

## Being Honest About Dishonesty: Correlating Self Reports and Actual Lying

Rony Halevy, University of Amsterdam. Obtained an MSc at the University of Amsterdam

Bruno Verschuere, University of Amsterdam. Obtained a PhD at Ghent University

Shaul Shalvi, Ben-Gurion University of the Negev. Obtained a PhD at the University of Amsterdam

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Contact details corresponding author: Bruno Verschuere, Department of Clinical Psychology, University of Amsterdam, Roetersstraat 15, 1018 WB Amsterdam, Netherlands. *E-mail:* [b.j.verschuere@uva.nl](mailto:b.j.verschuere@uva.nl). Phone: +3125256799

## Abstract

Does everybody lie? A dominant view is that lying is part of everyday social interaction. It was recently claimed however, that robust individual differences exist, with most people reporting not to lie, and only a small minority reporting very frequent lying. In the current work we found most people to subjectively report little or no lying. Importantly, we found self reports of frequent lying to positively correlate with real life cheating and psychopathic tendencies. Our findings question whether indeed lying is normative and common among most people, and instead suggest that most people are honest most of the time, and that a small minority lies frequently.

*Key words:* Deception, cheating, pathological lying, individual differences, lying, dishonesty, psychopathy, ethical decision making, morality, explicit attitude.

While condemned by society, lying is claimed to have survival value (King & Ford, 1988) and to be a part of everyday social interaction. In a study based on a daily-diary methodology, students reported telling on average two lies a day (DePaulo, Kirkendol, Kashy, Wyer & Epstein, 1996). This finding was often replicated and widely cited (for a review see Vrij, 2000), leading to the conclusion 'Everybody lies!' (e.g., DePaulo, 2004).

The claim that everybody lies was, however, recently challenged. A mass survey of 1000 US citizens had shown large individual differences with respect to lying frequency (Serota, Levine & Boster, 2010). The survey revealed an average amount of lies per day which was quite similar to what has been found in previous studies: 1.65. However, the data was heavily skewed – the few people who lied a lot pulled the overall sample mean upwards. The skewed distribution was recently replicated by the same group in a sample of US high school students (Levine, Serota, Carey & Messer, 2011), and in a large, representative UK community sample (Serota, Levine & Burns, 2012). This line of work led to a competing conclusion 'only some lie - a lot'.

### **Everybody lies?**

Growing literature, routed in social psychology, decision making and economics, provides support to the claim that 'everybody lies'. This growing literature, focuses on situational factors which lead people to lie more or less (see Bazerman & Tenbrunsel, 2011, Ariely, 2012). For example, being in a dark room (Zhong, Bohns and Gino, 2010), benefiting a charitable cause (Lewis et al. 2012) or other people (Gino, Ayal, & Ariely, 2013), reading a text encouraging a deterministic beliefs (Vohs & Schooler, 2008), depleting self-control (Gino, Schweitzer, Mead & Ariely, 2011), and having no time to think (Shalvi, Eldar & Bereby-Meyer, 2012), are all claimed to increase lying. By implication, if only situational factors tempt people to lie or be honest, very little room is left for individual difference to explain dishonesty.

Serota and colleagues' (2010) findings however, challenges this view – some participants in their sample claimed to have lied a lot, others very little. If self-reported dishonesty is somewhat related to actual dishonesty, then the skewed distribution with large variance in people's tendency to lie suggests individual difference may play a larger role in determining human deceptive communications. Indeed, initial recent work revealed that people who chronically tend towards attempting to achieve positive outcomes (rather than to avoid negative ones from happening) are more likely to lie due to their reduced fear of the risks involved in such behaviors (regulatory focus; Gino & Margolis, 2011), and that individual differences on religiousness predict people's dishonesty: religious people seem to lie less on tasks commonly evoking dishonesty (Shalvi & Leiser, 2013; Fischbacher & Utikal, 2011).

The current work squarely fits the debate by assessing the role individual difference play in predicting dishonest behavior. According to Serota et al. (2010), individual differences play a major (but neglected) role in this field, and most lies in our society are told by a small number of prolific liars. Finding out if individuals difference are also predictive to human deceptive communications, will help us better understand dishonesty in society. If everybody lies, then lies can be seen as a practical tool of communication, and research should focus on situational factors nudging people to act dishonestly (Thaler & Sunstein, 2008). If however, some individuals lie more than others, while the general population is honest most of the time, it might be useful to try and understand the specific characteristics of those individuals who succumb to such behaviour. If a small group is responsible for most of the lies told in our society – we want to be able to distinguish these people from the rest of the population.

Importantly, the evidence suggesting individual difference in dishonesty are chiefly based on self-reported evidence. But to what extent people respond honestly when asked about their

dishonesty? And how reliable are the results of such a large survey (Merckelbach, Giesbrecht, & Smeets, 2010)? No work we are familiar with has assessed the relation between individual's self-reported dishonesty and their actual dishonest tendencies. The current work fills exactly this void.

### **The correlates of frequent liars**

As far as self-reported dishonesty goes, recent work suggests most lies are told by a small number of 'prolific liars' (Serota et al., 2010; 2012; Levine et al. 2011). This raises the question – who are these people? To address this issue, we explored which individual differences predict frequent lying, in both self-report and real-life cheating. The real life deception task we use keeps the likelihood of getting caught and expected punishment constant (and set to zero). Thus, meaningful differences in the amount of dishonesty reflect individual differences in one's willingness to bend the task's rules in order to secure personal financial gain.

While the empirical evidence concerning frequent lying is scarce, we derived predictions from the literature on one condition that is considered an extreme case of frequent lying: Pathological lying, individuals who repeatedly and compulsively tell false stories (Poletti, Borelli & Bonuccelli, 2011). It was suggested that pathological liars do not need any external motivation in order lie (Dike, Baranoski & Griffith, 2005). While all pathological liars lie frequently, we do not propose all frequent liars to be pathological liars. However, since lying frequently is a defining characteristic of pathological lying, theories regarding pathological liars seem to provide valuable insight to the potential profile of frequent liars.

First, it was suggested that pathological liars do not link negative affect to lying (Grubin, 2005). The lack of negative attitude associated with lying can be seen either as a predictor of frequent lying, namely that some people lie more since they do not consider deception to be a

negative act, or as a way of justifying an existing behavior by adopting a less negative attitude towards it (Shalvi et al., 2011). Accordingly, we expect frequent liars to show a less negative explicit attitude towards deception.

Further, pathological liars show diminished moral reasoning abilities, proposed to lead them to a difficulty in distinguishing right from wrong (Healy & Healy, 1916). We explore the possibility that frequent liars show deficits in moral reasoning. If indeed such deficits in moral reasoning are associated with frequent lying, related personality traits, known to be associated with moral deficits, should also correlate with frequent lying. Such personality traits include psychopathic personality, which was found to be correlated with self reports of lying in a daily diary paradigm within a normal population (Kashy & DePaulo, 1996). We expect frequent liars to show elevated psychopathic traits.

In sum, the current work seeks to (1) examine whether everybody lies (DePaulo et al., 1996) or most people report not to lie and a few people report lying very frequently (Serota et al., 2010), (2) find a relation between self-reports regarding lying habits and real life cheating, and (3) explore the affective, personality, and cognitive correlates that are associated with frequent lying. To do so, we first used a large survey of more than 500 participants, aimed at investigating the distribution of self-reports regarding lying frequency, as well as some of the correlates of frequent lying. Following, a sub-sample was assembled based on their reports on the lying frequency questionnaire, in order to further investigate correlates of frequent lying, and measure real life deception.

### **Study 1**

The lying frequency questionnaire was administered as part of a large battery of questionnaires to all first year psychology students at the University of Amsterdam. In this study

we investigated the lying frequency distribution in order to see whether the skewed distribution found by Serota et al. (2010) can be replicated. In addition, we examined the possibility that the skewed distribution on the Lying Frequency Questionnaire is caused by random or deviate responding, namely – that people scoring high on the questionnaire were simply trying to give weird answers, or were answering the questionnaire randomly, without giving attention to the questions. Finally, if indeed the Lying Frequency Questionnaire measures actual lying behavior, we expect it would positively correlate with participants' Psychopathic tendencies.

## Methods

**Subjects.**  $N = 527$  (372 or 71% female) first year psychology students from the University of Amsterdam ( $M$  age = 19.7 years;  $SD = 2.56$  years). Not all subjects completed all questionnaires. Hence, a different  $N$  is reported for each measurement, see Table 1.

**Measurements. *Lying frequency questionnaire.*** A Dutch translation of the questionnaire used by Serota et al. (2010) was used. The questionnaire started with a short, non-evaluative description of lying as used by Serota and colleagues: "We are interested in truth and lying in everyday communication. A frequently used definition of lying is intentionally misleading anyone. Some lies are big, others are small. Some are totally false claims, others are partial truths with some important details made up or left out. Some lies are obvious, others are subtle. Some lies are told for good reason. Some lies are selfish, other lies are told in order to protect others. We are interested in all these different kinds of lies. To get a better understanding of lying, we ask a lot of people how often they lie." (p. 6)

After the description, subjects were asked to indicate how many times in the last 24 hours they lied to different people (Family members, Friends or other people you know, People you work with or know as business contacts, People you do not know but might see occasionally

such as store clerks, and Total strangers) using different communication types (face to face and non-face to face). A total of 5 (target of lie) x 2 (communication type) estimates were given and summed into one lying frequency index.

***Youth psychopathic trait inventory.*** (YPI; Andershed, Kerr, Stattin & Levander, 2002). The YPI is a self reported questionnaire designed to measure traits of psychopathic personality. The YPI consists of 50 items that can be divided into ten subscales: dishonest charm, grandiosity, lying, manipulation, callousness, un-emotionality, remorselessness, impulsiveness, thrill seeking and irresponsibility. Respondents are requested to rate to what degree each of the items apply to them on a 4-point Likert scale (1 = does not apply at all to 4 = applies very well). The Dutch version of the YPI was found reliable and valid using a sample of non-referred Dutch adolescents (Hillege, Das & Ruiters, 2010) and a community based sample of adults (Uzieblo, Verschuere, van den Bussche & Crombez, 2010). In the current study, the YPI total score and the YPI lying scale (YPI LIE) were used.

***Multidimensional personality questionnaire- brief form.*** (MPQ BF, Patrick, Curtin & Tellegen, 2002, See Eigenhuis, Kamphuis & Noordhof, 2012, for the Dutch version). This is a general self report measure of personality, measuring a range of discrete trait dispositions. In the current study, two measurements for inconsistent response patterns were used: the Variable Response Inconsistency scale (VRIN) and the True Response Inconsistency (TRIN). The VRIN scale consists 21 content-matched item pairs, keyed in the same direction. The VRIN score increases as these item pairs are answered in an opposite directions, and is hence measuring random answering patterns. The TRIN scale consists of 16 content matched item pairs, keyed in an opposite direction, so that frequent 'true' or 'false' answers is indicative 'yea-saying' or 'nay-saying', respectively" (Patrick et al., 2002), and is hence measuring deviate response patterns. In



addition, a selection of MPQ-subcales has been used as a measure of psychopathic traits (Benning, Patrick, Blonigen, Hicks & Iacono, 2005). Here we used the Dutch version of the MPQ-based psychopathy scale (Van Schagen, Verschuere, Kamphuis, Eigenhuis, & Gazendam, 2012).

## **Results**

Three subjects were excluded from the Lying Frequency Questionnaire, one from the YPI questionnaire and two from the MPQ questionnaire for submitting their answers too quickly (i.e., the duration was less than 2.5 SD from the mean duration, suggesting lack of attention to the task).

**Lying frequency questionnaire.** Lying frequency distribution is presented in Figure 1. The lying frequency distribution was skewed,  $SK = 4.76$ ,  $SE = 0.11$ . An average of 2.04 lies per day was found ( $SD=3.85$ ) with 41% of the subjects telling no lies, 51% telling 1-5 lies, and 8% telling 6 lies or more. Together, 5% of the subjects told 40% of all reported lies. Since the variables were not normally distributed, Spearman's rho tests were used<sup>1</sup>. Descriptive statistics and correlation with the Lying Frequency Questionnaire are presented in Table 1.

**Psychopathic traits.** Positive correlations were found between the Lying frequency questionnaire and YPI total score ( $r = .31$ ,  $p < .01$ ), YPI LIE scale ( $r = .30$ ,  $p < .01$ ) and MPQ psychopathic trait measure ( $r = .21$ ,  $p < .01$ ).

**Inconsistence response patterns.** We used the VRIN and TRIN scales to test the possibility that random or inconsistent responses are associated with higher levels of reported lying. The Cut-offs suggested by Patrick et al. (2002) was used to divide subjects to valid and invalid respondents (a deviation of 3  $SD$ 's from the mean in VRIN; a deviation of 3.21  $SD$ 's from the mean in TRIN; or a deviation of 2  $SD$ 's from the mean in VRIN and a deviation of 2.28

*SD*'s from the mean in TRIN was considered as invalid). Nine subjects were categorized as invalid respondents. An independent t-test was used to compare Lying Frequency Questionnaire score of valid ( $M = 2.06$ ;  $SD = 3.88$ ) and invalid respondents ( $M = 1.33$ ;  $SD = 1.22$ ). The difference was not significant,  $t(495) = 0.56$ ,  $p = .58$ , obtaining no evidence for a link between inconsistency response patterns and lying frequency.

## **Discussion**

In study 1, using a self-report questionnaire for lying frequency, we replicated the skewed lying frequency distribution reported by Serota et al. (2010; 2012). Many of the lies were told by a small part of the population; only 5% of all participants were what we may label 'frequent liars', and were responsible for 40% of all reported lies. Moreover, using two inconsistency scales (MPQ VRIN and MPQ TRIN), we found no indication for a link between lying frequency and random or deviate response patterns. This finding provides tentative support for the validity of a self-report tool for lying frequency.

It is important to note that the internal consistency (measured using Cronbach's Alpha) of the Lying Frequency Questionnaire was modest ( $= 0.67$ ). However, given the nature of the questionnaire, measuring lying to various people, high internal consistency is not necessarily expected. That is, one may lie (a lot) to some (e.g., friends) but not to others (e.g., family). In addition, most people answer most items on this scale, with 0 or 1, rendering high internal consistency less relevant.

Results further revealed the expected positive correlation between lying frequency and psychopathic tendencies (e.g., the YPI total score and the MPQ psychopathic trait measurement). Furthermore, as expected, Lying Frequency was associated with a self-reported subscale of lying habits (e.g. the YPI LIE scale). While the correlation between the Lying Frequency

Questionnaire and the YPI LIE score was modest ( $r = .30$ ), we note that the two measurements are quite different from each other and seem to tap on different kinds of lies. The YPI LIE scale, administered in a context of psychopathic trait measurement, is more tuned to measuring egocentric lies, whereas the Lying Frequency Questionnaire, which starts with a paragraph emphasizing the prevalence of deception in society, captures a larger variety of lies.

Taken together, the results of study 1 replicated the skewed lying frequency distribution (Serota et al. 2010; Serota et al., 2012; Levine et al., 2011). Moreover, initial information regarding the characteristics of the small minority of frequent liars is provided. We found that frequent lying is associated with psychopathic tendencies. We were not able, however, to address the affective aspect of frequent lying and the relation to moral deficits in the mass survey used in Study 1. In addition, as mentioned above, one of the main goals of the current project was assessing the relation between self reported lying frequency and real life deception, measured by incentivized behavior. In Study 2, we invited subjects to the lab to address these issues.

## **Study 2**

To further investigate the correlates of frequent lying, a sample of Study 1 participants was invited to the lab. To assess moral development, a Dutch version of Defining Issues Test (DIT-2; Rest, Narvaez, Thoma & Bebeau, 1999, see van Goethem et al., 2012 for the Dutch version) was used. This task is based on presenting subjects with moral dilemmas and asking them to rate and rank different statements as important or unimportant to the decision how to act in such a situation. In addition, we administered the Feeling Thermometer (Jung & Lee, 2009), assessing explicit attitude towards deception by asking subjects to rate the pleasantness of words related to truth or deception.

We further used two different tasks in which subjects had the opportunity to privately cheat for financial profit, allowing us to investigate the relation between self-reported lying frequency and real life cheating. The first task was an adaptation of the Die Under Cup task (Shalvi et al., 2011 adapted from Fischbacher & Heusi, 2008) in which participants receive a regular die inside a paper cup, with a small hole enabling them to privately roll the die under the cup and see the outcome. Participants are instructed to roll and report the outcome to determine their pay (higher numbers equal higher pay). While results of the die rolls are truly private, lying can be analyzed on the aggregate level comparing the empirical distribution of reported die rolls to the theoretic distribution of an honest die roll (Shalvi et al., 2011). Here, we made a first attempt to use this task in order to classify subjects according to their individual (dis)honesty. Subjects were asked to engage in multiple trials of rolling the die and reporting the rolled outcomes. We classified participants as dishonest if their reported average of die rolls was statistically unlikely (see similar approach in Greene & Paxton, 2009).

The Die Under Cup task was found very useful when investigating real life cheating, since it is very simple to explain, and the subjects can easily understand that no one but them will know if they cheated. However, classifying subjects into honest and dishonest in this task is based solely on statistics, meaning that extremely lucky subjects will be falsely classified as being dishonest. To address this limitation, we administered a second cheating task, the Words task (Wiltermuth, 2011), in which a clear-cut discrimination between honest and dishonest subjects is possible. In this task, subjects are asked to solve word jumbles in the order in which they are presented, and are paid according to their reported success in a consecutive order. As participants are asked to report only the number of correct answers they had, not their actual answers, they could lie about the number of correct answers and gain more money. Critically, the

third word presented was unsolvable, so any subject reporting solving more than two words, can be classified as dishonest.

## **Method**

**Sampling.** Subjects were invited to the lab for a follow-up study according to their score in the Lying Frequency Questionnaire. To ensure enough variance in the Lying Frequency variable, low lying frequencies were under-sampled and high lying frequencies were over-sampled. From the initial sample, we invited 50 subjects scoring 0 (~25% of the sample), 50 subjects scoring 1 (~40% of the sample), 63 subjects scoring 2 (100% of the sample), 72 subjects scoring 3-5 (100% of the sample) and 35 subjects scoring 6 and above (100% of the sample). In total, 270 invitations were sent. Thirty-three subjects responded to the invitation and 31 were eventually scheduled. An additional sample of 20 subjects was recruited without screening, from the psychology department and other faculties in the University of Amsterdam. Subjects participated in the experiment for either money or course credit.

**Subjects.**  $N = 51$  (37 female) participants from the University of Amsterdam ( $M$  age = 21.1 years;  $SD = 6.16$  years).

**Procedure.** The experimenter was blind of the subjects' Lying Frequency Questionnaire score throughout the scheduling and testing phases. Lying Frequency Questionnaire and YPI were administered again. In addition, the following measures were used<sup>2</sup>:

***Feeling thermometer (FT).*** (Jung & Lee, 2009). Subjects were presented with 6 words related to deception and 6 words related to honesty, and were asked to rate the words as pleasant or unpleasant on an 11-points Likert scale (1=unpleasant, 11=pleasant). The average score for lie words was subtracted from the average score for truth words. A high score indicates a bigger difference between truth and lie words, e.g. a more negative attitude towards deception.

**Defining issues test 2 (DIT2).** (Rest et al., 1999). Subjects were presented with three paragraph-long moral dilemmas and were asked what the main character should do. Next, subjects were asked to rate 10 statements as important/unimportant for the decision on a 5-points Likert scale and then rank these statements. Answers were used to calculate an index score of moral development (known as N2 index; higher score indicate higher moral development; for details regarding the computing procedure see Rest, Thoma, Narvaez & Bebeau, 1997).

**Die Under Cup.** A modification of the paradigm by Shalvi and colleagues (Shalvi et al., 2011) was used. Subjects received a covered cup with a die inside it, and a small hole in the lid. They were informed that they will be paid according to their reported scores, €0.02 for each point they rolled in each of the trials, meaning €0.02 when rolling '1', €0.04 when rolling '2', and so on. In each trial, subjects were requested to roll the dice three times, check the outcome every time, but to report only the outcome of the first roll by typing the outcome into the computer. The task included 60 trials, so in total each subject rolled the dice 180 times but only reported and were paid for the 60 rolls they reported. A participant who wishes to maximize profit (or a very lucky honest one) may thus report rolling 6 in all 60 trials earning €7.20 in total, which is well above the expected value if reporting honestly.

**Words task.** (Wiltermuth, 2011). Subjects were presented with 9 scrambled words in Dutch, and had 5 minutes to solve them (the solutions were: potlood [pencil], bloem [flower], taguan [taguan], sokken [socks], steen [stone], kleur [color], rusten [rest], koekje [cookie] and ijsberg [iceberg])<sup>3</sup>. Subjects were paid an extra €0.5 for each word they solved, but the instructions indicated that the words should be solved in the order in which they appeared, noting “if you successfully unscramble the first three words but not the forth you will only be paid for the first three words, even if you successfully unscramble the fifth, sixth and seventh words”.

When the time was up, subjects were requested to indicate how many words they were able to solve in a row, knowing that the number they indicate will be used to calculate the payment. After reading the instructions, the experimenter verified that subjects understood the instructions. Crucially, and unknown to the participants, the third word was extremely rare and difficult to solve. This word could only be unscrambled to spell “taguan”, a large nocturnal flying squirrel. Given this design, any reported score of three and above could be considered as cheating, enabling a clear cut between honest and dishonest subjects.

**Confession question.** After receiving their payment, subjects were asked to answer the following question on a small piece of paper and put it in a sealed box: “We are interested in the way people perform in the Die Under Cup task. The money you earned is yours and will not be taken away. We want to ask you a short question regarding your performance in this task. Out of the 60 times you had to report your score, how many times did you report a higher score than you actually rolled?” Any report of above zero was considered as a confession of dishonesty.

## **Results**

The different measurements’ descriptive statistics and correlations with Lying Frequency Questionnaire are presented in Table 2.

**Lying frequency questionnaire.** Results distribution is presented in Figure 2.

**YPI.** As predicted, and replicating the results of study 1, a positive correlation was found between the Lying Frequency questionnaire and both YPI total score,  $r = .38, p < .01$ , and the YPI LIE score,  $r = .31, p < .05$ .

**DIT.** No significant correlation was found between the DIT N2 score and the Lying Frequency Questionnaire ( $r = .17, p > .05$ ).

**FT.** Subjects generally rated words related to truth ( $M = 8.87$ ,  $SD = 1.19$ ) as more pleasant than words related to deception ( $M = 2.47$ ,  $SD = 1.23$ ),  $t(49) = 20.55$ ,  $p < .001$ ,  $d = 3.05$ . A difference score (average for truth words minus average for lie words) was calculated for each subject and correlated with the Lying Frequency Questionnaire score. A non significant negative trend was found in the predicted direction – frequent liars showed a slightly less negative attitude towards deception ( $r = -.15$ ,  $p = .08$ ).

**Die under cup.** The average score in the Die Under Cup task was 3.63€ ( $SD = 1.67$ ) and the distribution of responses deviated from the theoretical symmetric (honest) distribution,  $\chi^2 = 23.73$ ,  $p < .001$ , indicating that in general, some cheating took place. As expected, the average die roll score was positively correlated with the Lying Frequency Questionnaire, ( $r = .39$ ,  $p < .01$ ). The more people self-reported lying, the more they earned in the Die Under Cup task. We further classified subjects as Honest and Dishonest according to the likelihood that their reported scores were honest. Taking an alpha of 10%, 15 subjects (29% of the sample) showed a score which was higher than the score predicted by chance. A One Way ANOVA was used to compare the scores of the two groups (honest [ $n = 36$ ] and dishonest [ $n = 15$ ] subjects). For the Lying Frequency Questionnaire and the YPI total score, results revealed a significant difference between males and females, with males scoring higher on both measurements; hence gender was entered as a covariate. A significant difference was found for the Lying Frequency score,  $F(1, 49) = 9.45$ ,  $p < .005$ ,  $\eta^2 = 0.14$ , with dishonest subjects scoring higher ( $M = 3.93$ ,  $SD = 3.49$ ) than honest subjects ( $M = 1.58$ ,  $SD = 1.93$ ). A significant difference was also found for the Confession question, with dishonest subjects scoring higher ( $M = 7.00$ ,  $SD = 11.92$ ) than honest subjects ( $M = 0.69$ ,  $SD = 1.75$ ),  $F(1, 49) = 9.83$ ,  $p < .005$ ,  $\eta^2 = 0.17$ . A non-significant difference in the expected direction was found for the FT score, with dishonest subjects scoring



lower ( $M = 5.61$ ,  $SD = 2.30$ ) than honest subjects ( $M = 6.74$ ,  $SD = 2.10$ ),  $F(1, 49) = 2.85$ ,  $p = .09$ ,  $\eta^2 = 0.06$ . No difference was found for the Words score,  $F(1, 49) = 2.68$ ,  $p = .11$ , YPI total score,  $F(1, 49) = 1.07$ ,  $p = .31$ , YPI LIE score,  $F(1, 49) = 0.54$ ,  $p = .46$  or DIT score,  $F(1, 49) = 0.64$ ,  $p = .42$ .

**Confession question.** Twelve out of 51 subjects (23.5 %) confessed to some degree of over-reporting (e.g. dishonesty). Confessions were positively correlated with the Die Under Cup score,  $r = .49$ ,  $p < .001$ , validating that high scores on the Die Under Cup task are related to deception. Furthermore, confessions were also positively correlated with the Lying Frequency Questionnaire ( $r = .35$ ,  $p < .05$ ). We used the Confession question to divide subjects to honest and dishonest. One Way ANOVA's were used to compare self-proclaimed honest vs. dishonest subjects. For the Lying Frequency Questionnaire and the YPI total score, males scored higher than females, hence gender was entered as a covariate. Dishonest subjects scored higher ( $M = 3.75$ ,  $SD = 3.19$ ) than honest subjects ( $M = 1.82$ ,  $SD = 2.87$ ) in the Lying Frequency Questionnaire,  $F(1, 49) = 6.82$ ,  $p < .05$ ,  $\eta^2 = 0.12$ . No significant differences were detected between honest and dishonest subjects in the YPI total score,  $F(1, 49) = 1.4$ ,  $p = .244$ , YPI LIE score,  $F(1, 49) = 1.46$ ,  $p = .23$ , DIT score,  $F(1, 49) = 1.31$ ,  $p = .72$  or FT score,  $F(1, 49) = 2.07$ ,  $p = .16$ .

**Words task.** Twelve out of 51 subjects (23 %) reported solving more than 2 words, and were classified as dishonest. Six of them were also classified as dishonest based on the Die Under Cup total score. A positive correlation was found between the Words task score and the Lying Frequency Questionnaire ( $r = .39$ ,  $p < .01$ ). One way ANOVA's were used to compare the scores of the honest vs. dishonest subjects. For the Lying Frequency Questionnaire and the YPI total score, a significant difference was found between males and females, with males scoreung

higher in both measurements. Hence gender was entered as a covariate. A non-significant difference in the expected direction was found in the Lying Frequency Questionnaire between dishonest ( $M = 3.58, SD = 2.47$ ) and honest subjects ( $M = 1.87, SD = 2.65$ ) subjects,  $F(1, 49) = 3.7, p = .06$ . A significant difference was found in the Die Under Cup task between dishonest ( $M = 3.82, SD = 0.33$ ) and honest subjects ( $M = 3.58, SD = 0.27$ ),  $F(1, 49) = 6.08, p < .05, \eta^2 = 0.12$ . Dishonest subjects also scored higher in the YPI LIE scale ( $M = 8.92, SD = 2.58$ , as oppose to  $M = 7.54, SD = 1.80$ ),  $F(1, 49) = 4.2, p < .05, \eta^2 = 0.08$ . Finally, dishonest subjects scored higher on the YPI total score ( $M = 98.17, SD = 15.88$ , as oppose to  $M = 87.18, SD = 14.97$ ),  $F(1, 49) = 4.7, p < .05, \eta^2 = 0.07$ . No significant difference was found in the FT score,  $F(1, 49) = 2.31, p = .13$  and the DIT score,  $F(1, 49) = 0.68, p = .41$ .

## **Discussion**

The correlation between lying frequency and psychopathy identified in Study 1 was replicated in Study 2. The Lying Frequency Questionnaire results were positively correlated with both the general psychopathy score (YPI total score) and the psychopathy-lying scale (YPI Lie scale). In addition, frequent lying was non-significantly associated with a slightly less negative attitude towards lying.

Importantly, people who reported to lie more often were also more likely to cheat in tasks allowing them to make a quick profit. Dishonest subjects in both Die Under Cup and Words tasks showed higher scores on the Lying Frequency Questionnaire. These tasks are good proxies to lies in real life, since the participant makes the decision to lie, and a (financial) reward is attached to lying.

An additional interesting finding was that in the Words (but not the Die Under Cup) task, dishonest subjects also scored higher in the YPI total score and YPI LIE score. Perhaps the clear

cut between honest and dishonest subjects in the Words task also affects the way subjects conceive the task. In the Die Under Cup task, subject can over report occasionally, or by just a bit. On the Words task, on the other hand, subjects have one moment in which they make the decision to cheat. It was shown before that a violation of quantity is the most common form of deception, perhaps because it requires less effort (Levine et al., 2002). Over-reporting on the Die Under Cup task can be considered as a violation of quantity, while cheating in the Words task is more of a quality violation. Hence it is reasonable that psychopathic tendencies are related to deception in the Words task, a more effortful form of deception.

No correlation was found between lying frequency and the DIT score, and dishonest subjects in the die task did not score lower on the DIT task. These findings indicating that frequent lying is not related to a deficiency in moral judgment, as suggested for pathological liars (Healy & Healy, 1916). It seems that frequent liars in the present study displayed normal moral judgment, and are capable of discriminating right from wrong, but simply make the decision to lie. A similar claim, of being able to discriminate right from wrong and yet choosing wrong, was recently made for psychopathic inmates (Cima, Tonnaer, & Hauser, 2010).

Finally, a strong correlation was found between the Confession question and results on the Die Under Cup task. First, this finding validates the idea that a high score on the Die Under Cup task is generally related to dishonesty and not luck. Second, this questionnaire enabled another classification of honest and dishonest subjects based on self-reports. Using this classification as well revealed that dishonest subjects scored higher on the Lying Frequency Questionnaire. It seems like frequent liars do not only cheat more, they are also more willing to admit it.

One limitation of the study is the fact that as opposed to the results of study 1 and previous studies (Andershed et al., 2002; Hillege et al., 2010), the internal consistency of the YPI Lie scale in Study2 was modest (.55). This may be due to the combination of the small amount of items in this scale (see Streiner 2003) and the smaller sample used in study 2.

### **General Discussion**

Results obtained in two studies (1) replicated the distribution of lying frequency described by Serota et al. (2010), and validate the self-report tool as means to assess dishonesty, (2) revealed that people reporting high lying frequency are also more likely to cheat for personal profit, and finally (3) showed a correlation between lying frequency and psychopathic tendencies and a trend of a less negative attitude towards deception.

### **Replication**

We found a skewed lying frequency distribution, replicating the findings of Serota and colleagues (2010). While the claim that everybody lies is becoming widely accepted, with some claiming all people lie between 10 and 200 times a day (see Meyer, 2011), the findings presented here provide a somewhat different picture – most people report not to lie at all.

### **Validation**

Results further support the validity of the Lying Frequency Questionnaire: We did not find a relation between the Lying Frequency Questionnaire and random answering pattern or a tendency for deviate responses. Given the large sample size, it is not likely that the lack of findings is due to power issues. Using G\*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007), we calculated the magnitude of effect that could be detected with this sample size and the conventional value of .80 for minimal statistical power. This analysis showed that our sample was large enough to detect an effect size of only .07.

### **Positive Relation Between Self-Reports and Actual Dishonesty**

Another support for the validity of the questionnaire was found by the correlation between self-reported frequent lying and real life deception in the lab in two separate tasks enabling profitable deception: the Die Under Cup and the Words tasks. We further used these tasks to classify subjects as honest and dishonest, and found that dishonest subjects score higher on the Lying Frequency Questionnaire. The finding, linking self-reported lying and real life cheating, gives support to the validity of the Lying Frequency Questionnaire as a measurement for deception.

### **Correlates of Frequent Liars**

Finally, the data enabled a better understanding of the different correlates of frequent lying. With respect to the personality correlates of frequent lying, a correlation between lying frequency and psychopathic tendencies was found. This correlation was of medium strength, 0.2-0.3, and significant in both studies using two different measures. It seems as if at least part of the variance in lying frequency is explained by psychopathic tendencies. It has been claimed before that antisocial individuals are inclined to lying frequently (Dike et al., 2005), and psychopathy, as seen from the subscales of the YPI, is partially defined by lying habits. In addition, Kashy and Depaulo (1996) found that manipulative individuals (another personality trait that characterize people with psychopathic tendencies), tend to lie more. The stable correlation between psychopathic tendencies and lying habits therefore corroborates clinical observations and theoretical claims about psychopathy.

With respect to the affective aspect, a non-significant trend of negative correlation was found between lying frequency and explicit attitude towards deception. This means that similarly to the assumptions about pathological lying (Grubin, 2005), people who lie frequently might

conceive deception as slightly less negative. Questions have been raised regarding the relation between attitude and behavior (Chen & Bargh, 1999). With respect to deception, implicit but not explicit attitude was claimed to predict behavior (Jung & Lee, 2009). Given this claim, the trend found here is quite interesting. This finding is coherent with the finding of Serota et al. (2012) that prolific liars find lying to be a more acceptable behavior. A less negative attitude towards lying might pre-dispose some individuals to frequent lying. It is also possible that people who find lying less negative are the ones who will admit lying frequently in a questionnaire, while others who lie just as much but consider lying to be a negative act, choose to under-report their lying rates.

However, it seems that frequent liars do not have a moral deficit; no correlation was found between the Lying Frequency Questionnaire or the Die Under Cup task and the DIT2. We investigated the possibility that the lack of findings is due to power issues. According to G\*Power 3 (Faul et al., 2007), in order to find a correlation of .17 (the correlation found between DIT2 and the lying frequency questionnaire) as significant, a sample of  $N = 212$  was needed (with  $\alpha = .05$ ). While our sample size does not allow completely ruling out the possibility, moral deficiency is unlikely to be an important factor.

### **Implications of the Current Findings**

Taken together, our findings contribute to the developing debate regarding the role of individual differences in lying behavior. We provide solid evidence showing that both self-reports regarding lying frequency and cheating in the lab are correlated and associated with certain individual characteristics. These evidences strengthen the need to continue investigating the role of individual differences in deceptive communication, as clearly such differences matter. While situational factors are likely to play a role in the decision to lie or cheat, as lying or

cheating is easier or more appealing in some situations, it seems like some personality traits make some of us more prone to deceptive behavior than others.

The fact that individual differences play a role in deceptive behavior, is of great interest to economic and (ethical) decision making research. The small minority of frequent liars may be less susceptible to manipulations used in this line of work. For example, recent work revealed that people lie more when they can secure opportunities to win positive outcomes. Yet, some individuals cheat to the maximum extent possible regardless of such situational considerations (Shalvi, 2012). It was suggested before that self-concept maintenance can explain the extent to which people lie (Mazar, Amir & Ariely, 2008). According to this theory, "*people behave dishonesty enough to profit, but honestly enough to delude themselves of their integrity*" (Mazar et al., 2008, p. 633). Perhaps the desire to maintain an honest self-concept explains decision making only in non-frequent liars, more than in frequent liars. Simply put, frequent liars may be less concerned with maintaining an honest self image.

Understanding the characteristics of a liar is of great relevance to the field of human communication. It was claimed that a truth bias exists in human communication – that is, people tend to believe others, regardless of their actual honesty (Levine, Parks & McCornack, 1999). According to this point of view, assessing the reliability of every claim we come across is ineffective, and we are hence prone to believe in what we hear. This bias is reasoned to provide a useful tool in most social interactions (as most social interactions are claimed to be honest). However, the usefulness of this heuristic obviously depends on the chance that the individual in front of us is telling the truth. If we are all liars – the truth bias will be a non-adaptive mechanism. If a small group in the population is prone to very frequent lying, the truth bias

could be misleading only when communicating with these specific individuals, but adaptive when communicating with others.

Our research may also provide a new motivation for research on pathological lying. The knowledge regarding pathological lying is mostly limited to theory, clinical observation, and anecdotal evidence. Our study provides the much needed tools to start the empirical investigation of pathological lying and how they are qualitatively and quantitatively different from frequent liars. The study of frequent liars seems valuable for shaping new hypotheses concerning the nature and development of pathological lying.

## **Conclusions**

The current research reveals individual differences play a role in deceptive communication, and provide a better understanding of the elements distinguishing frequent liars from the rest of the population. The emerging profile of a frequent liar is of a person which has higher scores on psychopathic traits measures and is more prone to cheating in a lab task. Future research should further craft the characteristics of this interesting population and investigate the causal directionality of the uncovered correlations. Further promising direction is gaining better understanding to the developmental pathway that may lead some individuals to become frequent liars, or even pathological liars. Gaining such knowledge may help identifying the frequent liars among us. It may also be valuable to craft interventions aimed at these populations to stop lying and begin telling the truth.



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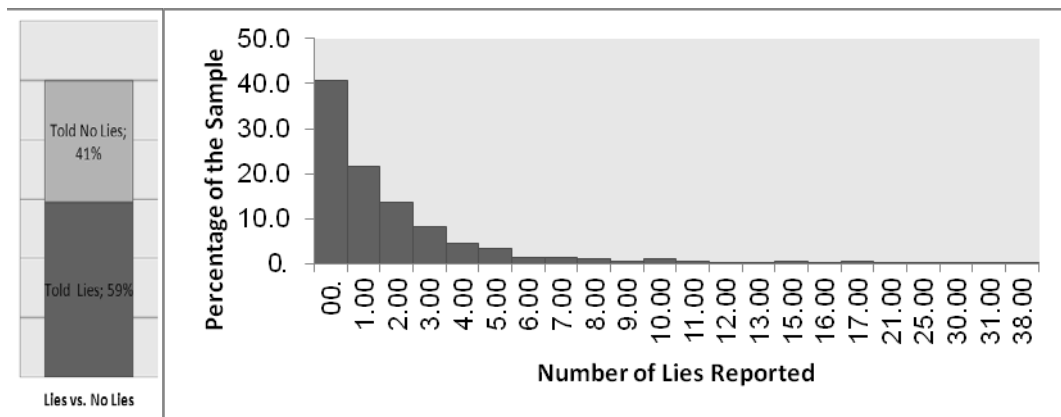
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## Endnotes

1. An additional analysis computing Pearson correlations while controlling for gender effects revealed the same pattern of results. Gender is thus not discussed further.
2. We additionally administered the Symptom Check-List (SCL 90, Derogatis 1975) and an extension for the Lying Frequency Questionnaire including open questions regarding the last lie told, but these did not produce any meaningful results and are thus not discussed further. Information about these scales and their results are available from the corresponding author.
3. These words were selected from a larger sample of words, after piloting the words with 10 native Dutch speakers. The unsolvable word was not solved by any of the subjects, and the solvable words were solved by all 10 subjects.

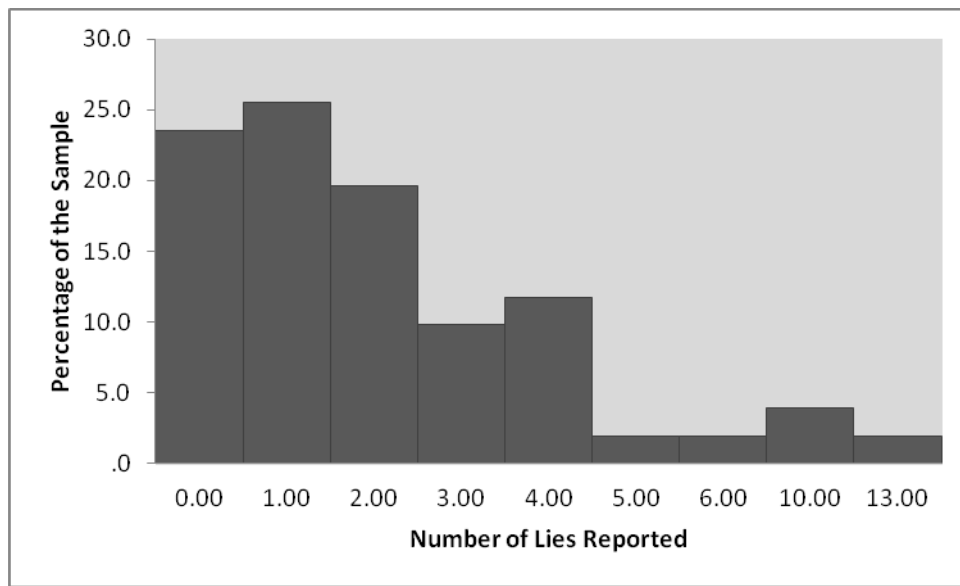


(A) Occurrence

(B) Number of Lies in the past 24 hours

Figure 1. Lying Frequency Questionnaire distribution – Study 1.





*Figure 2.* Lying Frequency Questionnaire distribution – Study 2.

Table 1

*Descriptive statistics and correlations with lying frequency – Study 1.*

Measurement	N	M (SD)	Cronbach's $\alpha$	Spearman's rho correlation with Lying Frequency Questionnaire
Lying Frequency Questionnaire	497	2.04 (3.85)	.67	-
MPQ VRIN	507	2.72 (1.73)	-	.02
MPQ TRIN	507	-0.23 (1.75)	-	.11
MPQ psychopathy	507	11.65 (5.19)	.73	.21**
YPI LIE	519	8.01 (2.55)	.72	.3**
YPI	519	88.55 (17.73)	.91	.31**

*Note* \*  $p < 0.05$ , \*\*  $p < 0.01$

Table 2

*Descriptive statistics and correlations with lying frequency – Study 2.*

	M (SD)	Cronbach's $\alpha$	Spearman's rho correlation with Lying Frequency Questionnaire
Lying Frequency Questionnaire	2.27 (2.68)	.61	-
YPI LIE	7.86 (2.1)	.55	.31*
YPI total score	89.76 (15.75)	.88	.38**
Die Under Cup Mean	3.63 (0.3)	-	.39**
Confession question	2.55 (7.1)	-	.35*
Words task	2.8 (1.9)	-	.39**
FT	6.4 (2.2)	-	-.15
DIT N2	35.16 (17.20)	-	.17

*Note.* \*  $p < 0.05$ , \*\*  $p < 0.01$ .