truthful information	49	0.25	0.44	$\chi^2(2) = 5.02$, $p = .081$, $V = .161$
Poor	7	0.14	0.35	
Neutral	**23**	**0.31**	**0.46**	
Good	19	0.28	0.45	
Behavioural control	39	0.20	0.40	$\chi^2(2) = 2.69$, $p = .260$, $V = .118$
Poor	9	0.18	0.39	
Neutral	12	0.16	0.37	
Good	**18**	**0.26**	**0.44**	
Miscellaneous strategies	44	0.23	0.42	$\chi^2(2) = 1.29$, $p = .524$, $V = .082$
Poor	9	0.18	0.39	
Neutral	17	0.23	0.42	
Good	**18**	**0.26**	**0.44**	
No strategy	10	0.05	0.22	$\chi^2(2) = 8.26$, $p = .016$, $V = .206$
Poor	**6**	**0.12**	**0.33**	
Neutral	4	0.05	0.23	
Good	0	0	0	
Not Applicable	15	0.08	0.27	$\chi^2(2) = 1.23$, $p = .540$, $V = .080$
Poor	4	0.08	0.27	
Neutral	4	0.05	0.23	
Good	**7**	**0.10**	**0.31**	

Note. The *N* column represents the number of participants who endorsed each strategy, both in the total sample and for Poor, Neutral and Good liars, respectively. The total number of endorsed strategies surpasses the sample size of 194 because each participant could report multiple strategies that may have fallen into more than one category. The bolded numbers represent the group with the highest endorsement of each strategy.

https://doi.org/10.1371/journal.pone.0225566.t001

commission, $r(192) = .10$, $p = .161$. Higher self-reported deception ability was significantly associated with telling lies to colleagues, $r(192) = .27$, $p < .001$, friends, $r(192) = .16$, $p = .026$, and "other" receivers of deception, $r(192) = .16$, $p = .031$; however, there were no significant associations between self-reported ability to lie and telling lies to family, employers, or authority figures ($r(192) = .08$, $p = .243$; $r(192) = .04$, $p = .558$; and $r(192) = .11$, $p = .133$, respectively). Finally, higher values for self-reported deception ability were positively correlated to telling lies via face-to-face interactions, $r(192) = .26$, $p < .001$. All other mediums of communicating the deception were not associated with a higher reported ability, as follows: Via phone conversations, text messaging, social media, email, or "other" sources ($r(192) = .13$, $p = .075$; $r(192) = .13$, $p = .083$; $r(192) = .03$, $p = .664$; $r(192) = .05$, $p = .484$; $r(192) = .10$, $p = .153$, respectively).

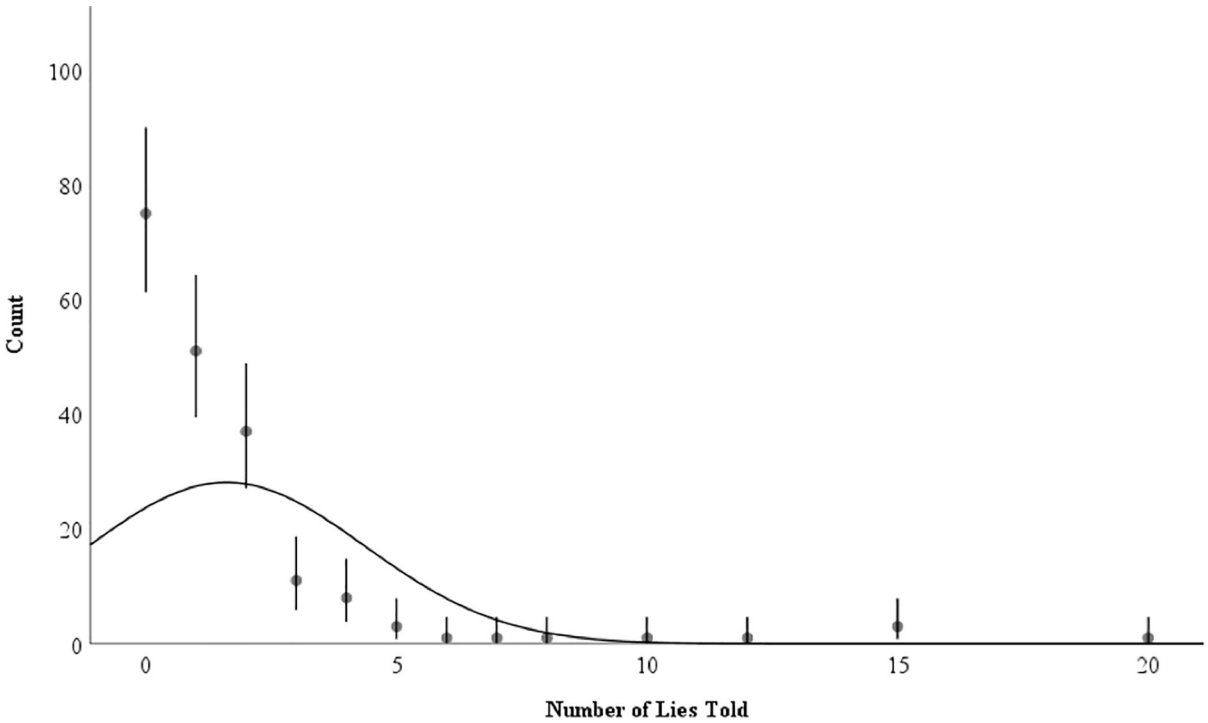

Fig 1. Scatterplot of participants' self-reported lie-telling frequency during the past 24 hours. The distribution curve represents the mean and standard deviation of the total sample. Error bars represent 95% confidence intervals.

https://doi.org/10.1371/journal.pone.0225566.g001

Deception strategies of good liars

We were also interested in exploring the strategies of deception, particularly those of good liars. To test this, we created categories representing participants' self-reported deception ability, using their scores from the question asking about their ability to deceive successfully, as follows: Scores of three and below were combined into the category of "Poor liars" (n = 51); scores of 4, 5, 6, and 7 were combined into the category of "Neutral liars" (n = 75); and scores of eight and above were combined into the category of "Good liars" (n = 68).

Table 1 provides an overview of the exact values regarding the endorsement of each deception strategy that emerged from the qualitative coding. To examine whether there were associations between the reported strategies and varying deception abilities, we conducted a series of chi square tests of independence on participants' coded responses to the question regarding their general strategies for deceiving. We did not observe any statistically significant associations between self-reported deception ability and the endorsement of any strategy categories (see Table 1), apart from one exception. We observed a significant association between Poor, Neutral and Good liars and the endorsement of using "*No strategy*". Pairwise comparisons were performed using Dunn's procedure [37] with a corrected alpha level of .025 for multiple tests. This analysis revealed a significant difference in endorsing *"No strategy"* only between the Good and Poor liars, p = .004. However, we did not meet the assumption of all expected cell frequencies being equal to or greater than five and as such these data may be skewed. Based on Cohen's guidelines [38], all associations were small to moderate (all Cramer's $Vs <$ .206).

Verbal and nonverbal strategies. To investigate whether participants differed in their endorsement of the importance of verbal versus nonverbal strategies based on their self-

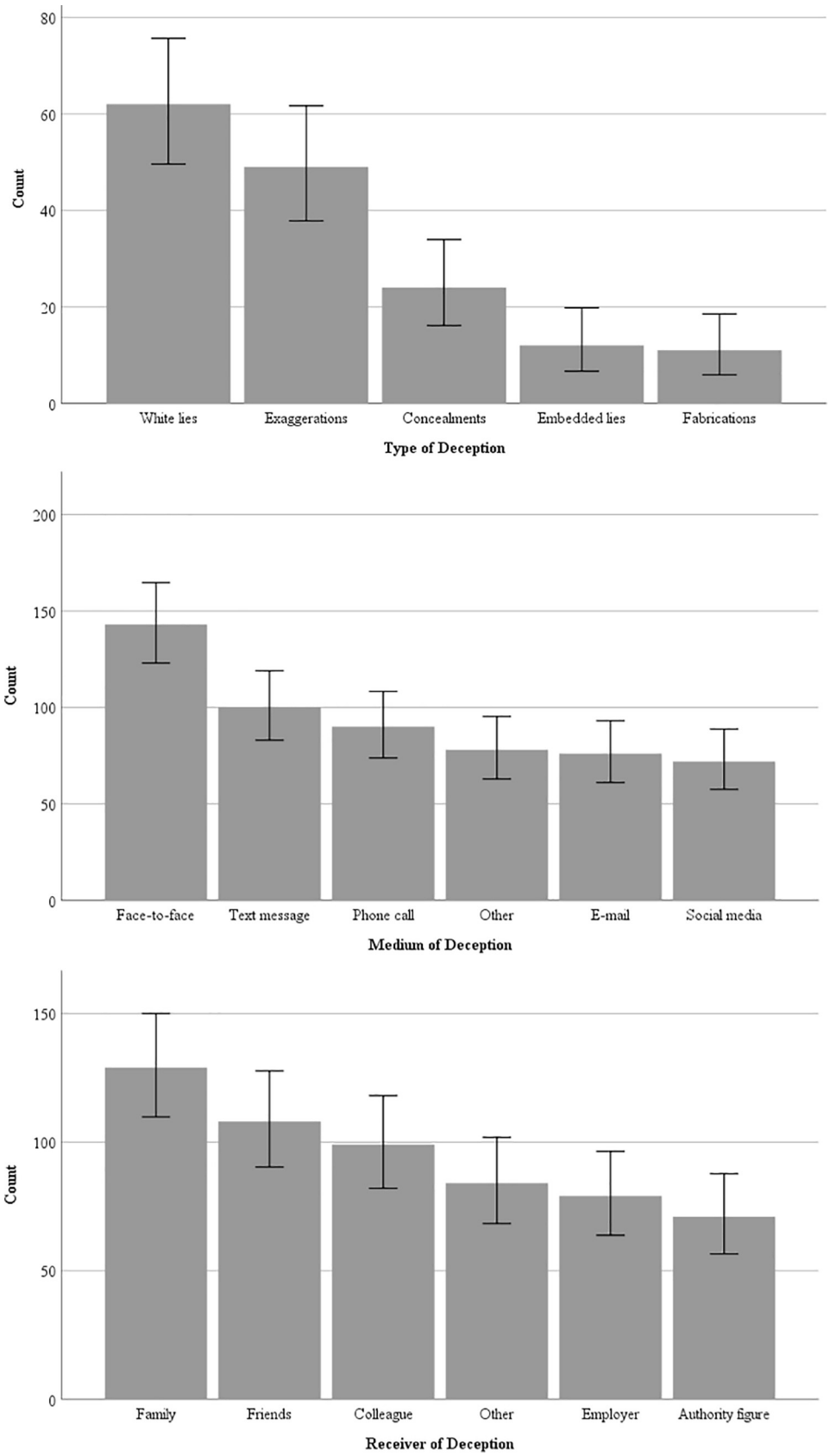
80
60
40
20
0
Count
White lies
Exaggerations
Concealments
Embedded lies
Fabrications
Type of Deception
200
150
100
50
0
Count
Face-to-face
Text message
Phone call
Other
E-mail
Social media
Medium of Deception
150
100
50
0
Count
Family
Friends
Colleague
Other
Employer
Authority figure
Receiver of Deception

Fig 2. Bar charts displaying the frequency of the types, receivers, and mediums of deception endorsed by participants for their reported lies during the past 24 hours. Error bars represent 95% confidence intervals. For deception recipients, "other" refers to individuals such as intimate partners or strangers; for deception mediums, "other" refers to online platforms not included in the provided list.

https://doi.org/10.1371/journal.pone.0225566.g002

reported deception ability, we conducted two between-subjects ANOVAs with deception ability (Poor, Neutral, Good) on participants' Likert scale ratings of the importance of verbal and nonverbal strategies. Additionally, the data were examined by calculating Bayesian ANOVAs with default prior scales, using JASP software. We report the Bayesian factors [*BF*; see 39, 40] in line with the guidelines by Jarosz and Wiley [39], adjusted from Jeffreys [41]. For ease of interpretation, BF_{10} is used to indicate the Bayes factor as evidence in favour of the alternative hypothesis, whereas BF_{01} is used to indicate the Bayes factor as evidence in favour of the null hypothesis.

First, we found a significant effect of self-reported deception ability on participants' endorsement of verbal strategies, $F(2, 191) = 5.62$, $p = .004$, $\eta_P^2 = .056$; $BF_{10} = 7.11$. Post hoc comparisons indicated that Good liars rated verbal strategies as significantly more important than Neutral liars ($M_{diff} = -0.82$, 95% CI [-1.47, -0.18], $p = .009$), and Poor liars ($M_{diff} = -0.83$, 95% CI [-1.54, -0.11], $p = .018$). Participants across groups did not differ with respect to their endorsement of the importance of nonverbal strategies, $F(2, 191) = .003$, $p = .997$, $\eta_P^2 < .001$; $BF_{01} = 18.55$.

Next, we examined which specific verbal strategies participants reported to use when lying. We asked participants to indicate, from a list of ten options, which strategies they use. Table 2 provides an overview of the strategies endorsed by Poor, Neutral, and Good liars. Across all groups, the most frequently reported strategies were "*Keeping the statement clear and simple*" (endorsed by 17.6% of participants), "*Telling a plausible story*" (15.1% of participants), "*Using avoidance/being vague about details*" (13.2% of participants) and "*Embedding the lie into an otherwise truthful story*" (13.1% of participants). To examine differences in the endorsement of the strategies across Poor, Neutral, and Good liars we conducted a series of one-way between-subjects ANOVAs. Significant differences emerged for eight of the strategies, as follows: "*Embedding the lie*," $F(2, 191) = 11.97$, $p < .001$, $\eta_P^2 = .111$; $BF_{10} = 1438.20$; "*Matching the amount of details in the deceptive component of the statement to the truthful component*," $F(2, 191) = 4.77$, $p = .010$, $\eta_P^2 = .048$; $BF_{10} = 3.32$; "*Matching the type of details of the deceptive component of the statement to the truthful component*," $F(2, 191) = 3.56$, $p = .030$, $\eta_P^2 = .036$; $BF_{10} = 1.15$; "*Keeping the statement clear and simple*," $F(2, 191) = 5.07$, $p = .007$, $\eta_P^2 = .050$; $BF_{10} = 4.15$; "*Telling a plausible story*," $F(2, 191) = 5.48$, $p = .005$, $\eta_P^2 = .054$; $BF_{10} = 5.98$; "*Providing unverifiable details*," $F(2, 191) = 4.95$, $p = .008$, $\eta_P^2 = .049$; $BF_{10} = 3.78$, and "*Avoidance*," $F(2, 191) = 3.79$, $p = .024$, $\eta_P^2 = .038$; $BF_{10} = 1.43$. Interestingly, Good liars reported using all of the above strategies significantly more than Poor liars (all $p's < .025$). The only exception was that Poor liars reported using the avoidance strategy significantly more than Good liars ($p = .026$). Finally, there were no significant differences between Good, Neutral, and Poor liars in endorsing "*Reporting from previous experience/memory*" ($F(2, 191) = 1.32$, $p = .268$, $\eta_P^2 = .014$; $BF_{01} = 5.96$), "*Using complete fabrication*" ($F(2, 191) = 0.57$, $p = .565$, $\eta_P^2 = .006$; $BF_{01} = 11.36$), and "*Using other strategies*" ($F(2, 191) = 0.51$, $p = .600$, $\eta_P^2 = .005$; $BF_{01} = 11.96$). See Table 2 for the exact values and applicable post hoc comparisons.

Exploratory testing of liar characteristics

Finally, we also explored the associations between sex and education level and laypeople's self-reported deception ability by conducting a series of chi square tests of association. We

Table 2. Endorsement of predetermined deception strategies and descriptive statistics as a function of deception ability.

Interview Strategies	*N*	*M*	*SD*	Bonferroni Comparisons	
				Poor	Neutral
Keeping the statement clear and simple	112				
Poor	20	0.39	0.49		
Neutral	49	0.65	0.48	**.010**	
Good	43	0.63	0.49	**.025**	1.00
Telling a plausible story	96				
Poor	17	0.33	0.48		
Neutral	36	0.48	0.50	.302	
Good	43	0.63	0.49	**.004**	.195
Avoidance	84				
Poor	28	0.55	0.50		
Neutral	35	0.47	0.50	1.00	
Good	21	0.31	0.47	**.026**	.167
Embedding the lie	83				
Poor	13	0.26	0.44		
Neutral	26	0.35	0.48	.850	
Good	44	0.65	0.48	**< .001**	**< .001**
Providing unverifiable details	76				
Poor	12	0.24	0.43		
Neutral	29	0.39	0.49	.251	
Good	35	0.52	0.50	**.006**	.338
Matching the *type* of details between lies and truths	71				
Poor	12	0.24	0.43		
Neutral	27	0.36	0.48	.453	
Good	32	0.47	0.50	**.025**	.503
Reporting from previous experience	55				
Poor	10	0.20	0.40		
Neutral	23	0.31	0.46	.535	
Good	22	0.32	0.47	.387	1.00
Matching the *amount* of details between lies and truths	38				
Poor	5	0.10	0.30		
Neutral	12	0.16	0.37	1.00	
Good	21	0.31	0.47	**.012**	.072
Using complete fabrication	14				
Poor	2	0.04	0.20		
Neutral	6	0.08	0.27	1.00	
Good	6	0.09	0.29	.930	1.00
Using other strategies	7				
Poor	3	0.06	0.24		
Neutral	2	0.03	0.16	1.00	
Good	2	0.03	0.17	1.00	1.00

Note. The *N* represents the number of participants who endorsed each strategy per group. Post hoc comparisons were conducted with the Bonferroni correction, and the *p*-values are displayed in the table. The bolded numbers represent the significant cell comparisons.

https://doi.org/10.1371/journal.pone.0225566.t002

observed a significant association between sex and deception ability, $\chi^2(2) = 12.31$, $p = .002$, $V = .253$. Further examination revealed that, of those who self-reported to be Poor liars, 70%

(n = 35) were female compared to 30% (n = 15) male. Additionally, of those who identified themselves as Good liars, 62.7% (n = 42) were male whereas 37.3% (n = 25) were female. Both column proportions were significantly different at the .05 level. We did not observe a significant association between participants' education level and their self-reported deception ability, $\chi^2(4) = 9.09$, $p = .059$, $V = .153$. The complete analyses are presented in the Supporting Information to conserve manuscript length.

Discussion

We found that self-reported good liars i) may be responsible for a disproportionate amount of lies in daily life, ii) tend to tell inconsequential lies, mostly to colleagues and friends, and generally via face-to-face interactions, and iii) highly rely on verbal strategies of deception, most commonly reporting to embed their lies into truthful information, and to keep the statement clear, simple and plausible.

Lie prevalence and characteristics

First, we replicated the finding that people lie, on average, once or twice per day, including its skewed distribution. Nearly 40% of all lies were reported by a few prolific liars. Furthermore, higher self-reported ratings of individuals' deception ability were positively correlated with self-reports of: i) telling a greater number of lies per day, ii) telling a higher frequency of white lies and exaggerations, iii) telling the majority of lies to colleagues and friends or others such as romantic partners, and iv) telling the majority of lies via face-to-face interactions. Importantly, skewed distributions were also observed for the other lie characteristics, suggesting that it may be misleading to draw conclusions from sample means, given that this does not reflect the lying behaviours of the average person. A noteworthy finding is that prolific liars also considered themselves to be good liars.

The finding that individuals who consider themselves good liars report mostly telling inconsequential lies is somewhat surprising. This deviates from the results of a previous study, which showed that prolific liars reported telling significantly more serious lies, as well as more inconsequential lies, compared to everyday liars [15]. However, small, white lies are generally more common [18] and people who believe they can get away with such minor falsehoods may be more inclined to include them frequently in daily interactions. It is also possible that self-reported good liars in our sample had inflated perceptions of their own deception ability because they tell only trivial lies versus lies of serious consequence.

Regarding the other lie characteristics, we found a positive correlation between self-reported deception ability and telling lies to colleagues, friends and others (e.g., romantic partners). This variation suggests that good liars are perhaps less restricted in who they lie to, relative to other liars who tell more lies to casual acquaintances and strangers than to family and friends [22]. Our results also showed that good liars tended to prefer telling lies face-to-face. This fits the findings of one of the only other studies to examine characteristics of self-reported good versus poor liars, which found that self-perceived good liars most commonly lied via face-to-face interactions versus through text chat [42]. This could be a strategic decision to deceive someone to their face, since people may expect more deception via online environments [43]. As researchers continue to examine the nature of lying and to search for ways of effectively detecting deception, it is important to recognize how certain lie characteristics may influence individuals' detectability as liars.

Deception strategies

We also isolated the lie-telling strategies of self-reported good liars. People who identified as good liars placed a higher value on verbal strategies for successfully deceiving. Additional

inspection of the verbal strategies reported by good liars showed that commonly reported strategies were embedding lies into truthful information and keeping their statements clear, simple and plausible. In fact, good liars were more likely than poor liars to endorse using these strategies, as well as matching the amount and type of details in their lies to the truthful part/s of their story, and providing unverifiable details. A common theme among these strategies is the relation to truthful information. This fits with the findings of previous literature, that liars typically aim to provide as much experienced information as possible, to the extent that they do not incriminate themselves [35, 44]. Additionally, good liars used plausibility as a strategy for succeeding with their lies. This reflects the findings of the meta-analysis by Hartwig and Bond [45] that implausibility is one of the most robust correlates of deception judgements, and the results of DePaulo et al. [26] that one of the strongest cues to deception is liars' tendency to sound less plausible than truth tellers (d = -0.23).

We also found that self-reported poor liars were more likely than good liars to rely on the avoidance strategy (i.e., being intentionally vague or avoiding mentioning certain details). Previous research suggests that this is one of the most common strategies used by guilty suspects during investigative interviews [46]. Additionally, all liars in our study expressed behavioural strategies as being important for deceiving successfully. This could be explained by the widespread misconceptions about the associations between lying and behaviour, for example that gaze aversion, increased movement or sweating are behaviours symptomatic of deception [2, 47].

There was inconsistency in our data between the responses to the qualitative strategy question and the multiple-response strategy question. Based on the qualitative strategy data it seems that Good, Neutral, and Poor liars do not differ in their use of strategies. However, robust differences emerged when we evaluated participants' endorsement of the predetermined strategies. One explanation for this finding is the difficulty people perceive when they have to verbalize the reasons for their behavior. Ericsson and Simon [48] suggest that inconsistencies can occur especially when the question posed is too vague to elicit the appropriate information, which might have been the case in our study. Another explanation for the discrepancy in the data between the two measurement procedures is that data-driven coding is inherently susceptible to human subjectivity, error, and bias [49, 50]. Such limitations apply to a lesser extent to coding based on predetermined categories that are derived from psychological theory, an approach which has been heavily used within the deception literature [2]. In any case, future research should continue exploring the deception strategies of good liars using a variety of methodological approaches. In particular, it would be beneficial to establish more reliable techniques for measuring interviewees' processing regarding their deception strategies. One potential idea could be to explore the effectiveness of using a series of cued questions to encourage the recall of specific aspects of interviewees' memory or cognitive processing. Another suggestion is to combine the data-driven and theory-driven approaches, whereby the coding system is generated inductively from the data but the coders draw from the theoretical literature when identifying categories [50].

Limitations

Some methodological considerations should be addressed. First, the results of the present study are drawn from participants' self-reports about their patterns of deception in daily life. Sources of error associated with such self-report data limit our ability to draw strong inferences from this study. However, previous research has validated the use of self-report to measure lying prevalence by correlating self-reported lying with other measures of dishonesty [17]. Moreover, self-report data may not be as untrustworthy as critics argue, and in some

situations, it may be the most appropriate methodology [51]. This study was intended as an initial examination of the strategies and preferences of good liars, and surveying liars for their own perspectives provided a novel source of insight into their behaviour. A constraint to the generalizability of this research is that we did not establish the ground truth as to whether self-reported good liars are indeed skilled deceivers. Future research could attempt to extend our findings by examining deceivers' lie frequency, characteristics, and strategies after systematically testing their lie-telling ability within a controlled laboratory setting.

Second, one of the most frequent concerns about using Amazon MTurk relates to low compensation and resulting motivation [52, 53]. We took measures to ensure that our remuneration to participants was above the fair price for comparable experiments. Importantly, data collected through MTurk produces equivalent results as data collected from online and student samples [52, 54–58]. As well, mTurk surveys have been shown to produce a representative sample of the United States population that yields results akin to those observed from more expensive survey techniques, such as telephone surveys [57]. It speaks to the validity of our data, for example, that the self-reported prevalence of lies, and the endorsement of nonverbal deception strategies, replicates previous research. Nonetheless, the results of this study could be advanced if future research i) directly replicates our survey amongst different populations, for instance university students, and ii) conceptually replicates this research by evaluating different methodological approaches for measuring deception ability (e.g., via controlled evaluation) and good liars' strategies for deceiving (e.g., via cued recall).

Implications and future research

This study explored the deception characteristics and strategies used by self-reported good liars. Deception researchers generally agree that the most diagnostic information is found in the content of liars' speech [59]. Content-based cues to deception, however, may be less effective for detecting good liars who rely highly on verbal strategies of deception. This could even offer an explanation for the modest effect sizes observed in the deception literature [60]. For instance, good liars in our study reported to strategically embed their lies into truthful information. This finding has potential implications for the reliability of credibility assessment tools that derive from the assumption that truth tellers' statements are drawn from memory traces whereas liars' statements are fabricated from imagination [61, 62]. If good liars draw on their memory of truthful previous experiences, then their statements may closely resemble those of their truth telling counterparts. Another interesting observation was that self-reported good liars were more likely than poor liars to provide unverifiable details. This fits with the findings of previous literature on the VA, which contends that liars provide information that cannot be verified to balance their goals of being perceived as cooperative and of minimizing the chances of falsification by investigators [32, 33]. A fruitful avenue of future research could be to further explore liars' strategic inclusion of truthful information and unverifiable details. Doing so may give lie detectors an advantage for unmasking skilled liars. It would also be interesting for future research to examine how good versus poor liars are affected by certain interview techniques designed to increase the difficulty of lying such as the reverse-order technique [63].

Conclusion

In sum, this study yields new insights into the deception prevalence, characteristics, and strategies used by self-reported good liars. We replicated the finding that a minority of individuals account for the majority of lies told in daily life, and we provide evidence that these prolific liars also consider themselves good liars. We unveiled several lie characteristics of good liars:

They lean towards telling inconsequential lies, mostly to colleagues and friends, and generally via face-to-face interactions. Additionally, our results showed that self-reported good liars may attempt to strategically manipulate their verbal behaviour to stay close to the truth and to tell a plausible, simple, and clear story. This study provides a starting point for further research on the meta-cognitions and patterns of skilled liars, who may be more likely to evade detection in investigative settings.

Supporting information

S1 File. Questionnaire definitions: Deception and strategies.
(DOCX)

S2 File. Lie characteristics and distribution skewness.
(DOCX)

S3 File. Exploratory testing of liar characteristics.
(DOCX)

S4 File. Questionnaire part III: Recalling a serious lie.
(DOCX)

Author Contributions

Conceptualization: Brianna L. Verigin, Ewout H. Meijer, Glynis Bogaard.

Data curation: Brianna L. Verigin.

Formal analysis: Brianna L. Verigin.

Funding acquisition: Brianna L. Verigin.

Investigation: Brianna L. Verigin.

Methodology: Brianna L. Verigin.

Project administration: Brianna L. Verigin.

Resources: Brianna L. Verigin.

Supervision: Ewout H. Meijer.

Visualization: Brianna L. Verigin.

Writing – original draft: Brianna L. Verigin.

Writing – review & editing: Brianna L. Verigin, Ewout H. Meijer, Glynis Bogaard, Aldert Vrij.

References

1. Bond C, DePaulo B. Accuracy of Deception Judgments. Personality and Social Psychology Review. 2006; 10(3):214–234. https://doi.org/10.1207/s15327957pspr1003_2 PMID: 16859438
2. Vrij A. Detecting lies and deceit: Pitfalls and opportunities. 2nd ed. Hoboken, NJ; Chichester, West Sussex, England: John Wiley & Sons; 2008 Feb 19.
3. Bond C, DePaulo B. Individual differences in judging deception: Accuracy and bias. Psychological Bulletin. 2008; 134(4):477–492. https://doi.org/10.1037/0033-2909.134.4.477 PMID: 18605814
4. Bond C, Kahler K, Paolicelli L. The miscommunication of deception: An adaptive perspective. Journal of Experimental Social Psychology. 1985; 21(4):331–345.

5. Law MK, Jackson SA, Aidman E, Geiger M, Olderbak S, Kleitman S. It's the deceiver, not the receiver: No individual differences when detecting deception in a foreign and a native language. PloS One. 2018 May 3; 13(5):e0196384. https://doi.org/10.1371/journal.pone.0196384 PMID: 29723243
6. Levine TR. Examining sender and judge variability in honesty assessments and deception detection accuracy: Evidence for a transparent liar but no evidence of deception-general ability. Communication Research Reports. 2016 Jul 2; 33(3):188–94.
7. Levine TR, Serota KB, Shulman H, Clare DD, Park HS, Shaw AS, et al. Sender demeanor: Individual differences in sender believability have a powerful impact on deception detection judgments. Human Communication Research. 2011 Jul 1; 37(3):377–403.
8. DePaulo B, Rosenthal R. Telling lies. Journal of Personality and Social Psychology. 1979; 37 (10):1713–1722. https://doi.org/10.1037//0022-3514.37.10.1713 PMID: 512835
9. Riggio RE, Tucker J, Throckmorton B. Social skills and deception ability. Personality and Social Psychology Bulletin. 1987 Dec; 13(4):568–77.
10. Vrij A, Granhag PA, Mann S. Good liars. The Journal of Psychiatry & Law. 2010 Mar; 38(1–2):77–98.
11. Wright GR, Berry CJ, Bird G. "You can't kid a kidder": association between production and detection of deception in an interactive deception task. Frontiers in human neuroscience. 2012 Apr 17; 6:87. https://doi.org/10.3389/fnhum.2012.00087 PMID: 22529790
12. Wright GR, Berry CJ, Bird G. Deceptively simple. . . The "deception-general" ability and the need to put the liar under the spotlight. Frontiers in neuroscience. 2013 Aug 29; 7:152. https://doi.org/10.3389/fnins.2013.00152 PMID: 24009549
13. DePaulo B, Kashy D, Kirkendol S, Wyer M, Epstein J. Lying in everyday life. Journal of Personality and Social Psychology. 1996; 70(5):979–995. PMID: 8656340
14. George JF, Robb A. Deception and computer-mediated communication in daily life. Communication Reports. 2008 Nov 14; 21(2):92–103.
15. Serota KB, Levine TR. A few prolific liars: Variation in the prevalence of lying. Journal of Language and Social Psychology. 2015 Mar; 34(2):138–57.
16. Serota KB, Levine TR, Boster FJ. The prevalence of lying in America: Three studies of self-reported lies. Human Communication Research. 2010 Jan 1; 36(1):2–25.
17. Halevy R, Shalvi S, Verschuere B. Being honest about dishonesty: Correlating self-reports and actual lying. Human Communication Research. 2014 Jan 1; 40(1):54–72.
18. Feldman RS, Forrest JA, Happ BR. Self-presentation and verbal deception: Do self-presenters lie more?. Basic and applied social psychology. 2002 Jun 1; 24(2):163–70.
19. Vrij A. Deception: A social lubricant and a selfish act. Social communication. 2007:309–42.
20. Craig D. The Right to Silence and Undercover Police Operations. International Journal of Police Science & Management. 2003; 5(2):112–125.
21. Vrij A, Edward K, Roberts KP, Bull R. Detecting deceit via analysis of verbal and nonverbal behavior. Journal of Nonverbal behavior. 2000 Dec 1; 24(4):239–63.
22. DePaulo B, Kashy D. Everyday lies in close and casual relationships. Journal of Personality and Social Psychology. 1998; 74(1):63–79. https://doi.org/10.1037//0022-3514.74.1.63 PMID: 9457776
23. Van Swol LM, Braun MT, Kolb MR. Deception, detection, demeanor, and truth bias in face-to-face and computer-mediated communication. Communication Research. 2015 Dec; 42(8):1116–42.
24. Vrij A, Granhag PA, Porter S. Pitfalls and opportunities in nonverbal and verbal lie detection. Psychological science in the public interest. 2010 Dec; 11(3):89–121. https://doi.org/10.1177/1529100610390861 PMID: 26168416
25. DePaulo B. Nonverbal behavior and self-presentation. Psychological Bulletin. 1992; 111(2):203–243. https://doi.org/10.1037/0033-2909.111.2.203 PMID: 1557474
26. DePaulo B, Lindsay J, Malone B, Muhlenbruck L, Charlton K, Cooper H. Cues to deception. Psychological Bulletin. 2003; 129(1):74–112. https://doi.org/10.1037/0033-2909.129.1.74 PMID: 12555795
27. Hartwig M, Granhag PA, Strömwall LA. Guilty and innocent suspects' strategies during police interrogations. Psychology, Crime & Law. 2007 Apr 1; 13(2):213–27.
28. Colwell K, Hiscock-Anisman C, Memon A, Woods D, Michlik PM. Strategies of impression management among deceivers and truth-tellers: How liars attempt to convince. American Journal of Forensic Psychology. 2006(24):31–38.
29. Hartwig M, Granhag PA, Strömwall LA, Doering N. Impression and information management: On the strategic self-regulation of innocent and guilty suspects. The Open Criminology Journal. 2010 Jul; 3 (1):10–6.

30. Strömwall LA, Hartwig M, Granhag PA. To act truthfully: Nonverbal behaviour and strategies during a police interrogation. Psychology, Crime & Law. 2006 Apr 1; 12(2):207–19.
31. Strömwall LA, Willén RM. Inside criminal minds: Offenders' strategies when lying. Journal of Investigative Psychology and Offender Profiling. 2011 Oct; 8(3):271–81.
32. Nahari G, Vrij A, Fisher RP. Exploiting liars' verbal strategies by examining the verifiability of details. Legal and Criminological Psychology. 2014 Sep; 19(2):227–39.
33. Nahari G, Vrij A, Fisher RP. The verifiability approach: Countermeasures facilitate its ability to discriminate between truths and lies. Applied Cognitive Psychology. 2014 Jan; 28(1):122–8.
34. Nahari G, Ashkenazi T, Fisher RP, Granhag PA, Hershkowitz I, Masip J, et al. 'Language of lies': Urgent issues and prospects in verbal lie detection research. Legal and Criminological Psychology. 2019 Feb; 24(1):1–23.
35. Leins DA, Fisher RP, Ross SJ. Exploring liars' strategies for creating deceptive reports. Legal and Criminological Psychology. 2013 Feb; 18(1):141–51.
36. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for reliability research. Journal of chiropractic medicine. 2016 Jun 1; 15(2):155–63. https://doi.org/10.1016/j.jcm.2016.02.012 PMID: 27330520
37. Dunn O. Multiple Comparisons Using Rank Sums. Technometrics. 1964; 6(3):241.
38. Cohen J. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. New York: Psychology Press; 1988.
39. Jarosz AF, Wiley J. What are the odds? A practical guide to computing and reporting Bayes factors. The Journal of Problem Solving. 2014; 7(1):2–9.
40. Lee MD, Wagenmakers EJ. Bayesian cognitive modeling: A practical course. Cambridge university press; 2014 Apr 3.
41. Jeffreys H. Theory of probability. Oxford, UK: Oxford University Press.
42. Van Swol LM, Paik JE. Deciding how to deceive: differences in communication and detection between good and bad liars. Communication Quarterly. 2017 Oct 20; 65(5):503–22.
43. Whitty MT, Carville SE. Would I lie to you? Self-serving lies and other-oriented lies told across different media. Computers in Human Behavior. 2008 May 1; 24(3):1021–31.
44. Nahari G, Vrij A. Systematic errors (biases) in applying verbal lie detection tools: richness in detail as a test case. Crime Psychology Review. 2015 Jan 1; 1(1):98–107.
45. Hartwig M, Bond CF Jr. Why do lie-catchers fail? A lens model meta-analysis of human lie judgments. Psychological bulletin. 2011 Jul; 137(4):643. https://doi.org/10.1037/a0023589 PMID: 21707129
46. Granhag PA, Hartwig M. A new theoretical perspective on deception detection: On the psychology of instrumental mind-reading. Psychology, Crime & Law. 2008 Jun 1; 14(3):189–200.
47. Bogaard G, Meijer E, Vrij A, Merckelbach H. Strong, but Wrong: Lay People's and Police Officers' Beliefs about Verbal and Nonverbal Cues to Deception. Plos One. 2016; 11(6):e0156615. https://doi.org/10.1371/journal.pone.0156615 PMID: 27258014
48. Ericsson K, Simon H. Verbal reports as data. Psychological Review. 1980; 87(3):215–251.
49. Morrissey ER. Sources of error in the coding of questionnaire data. Sociological Methods & Research. 1974 Nov; 3(2):209–32.
50. Syed M, Nelson SC. Guidelines for establishing reliability when coding narrative data. Emerging Adulthood. 2015 Dec; 3(6):375–87.
51. Chan D. So why ask me? Are self-report data really that bad. Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences. 2009:309–36.
52. Landers RN, Behrend TS. An inconvenient truth: Arbitrary distinctions between organizational, Mechanical Turk, and other convenience samples. Industrial and Organizational Psychology. 2015 Jun; 8(2):142–64.
53. Chandler J, Shapiro D. Conducting clinical research using crowdsourced convenience samples. Annual review of clinical psychology. 2016 Mar 28;12.
54. Casler K, Bickel L, Hackett E. Separate but equal? A comparison of participants and data gathered via Amazon's MTurk, social media, and face-to-face behavioral testing. Computers in Human Behavior. 2013; 29(6):2156–2160.
55. Feitosa J, Joseph D, Newman D. Crowdsourcing and personality measurement equivalence: A warning about countries whose primary language is not English. Personality and Individual Differences. 2015; 75:47–52.

56. Simons DJ, Chabris CF. Common (mis) beliefs about memory: A replication and comparison of telephone and Mechanical Turk survey methods. PloS one. 2012 Dec 18; 7(12):e51876. https://doi.org/10.1371/journal.pone.0051876 PMID: 23272183

57. Fleischer A, Mead AD, Huang J. Inattentive responding in MTurk and other online samples. Industrial and Organizational Psychology. 2015 Jun; 8(2):196–202.

58. Crump MJ, McDonnell JV, Gureckis TM. Evaluating Amazon's Mechanical Turk as a tool for experimental behavioral research. PloS one. 2013 Mar 13; 8(3):e57410. https://doi.org/10.1371/journal.pone.0057410 PMID: 23516406

59. Bond CF Jr, DePaulo BM. Accuracy of deception judgments. Personality and social psychology Review. 2006 Aug; 10(3):214–34. https://doi.org/10.1207/s15327957pspr1003_2 PMID: 16859438

60. Luke TJ. Lessons from Pinocchio: Cues to deception may be highly exaggerated. Perspectives on Psychological Science. 2019 Jul; 14(4):646–71. https://doi.org/10.1177/1745691619838258 PMID: 31173537

61. Johnson MK, Raye CL. Reality monitoring. Psychological review. 1981 Jan; 88(1):67.

62. Steller M, Köhnken G. Criteria-based content analysis. In: Raskin DCed. Psychological methods in criminal investigation and evidence. New York: Spring Publishing Company. P. 217–45.

63. Evans JR, Michael SW, Meissner CA, Brandon SE. Validating a new assessment method for deception detection: Introducing a Psychologically Based Credibility Assessment Tool. Journal of Applied Research in Memory and Cognition. 2013 Mar 1; 2(1):33–41.