THE EASE OF LYING

Bruno Verschuere[1,2]*, Adriaan Spruyt[1], Ewout H. Meijer[2], & Henry Otgaar[2]

1. Department of Psychology, Ghent University, Henri Dunantlaan 2, B-9000 Ghent – Belgium

2. Faculty of Psychology and Neuroscience, Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands

* Corresponding author

E-mail: Bruno.Verschuere@ugent.be

Phone: +3292648622; Fax: +3292646489

RUNNING HEAD: EASE OF LYING

KEYWORDS: DECEPTION, RESPONSE INHIBITION; INTENTIONALITY

Abstract

Brain imaging studies suggest that truth telling constitutes the default of the human brain and that lying involves intentional suppression of the predominant truth response. By manipulating the truth proportion in the Sheffield lie test, we investigated whether the dominance of the truth response is malleable. Results showed that frequent truth telling made lying more difficulty, and that frequent lying made lying easier. These results implicate that 1) the accuracy of lie detection tests may be improved by increasing the dominance of the truth response and that 2) habitual lying makes the lie response more dominant.

Brain imaging studies on deception show that (1) lying is associated with activity in prefrontal brain regions (anterior cingulate, dorsolateral prefrontal and inferior frontal regions) that are critically involved in cognitive control, and (2) no area of the brain is systematically more active for truth telling than for deception (Christ, Essen, Watson, Brubaker, & McDermott, 2009; Spence & Kaylor-Hughes, 2008). These findings suggest that the truth constitutes the default of the human brain, and that lying involves intentional suppression of the predominant truth response. A long standing question is whether the truth is always the dominant response or whether deception may constitute the default in habitual or pathological liars (Dike, Baranoski, & Griffith, 2005; Grubin, 2005; Yang & Raine, 2006; Yang, et al., 2007). The present study is the first to examine whether the dominance of the truth response is malleable. This investigation also has important applied implications for lie detection: Malleability would suggest that the dominance of the truth response can be enhanced, thereby improving the diagnostic accuracy of lie detection.

Method

We examined whether response latencies and accuracy for truthful and deceptive answers to a critical set of questions in the Sheffield lie test (Fullam, Mckie, & Dolan, 2009; Spence, et al., 2001; Spence & Kaylor-Hughes, 2008; Spence, Kaylor-Hughes, Brook, Lankappa, & Wilkinson, 2008) were affected by a set of filler questions that either required a truth response or a lie response. Therefore, undergraduate students were randomly assigned to the *frequent truth* (*n* = 21), the *frequent lie* (*n* = 22), or the *control condition* (*n* = 20). They either received a monetary reward or course credit for their participation. After providing written informed consent and baseline information on 72 daily activities (i.e., Did you buy a newspaper?), participants performed a Sheffield lie test that consisted of 180 trials (see Footnote1): 72 test, 72 filler, and 36 catch trials, in random order. The 72 test trials consisted of 36 questions on daily activities that were presented twice, once requiring a truthful, and once requiring a lie response. The questions appeared centrally on the screen, with the possible responses appearing left (*Yes*) and right (*No*) below the questions. Crucially, the response labels appeared in yellow or in blue, and participants had been instructed in advance that one colour required a truthful response, and the other a lie (colours were counterbalanced). Acquisition of the colour rule was verified through a practice phase (error percentage during the last 12 practice trials: M = 13% SD = 9%). To manipulate dominant response strength, there were 72 filler trials, consisting of 36 questions that were presented twice. In the *frequent lie condition,* all filler questions required a lie response, in the *frequent truth condition* they all required a truthful response, and in the *control condition* they equally often required a lie and a truth response. Finally, to prevent strategic recoding of the task, there were 36 catch trials: The words *Yes* or *No* were presented centrally on screen (Johnson, Barnhardt, & Zhu, 2003). Participants were instructed to respond according to their meaning (i.e., press the *Yes* button for the word *Yes*, press the *No* button for the word *No*), irrespective of the colour of the response labels.

Results

INSERT FIGURE 1 HERE

The data of the filler trials were discarded (see Footnote2). Both the error rates and the response latencies of the test trials were analyzed by means of a 2 (Deception: Lie vs Truth) x 3 (Condition: Frequent lie vs. Frequent Truth vs. Control) mixed-model ANOVA. For the reaction time analyses, errors were discarded. To reduce the impact of outlying values, response latencies faster than 300 ms and slower than 3000 ms were recoded to 300 ms and 3000 ms, respectively (Greenwald, Nosek, & Banaji, 2003).

In line with our expectations, the ANOVA for the error rates showed a significant interaction between Deception x Condition, $F(2, 60) = 12.41$, $p < .001$ (see Panel A of Figure

1). Relative to the control condition, the "lie effect" (deception minus truth) was enhanced in the frequent truth condition, $t(30.74) = 1.99$, $p = .05$, and reduced in the frequent lie condition, $t(41) = 6.33$, $p < .001$. The lie effect was small in the control condition, one sample $t(19) < 1.30$, Cohen's $d = 0.29$, but very large in the frequent truth condition, $t(20) = 7.41$, $p < .001$, $d = 1.65$. The lie effect was reversed in the frequent lie condition $t(21) = 1.75$, $p = .09$, $d = -0.32$.

The ANOVA for response latencies showed a main effect of Condition: Compared to the control condition, response latencies decreased in the frequent truth condition, $t(39) = 2.34$, $p < .05$, $d = 0.73$, and increased in the frequent lie condition, $t(40) = 1.81$, $p = .08$, $d = 0.56$. More importantly, as can be seen in Panel B of Figure 1, the expected interaction between Deception and Condition was also significant, $F(2, 60) = 10.95$, $p < .001$. This interaction was mainly due to a greater lie effect in the frequent truth condition than in the control condition, $t(30.37) = 2.82$, $p < .01$, the lie effect in the frequent lie condition did not differ significantly from that in the control condition, $t(40) = 1.60$, $p = .12$. The lie effect size more than doubled from the control condition, $t(19) = 3.47$, $p < .01$, $d = 0.77$, to the frequent truth condition, $t(20) = 11.75$, $p < .001$, $d = 2.57$. The lie effect was no longer significant in the frequent lie condition, $t(21) = 1.67$, $p = .11$, $d = 0.36$.

Discussion

Assessing cognitive complexity with response latencies and accuracy (Donders, 1868/1969), the results of the control condition replicate previous research by showing that lying is more difficult and comes with a cognitive "cost": Lying is slower and less accurate compared to truth telling (for a review see Verschuere & De Houwer, 2011). Critically, truth proportion affected behavioral responding in the Sheffield lie test: Frequent lying made lying easier whereas frequent truth telling made lying more difficult. This data pattern shows that the strength of the dominant truth response is malleable.

The findings in the frequent truth condition suggest that the accuracy of lie detection tests may be improved to a significant extent by increasing the dominance of the truth response. A great advantage of the proportion manipulation is that it can be easily extended to other response measures (e.g., fMRI; Spence, et al., 2001) and other deception paradigms (e.g., memory detection; Lykken, 1959; Verschuere, Ben-Shakhar, & Meijer, 2011). A challenge for the application in real-life settings is the requirement of a set of filler trials with known ground truth. Resembling our manipulation, one could use pieces of information that the suspect does not deny, and that can be verified independently. The suspect may, for example, recognize having been at the crime scene at the time of the crime. Such information (e.g., “I was in Central Park around 10pm”) could be used as a filler trial when testing for crime involvement (e.g., “I physically assaulted Mr. X“). If further research would show that overlap in time and content between test and filler trials is not necessary, applied implementation would even become much easier, because then, any proposition (”I’m in front of a computer”) can be used as a filler.

Even though the truth may constitute the default under normal conditions, the findings in the frequent lie condition suggest that habitual lying makes lying easier. The effects were most pronounced for the behavioral errors, where the cognitive cost that comes with lying not just diminished, but in fact reversed. Indeed, participants in the frequent lying condition made more errors for truth telling than for lying. That this change in the ease of lying was obtained using only 72 filler trials, challenges the argument that the default mode would be unchangeable, as postulated by Johnson and colleagues: “…even after thousands of trials of practice, it is unlikely that the increased difficulty associated with making deceptive responses will be erased entirely (Johnson, Barnhardt, & Zhu, 2005; p. 402)”. Admittedly, for response latencies, the effects were less clear cut. Although the lie effect was no longer significant in the frequent lie condition, and the size of the lie effect in the frequent lie condition was halved as compared to the control condition, statistical comparison between the control condition and the frequent lying condition failed to reach significance. By extending the amount of filler and/or test blocks, future work could verify whether our findings can be replicated in the response latency domain.

In sum, by manipulating truth proportion in the Sheffield lie test, we demonstrate the of the dominant truth response, implying that 1) the accuracy of lie detection tests may be improved by increasing the dominance of the truth response and that 2) with habitual lying, the lie moves toward becoming the dominant response.

Footnotes

1. Due to a programming error, 34 participants were given only 168 trials.
2. Analyses on the filler trials in the control condition, showed that lying differed significantly from truth telling in accuracy, $t(19) = 2.07$, $p = .05$, $d = 0.43$, and response latency, $t(19) = 5.75$, $p <. 001$, $d = 1.30$. The lie effect of the filler trials was related to that of the test trials for response latency, $r = .58$, $p < .01$, but not accuracy, $r = .36$, $p = .11$.

Acknowledgement

Bruno Verschuere and Adriaan Spruyt are Postdoctoral Fellows of the Scientific Research Foundation - FWO. Preparation of this paper was supported by grants BOF/GOA2006/001 and BOF09/01M00209. We would like to thank Helen Tibboel and Bram Van Bockstaele for their aid in collecting the data.

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Figure1. Mean error percentage (Panel A) and response latencies (Panel B), with standard error of the mean, for lying and truth telling in the frequent lie, frequent truth, and control condition

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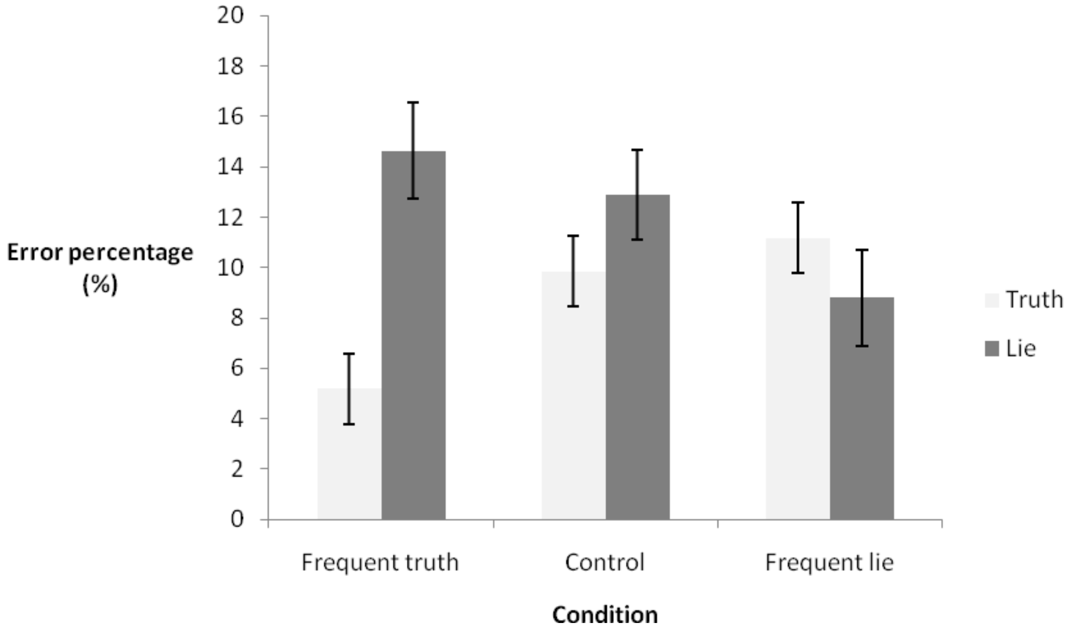
Panel A.



Panel B.