

# People's Perceptions of Their Truthful and Deceptive Interactions in Daily Life

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## Abstract

Deception theories predict that liars experience more cognitive load, are more tense, experience a greater sense of deliberateness, embrace their statements less, and try harder to make a convincing impression than truth tellers (DePaulo et al., 2003; Zuckerman, DePaulo, & Rosenthal, 1981). We tested these assumptions by asking 60 participants to keep a diary for a week and record all of their social interactions, including all the lies they told in these interactions. The findings showed support for these predictions, even when we controlled for how emotionally close the participants felt towards the person with whom they socially interacted. Findings further revealed that experiences during deception were associated with characteristics of the lie. For example, positive correlations were found between the self-reported seriousness of the lie and the lie being taxing, and subtle lies (concealments) were considered more serious and more cognitively demanding than outright lies or exaggerations. Finally, the implications of these findings for professional lie catchers are discussed.

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### *Underlying Processes of Deception*

For decades, researchers have theorized how truthful interactions differ from deceptive interactions. One of the most elegant and frequently cited theoretical models has been proposed by Zuckerman et al. (1981). They argued that three phenomena

could be experienced by liars: (1) emotional reactions, (2) cognitive load, and (3) attempted behavioral control.<sup>1</sup>

Regarding emotional reactions, people may feel tense when they lie, for example, because they feel guilty when they are lying, or they are afraid of being caught (Ekman, 1985/2001). Regarding cognitive load, in order to get away with their lies, liars need to provide plausible answers while avoiding contradicting themselves, and tell a lie that is consistent with everything the observer knows or may find out, while avoiding making slips of the tongue. Liars also need to remember what they have said, so that they can say the same things again when asked to repeat their story. This may be more cognitively demanding than truth telling. Regarding attempted behavioral control, liars may well realize that other persons will look at their behavioral and verbal reactions to judge whether they are lying, and may therefore deliberately attempt to make an honest impression on the other person, for example, by trying to avoid showing behaviors that they believe appear dishonest (Hocking & Leathers, 1980).

DePaulo and her colleagues (DePaulo et al., 2003) have argued that a crucial difference between liars and truth tellers is that the liars' claim to honesty is illegitimate. This has two implications. First, deceptive self-presentations may be less convincingly embraced than truthful self-presentations, for reasons including that liars have moral scruples, lack the emotional investment in their false claims, or lack the knowledge and experience to convincingly back up their deceptive statements. Second, liars typically experience a greater sense of awareness and deliberateness in their performances than truth tellers do, because they typically take their credibility less for granted than truth tellers do.

Perhaps surprisingly, whether or not liars actually do experience the above-described characteristics when they lie in daily life has not been investigated to date, perhaps with the exception of DePaulo, Kashy, Kirkendol, Wyer, and Epstein's (1996) diary study. They asked students and community members to keep a diary for a week and to record all their social interactions and all the lies they told in these interactions. When the participants lied, they were asked how tense they felt just before, during, and just after the lie. Results revealed that the participants felt slightly more tense while they lied compared to the period just before the lie. No study to date has examined whether liars experience the other characteristics (cognitive load, attempted control, lack of embracement, and sense of deliberateness) in their everyday lies. We examined this in the present diary study, which was similar in design to the study conducted by DePaulo et al. (1996). We put the hypotheses formulated by Zuckerman, DePaulo, and their colleagues to the test: Compared to when people tell the truth, when they lie they become more tense and experience more cognitive load, try harder to control themselves, embrace their statements less, and will experience a stronger sense of deliberateness.

Perhaps the prediction regarding cognitive load is the most controversial. McCorrack (1992, 1997) in particular, has challenged the assumption that deception is

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<sup>1</sup> Zuckerman et al. (1981) mentioned a fourth factor 'arousal'. However, as they themselves acknowledge, it shows an overlap with the emotion factor.

generally more cognitively demanding than truth telling, and argues that lying sometimes has cognitive advantages over truth telling. For example, liars can fabricate any kind of information as long as it suits the situation (i.e., they can make compliments in several different ways about a painting they actually dislike), whereas truth tellers will face more difficulty in such a situation because they are more restricted: They must disclose certain information in order to be considered honest. McCornack's analysis concentrates on the cognitive demands of *formulating* lies and truths, but, as Patterson (1995) has argued, formulating speech content is only part of a social interaction. Issues such as engaging in self-presentation, and attempting to appear convincing, and carefully scrutinizing the speech content and nonverbal cues presented by target persons also play a role in social interactions. It may well be that this total package is more demanding for liars than for truth tellers. Other aspects of lying further increase cognitive load (Vrij, Fisher, Mann, & Leal, 2006, 2008, 2009, in press; Vrij et al., 2008). When people lie, they may be preoccupied by the task of reminding themselves to act and role-play, which requires extra cognitive effort (DePaulo et al., 2003). Moreover, people have to suppress the truth when they are lying and this is also cognitively demanding (Spence, 2008; Spence et al., 2001, 2004). Finally, whereas activating the truth often happens automatically, activating a lie is more intentional and deliberate, and thus requires mental effort (Gilbert, 1991).

#### *Frequency and Negative Connotation of Lying*

It has been argued before that lying is part of everyday life (DePaulo, 2004; DePaulo et al., 1996; Goffman, 1959; McCornack, 1997; Turner, Edgley, & Olmstead, 1975). The "self" that is presented to others in daily life is edited and packaged (DePaulo et al., 1996; Feldman, Forrest, & Happ, 2002; Goffman, 1959; van Dongen, 2002). In truthful interactions, the editing serves to highlight the aspects of the self that are most relevant to the desired outcome of the interaction (DePaulo et al., 1996). In cases where the aspects of the self work against the desired outcome, people are tempted to lie. And they do so frequently (DePaulo et al., 1996; Kalbfleisch, 2001; Knox, Zusman, McGinty, & Gescheidler, 2001; Lippard, 1988; Mazur & Ebesu Hubbard, 2004; Turner et al., 1975; Whitty, 2002). DePaulo et al. (1996), for example, found in their diary study that people lied on average in one out of every four of their social interactions. As in previous studies, we also expected lying to be a frequent event in the present study. The fact that lying is so much incorporated in everyday life makes people experienced in lying. Due to their familiarity with deceit, we expected liars therefore not to experience tenseness, cognitive load, etc. to a great extent. However, because lying appears to be less common than truth telling (DePaulo et al., 1996), and because lying is generally perceived negatively, both in the popular press (DePaulo et al., 1996) and by ordinary people (Backbier, Hoogstraten, & Meerum Terwogt-Kouwenhoven, 1997; DePaulo, 2004; Robinson, 1994) we still expected these characteristics to be more strongly present when people lie than when they tell the truth.

DePaulo et al. (1996) hypothesized and found that this negative connotation of deception could also lead to people lying more via a more indirect medium (telephone, text message, etc.) than via a more direct medium (face to face). The knowl-

edge of conducting a somewhat negative act, and the perhaps unpleasant characteristics (such as tenseness) attached to it, may also mean that lying would be considered as less pleasant and more superficial (see also DePaulo et al., 1996). Because lying is a frequent event, everyday lies should also require little planning, as is the case with other well-practiced behaviors, neither it is likely that people will consider their average lie to be serious (DePaulo et al., 1996). Due to the fact that lies are unlikely to be serious, people will not be very much concerned about whether their lies will be discovered (DePaulo et al., 1996).

Conversation rules prescribe that it is impolite to frequently challenge someone else (Vrij, 2004, 2007, 2008). We therefore further expect that liars will rarely experience their lies being challenged, instead, believing that the target will tend to believe them.

Since people make a deliberate decision to lie, they will also believe that they themselves are better off by telling the lie rather than telling the truth. They may also believe that the target person is better off hearing the lie than with hearing the truth.

### *Different Types of Lie*

We further investigated differences between different lies. Lies will differ in how serious they are and in how important it is that they will not be discovered. We expected significant correlations between the seriousness of the lie or importance of not getting caught and social-interaction characteristics. Thus, we predicted that the more serious the lie is, or the more important it is not to get caught, the more tenseness and cognitive load liars would experience, the harder they would try to appear convincing, the more sense of deliberateness they would experience and the less they would embrace their statements. We also expected interactions that included more serious lies being perceived as less meaningful and pleasant.

Lies could be classified into three different types (DePaulo et al., 1996): Outright lies (total falsehoods where the information is completely different from the truth), exaggerations (overstating or understating the truth), and subtle lies (lying by evading or omitting relevant details). DePaulo et al. (1996) and Turner et al. (1975) found that the majority of lies people tell are outright lies. Different types of lies may result in different experiences. Formulating an outright lie is probably more cognitively difficult than exaggerating or omitting information, thus it could be predicted that most cognitive load will be experienced when people tell outright lies. However, one could wonder why people choose to omit information rather than telling an outright lie. It could be that they prefer to conceal information when they believe the lie is serious and when it is important not to get caught. The benefit of concealments is that they are difficult to detect as no information is given that could be verified by the observer (Ekman, 1985/2001; Metts, 1989). Also, evasion or omissions are typically perceived as less negative (Bavelas, Black, Chovil, & Mullett, 1990), which will suit the liar well in case the lie is discovered. If concealments are indeed used in more serious lies, then we may find that subtle lies are seen as more taxing than other lies, including being more cognitively demanding.

### *Reasons to Lie*

DePaulo et al. (1996) further found that people tell lies for four different reasons: To gain esteem, affection, and respect (hereafter labeled self-oriented psychological lies); to acquire financial gain or material advantage (self-oriented advantage lies); to protect or enhance other persons psychologically (other-oriented psychological lies); and to achieve another person's financial gain or material advantage (other-oriented advantage lies). DePaulo et al. (1996) found that lies are more often told to serve the self rather than others and that most of these self-oriented lies are told for psychological reasons. Different reasons to lie may result in different experiences. For example, people may feel somewhat negative about lying for personal advantage and may therefore perceive these interactions as less meaningful and pleasant. They may also find such lies particularly serious, and this may result in finding such lies more taxing.

DePaulo et al. (1996) further reported that people lie about different topics. They lie about affects, emotions, opinions, and evaluations by pretending to feel more positive than they in fact do (hereafter labeled positive feelings); they pretend to feel more negative than they in fact do (negative feelings); they lie about their achievements, accomplishments, failures, shortcomings, and knowledge (knowledge); they lie about what they did, are doing, or planning to do (actions); they lie about reasons for, or explanations of, their behavior (explanations); and they lie about facts (facts). DePaulo et al. (1996) found that people mostly lied about their true feelings, especially by feigning positive feelings, but also lying about actions and whereabouts was commonplace. Perhaps different types of content of the lie would be related to how people experience those lies. For example, liars may think that it is easier to get away with lying about their feelings than about facts, because the veracity of factual information can be more easily verified by observers (Köhnken, 1989). If liars realize this, they then may be less tense and experience less cognitive load when they lie about feelings.

### *Emotional Closeness*

Finally, we examined the emotional closeness between the liar and target person. DePaulo and Kashy (1998) found that the closer the relationship between two persons in an interaction, the lower the rate of lying within that relationship. As Anderson, Ansfield, and DePaulo (1999) pointed out, when people feel that they cannot tell each other how they really performed, or when they too often fear that they cannot safely express their true feelings and opinions, the relationship is unlikely to feel like a close relationship. The type of relationship could well affect the experiences during social interactions. For example, people will probably perceive the conversations they have with others they feel close to as more pleasant and meaningful. Moreover, perhaps because in such interactions people feel more at ease and can express their true selves more, this may result in feeling less tense, and experiencing less cognitive load and less sense of deliberateness. They may also embrace their statements more and feel a lesser urge to appear convincing. This is probably true for truthful interactions, but perhaps also for deceptive interactions. For example,

Seiter, Brusckie and Bai (2002) and Jensen, Arnett, Feldman, and Cauffman (2004) found that people thought that it is sometimes highly acceptable to lie to others they feel close to, and even more acceptable than to people they do not feel so close to. This is particularly the case when the motives of these lies are to maintain privacy, to avoid conflict, or to benefit others. It may be that these are the types of lies people mostly tell in daily life to people they feel close to. In that case, the positive feelings of being at ease when interacting with someone the liar is close to are unlikely to be overshadowed by the slight negative feelings caused by deception, and therefore people may feel more at ease when lying to close partners than to casual partners.

## Method

### *Participants*

A total of 50 females and 10 males participated, and their average age was  $M = 21.60$  ( $SD = 5.0$ ) years. Due to the small number of male participants and the small standard deviation in age, no gender and age differences were further examined.

### *Procedure*

The study took place in the Psychology Department. Participants were made aware of the study via large posters on the wall with the heading: "Do you want to know more about your interactions with other people?" In the poster, students were made aware that participants would be awarded £10 (\$18) and information was given about whom to contact in order to participate (the research assistant). The research assistant gave the participants a pack of information consisting of 50 copies of the social-interaction sheets (described below), a personality-measures questionnaire (not reported in this article), an informed-consent form, and an instruction sheet. The research assistant asked the participant to read the instruction sheet first before signing the informed-consent form. The instruction sheet was based on the instructions given by DePaulo et al. (1996) in their diary study. We asked participants to record all the social interactions they had for a week starting the following day, and to record all of the lies that they told during those interactions. They were asked to fill out a social-interaction sheet as soon as possible after each conversation they had. In case they did not have the opportunity to fill out the social-interaction sheets immediately, they were asked to write reminders of their interactions as soon as possible after the interaction occurred, and to use these notes as a memory aid when they filled out the social-interaction sheets. A social interaction was defined as "Any exchange between you and another person that lasts for some amount of time. Thus, few-word exchanges, such as saying fine when asked how you are, would not count. A lie was defined as "A lie occurs any time you intentionally convey an opinion which you do not consider to be your real opinion and which you express with the intention to mislead the other person. Both the intent to deceive and the actual deception must occur." The instruction sheet further informed participants that they would be asked to briefly describe the content of the lie, but that they could write down "rather not say" if they did not wish to reveal that information; to give as much information on the social-interaction sheets as they could in case they could no

longer completely remember everything about the lie; to record all lies, no matter how small or big; to record the interaction as a lie if they are uncertain whether a certain communication qualifies as a lie; to get more social-interaction sheets if needed; to write a pseudonym on their social-interaction sheets instead of their real name on all forms to ensure anonymity; and to put the completed social-interaction forms in an envelope and to drop the envelope in the social-interaction box located in the Psychology Department. They were also informed that they would be asked to fill out a post-diary questionnaire after submitting the envelope, and that this questionnaire, together with further instructions about how to obtain the monetary reward, could be found in the students' Departmental mail box under the pseudonym's name. A debriefing form was given when the participants collected their monetary reward.

### *The Variables*

The first part of the social-interaction sheet contained background information. Participants were asked to indicate when the interaction took place, how the social interaction took place (face to face, via the telephone, via email, via chat box, or via text messages), how many people other than themselves were involved in the interaction, and the duration of the interaction. They were then asked to describe the person they interacted with by means of filling out the WHOTO questionnaire (Fralely & Davis, 1997) consisting of the following six items:

- i. Is this a person you most like to spend time with?
- ii. Is this a person you don't like to be away from?
- iii. Is this a person you want to be with when you are feeling upset or down?
- iv. Is this a person you would count on for advice?
- v. Is this a person you would want to tell first if you achieved something good?
- vi. Is this a person you can always count on?

Answers were given on 7-points scales ranging from (1) certainly not to (7) definitely. Answers were clustered into a *social closeness scale* (Cronbach's alpha = .96). In case the participants interacted with more than one other person, they were asked to answer the WHOTO questions for each person with whom they interacted.

The following seven questions were asked about each interaction:

- i. To what extent did you feel tense during this social interaction?
- ii. To what extent did you think hard about what to say?
- iii. To what extent did you deliberately attempt to make an honest impression on the other person?
- iv. To what extent could you embrace what you said?
- v. To what extent did you experience a sense of deliberateness during the interaction?

Answers to these five questions were given on 7-point Likert scales ranging from not at all (1) to very (7). Moreover, participants were asked to describe the nature of the social interaction in terms of

- vi. superficial (1) to meaningful (7) and
- vii. unpleasant (1) to pleasant (7).

These seven questions are labeled *characteristics of the social interaction* throughout the article.

Participants were then asked to indicate whether or not the social interaction included a lie. In case participants did lie, they were asked to describe

- i. the conversation and content of the lie,
- ii. and the reason why they told the lie.

Both questions were open-ended questions. Seven specific questions were asked about the lie using 7-point Likert scales:

- i. To what extent did you plan your lie in advance? [completely spontaneous (1) to completely planned (7)],
- ii. To what extent is it important not to get caught? [very unimportant (1) to very important (7)];
- iii. To what extent was the lie serious? [not at all (1) to very (7)];
- iv. Did the other person challenge you? [not at all (1) to very (7)];
- v. To what extent did the other person believe you? [not at all (1) to completely (7)];
- vi. How would the person you deceived have felt if you told the truth instead of a lie? [much better (1) to much worse (7)]; and
- vii. How would you yourself have felt if you told the truth instead of a lie? [much better (1) to much worse (7)].

These seven questions are labeled *characteristics of the lie* throughout this article.

In the post-diary questionnaire, the participants were asked to report:

- i. the percentage of social interactions that they had that they have recorded,



- ii. the percentage of lies they told that they have recorded,
- iii. how many lies they tell per week [much fewer than I thought (1) to much more than I thought (7)],
- iv. how serious they think these lies are [much more trivial than I thought (1) to much more serious than I thought (7)], and
- v. how this insight into the number and nature of their own lies affects them as individuals [makes me feel much better (1) to makes me feel much worse (7)].

### *Coding the Lies*

For coding of the lies, the taxonomy developed by DePaulo et al. (1996) was used. Like DePaulo et al. (1996), we distinguished among three types of lies, including

- i. outright lies,
- ii. exaggerations,
- iii. subtle lies;

six content types, including lies about

- i. positive feelings (feigning affects, opinions, evaluations etc. that are more positive than they in fact are),
- ii. negative feelings (feigning affects, opinions, evaluations etc. that are more negative than they in fact are),
- iii. achievements and knowledge,
- iv. actions, plans and whereabouts,
- v. explanations and reasons, and
- vi. facts and possessions;

and four types of reason for telling the lie, including

- i. self-oriented lies told for psychological reasons,
- ii. self-oriented lies told for personal advantage,
- iii. other-oriented lies told for psychological reasons, and
- iv. other-oriented lies told for personal advantage.

See DePaulo et al. (1996) for definitions. The coder read DePaulo et al.'s (1996) taxonomy of lies (described in Table 1 of their article) and coded the lies accordingly. A second independent coder was also asked to read DePaulo et al.'s (1996) article and code a random selection of 20% ( $N = 63$ ) of the recorded lies. Reliability scores (Cohen's Kappas) between the two coders were .70 for type of lie, .87 for content of the lie, and .83 for reason of the lie. According to Cicchetti and Sparrow (1981) Cohen's Kappas greater than .75 are excellent and those ranging between .60 and .74 are good.

### *Analyses*

The 60 participants recorded a total 1,241 interactions, of which 938 were truthful and 303 included a lie. In 1,074 interactions, only one other person was involved and in the remaining 167 interactions, two or more other people were involved. Note that we asked participants to fill out a WHOTO social-interaction sheet for each of the people involved in the interaction (see section "the Variables"). The number of WHOTO social-interaction sheets therefore outnumbered the total of social interactions reported by the participants. In total 1,496 WHOTO social-interaction sheets were completed of which 338 were related to deceptive interactions.

Data were analyzed in two different ways. First, we used "participant" as the unit of analysis. For each participant a mean score on each dependent variable was computed across all truthful social interactions, and a second set of means was computed averaging over all deceptive interactions. Then, within-subjects analyses were carried out to compare the means for truthful and deceptive interactions. Since three participants did not report a lie, (see below) these analyses involved 57 participants. We could not conduct such within-subjects analyses when we looked at specific variables such as "medium" and "lie categories" (type of lie, content and reason), as this would result in too many missing participants. For example, we would only be able to include those participants in the Type-of-Lie analysis who told all three types of lies, etc. We therefore also conducted between-subjects analyses using social interaction as a unit. To control for the fact that some participants filled out more social-interaction sheets than others, the variable "participant" was included as a covariate in such analyses. Due to the constraints of the within-subjects analyses, we will report only the between-subjects analyses in the main text. Where relevant (Table 3) we summarize the within-subjects findings in an endnote.

## Results

### *Frequency of Lying and Post-Diary Questionnaire*

The 938 truthful interactions lasted significantly longer ( $M = 51.6$  minutes,  $SD = 71.5$ ) than the 303 conversations that included a lie ( $M = 39.21$  minutes,  $SD = 57.3$ ),  $F(1, 1238) = 7.54$ ,  $p < .01$ ,  $\eta^2 = .01$ . We asked the 60 participants to keep a diary for seven days and 42 did so. The remaining participants kept a diary for four days ( $N = 4$ ), five days, ( $N = 6$ ) or six days ( $N = 8$ ). Participants thus kept a diary, on average, for  $M = 6.47$  days ( $SD = .9$ ). Table 1 reveals that, in that period of time, each

participant told on average  $M = 5.05$  lies. The average number of interactions reported during the study was  $M = 20.67$ , resulting in approximately one lie in every four social interactions. This supports the prediction that lying would be a frequent event. Three participants did not report a single lie, and the highest reported frequency of lying over a period of seven days was 19.

In the post-diary questionnaire (see Table 1)<sup>2</sup> participants estimated that they had reported 86% of their lies and 71% of their social interactions. Roughly equal numbers of participants reported that they lied less (45%) or more (40%) than they had previously thought, and this was dependent on the number of lies reported. The more lies the participants reported, the more they reported that they obviously lied more than they had initially thought. Most participants (65%) indicated that their lies were not serious, but this was also correlated with the number of lies reported: The more lies reported, the more serious they thought these lies were. Roughly equal numbers of participants reported that insight into the nature and frequency of their own lying made them feel a worse (35%) or a better person (32%).

Table 1

*Frequency of Lying by the 60 Participants*

	M	SD	Range				
N of interactions	20.67	10.23	5 - 52				
N of lies	5.05	4.05	0 - 19				
% of interactions which included a lie	25.48	17.64	0% - 67%				
Post questionnaire:							
	M	SD					
% of interactions claimed to have reported	71.33	23.05	20% - 100%				
% of lies claimed to have reported	86.00	19.05	20% - 100%				
	M	SD	low (< 4)	medium (4)	high (>4)	r(60) with % lies	
How many lies do you tell per week?	3.83	1.8	45%	15%	40%	.47**	
How serious were these lies?	3.12	1.3	65%	18%	17%	.34**	
How does insight in telling lies affect you as a person?	3.97	1.4	35%	33%	32%	.09	

*Medium and Deception*

Table 2 shows via which medium the interactions (including the lies) took place. As Table 2 shows, relatively speaking, many lies were told via more indirect channels (telephone, chat box, text) than face to face. An exception was "email" (few lies were told via email), but since so few interactions took place via email, the data may be unreliable. "Email" was therefore left out of all Medium analyses. A 4 (Medium: face to face, telephone, chat box, text messages) X 2 (Veracity: truth vs. lie) Chi-

<sup>2</sup> All tables are viewable in their original format as an appendix to this document.

square analysis revealed a significant effect,  $X^2(3, N = 1222) = 13.38, p < .01$ , supporting our prediction that relatively few lies were told face to face.

Table 2

*Frequency of Social Interactions as a Function of Veracity and Medium*

	Truth	Lie	Total <sup>1</sup>
Face to face	713 (77.9%)	202 (22.1%)	915 (73.9%)
Telephone	158 (69.3%)	70 (30.7%)	228 (18.4%)
Email	14 (87.5%)	2 (12.5%)	16 (1.3%)
Chat box	31 (62.0%)	19 (38.0%)	50 (4.0%)
Text messages	19 (65.5%)	10 (34.5%)	29 (2.3%)

<sup>1</sup> The total doesn't add up to 1241 due to some missing values.

In order to examine how emotional closeness and the seven social-interaction characteristics were affected by Medium and Veracity, two analyses were conducted. First, a 4 (Medium: face to face, telephone, chat box, and text message) X 2 (Veracity: truth vs. lie) MANCOVA was carried out with the seven social-interaction characteristics as dependent variables and participant as covariate. Since emotional-closeness scores were based on more social-interaction sheets than the seven social-interaction variables (see Method), a separate 4 (Medium) X 2 (Veracity) ANCOVA was carried out with emotional closeness as dependent variable and participant as a covariate. The MANCOVA<sup>3</sup> revealed significant effects for Medium,  $F(21, 3436) = 3.15, p < .01, \eta^2 = .02$  and Veracity,  $F(7, 1207) = 13.15, p < .01, \eta^2 = .07$ . The Medium X Veracity interaction effect was not significant,  $F(21, 3466) = 1.31, ns$ . The results for the Medium effect are beyond the scope of this article and will therefore not be discussed. The univariate effects for Veracity are shown in Table 3. When participants lied they were more tense, had to think harder, tried harder to appear convincing, embraced their statements less, experienced more sense of deliberateness, and found the interaction less pleasant. This supports our predictions. Table 3 also showed how strongly participants experienced these processes when they lied. Tenseness, cognitive load, attempting to be convincing, embracing the statement, and sense of deliberateness were all experienced in approximately a third of the lies. Around half of the deceptive interactions were perceived as meaningful and pleasant. We predicted that these characteristics would only be weakly present when people lied. With one sample t-test, we compared the means for both the truth and lies scores with the neutral "4" scores on

<sup>3</sup> A within-subjects MANOVA with Veracity (truth vs lie) as factor and emotional closeness and the seven social-interaction characteristics as dependent variables revealed a significant multivariate effect,  $F(8, 49) = 9.78, p < .01, \eta^2 = .62$ . All eight univariate effects were significant, all  $F(1, 56)$ 's  $> 5.68$ , all  $p$ 's  $< .05$ , and  $\eta^2$ 's ranged from .09 to .52. The mean scores showed a pattern identical to the pattern depicted in Table 2, but we were able to explain more of the variance with this within-subjects analysis.

the 7-point Likert scales (emotional closeness was excluded from these analyses). These analyses supported the idea that these processes were, on average, not strongly experienced. As Table 3 shows (underlined scores), most mean scores were significantly below the neutral "4" point, even for the deceptive interactions (all  $t$ 's > 2.18, all  $p$ 's < .01) supporting our predictions that the lies were relatively minor.

Table 3

*Social Characteristics as a Function of Veracity*

	Truth (N = 921)		Lie (N = 301)		F(1, 1213)	eta <sup>2</sup>	Lie scores		
	M	SD	M	SD			low (< 4)	medium (4)	high
(>4)									
Feeling tense	<u>2.42</u>	1.7	<u>3.33</u>	1.9	34.70**	.03	54%	13%	33%
Thinking hard	<u>2.40</u>	1.7	<u>3.48</u>	2.0	38.33**	.03	52%	13%	35%
Attempting to appear convincing	<u>2.86</u>	1.8	<u>3.65</u>	1.9	11.40**	.01	47%	15%	38%
Embracing the statement	<u>4.44</u>	1.6	<u>3.79</u>	1.5	20.37*	.02	36%	31%	33%
Sense of deliberateness	<u>2.69</u>	1.7	<u>3.61</u>	1.8	16.01*	.01	47%	17%	36%
Superficial – meaningful	<u>4.61</u>	1.8	<u>4.27</u>	1.8	3.78		34%	15%	51%
Unpleasant - pleasant	<u>5.60</u>	1.4	<u>4.34</u>	1.7	57.35**	.05	29%	22%	51%

Underlined scores differ significantly ( $p < .05$ ) from the neutral score '4'

Emotional closeness<sup>1</sup> 4.60 1.8 4.38 1.7 5.57\* .01

\*  $p < .05$  \*\*  $p < .01$

<sup>1</sup> Based on 1141 truths and 336 lies

The 4 (Medium) X 2 (Veracity) ANCOVA with emotional closeness as dependent variable revealed a significant main effect for Medium,  $F(1, 1468) = 31.83$ ,  $p < .01$ ,  $eta^2 = .06$ , and a significant main effect for Veracity,  $F(1, 1468) = 5.57$ ,  $p < .05$ ,  $eta^2 = .01$ . The Medium X Veracity interaction effect was not significant,  $F(1, 1468) = 2.87$ ,  $ns$ . Table 3 shows that participants felt emotionally least close to the people they lied to. Since Medium X Veracity revealed no significant effect, we disregarded the Medium factor in further analyses where we looked at the different categories of lies.

*Lie categories: Overview*

Table 4 shows the lies categories. As was predicted, participants mostly lied about their affects, emotions, opinions, and evaluations, particularly feigning positive feelings and thus pretending that things were better than they in fact were. Participants also frequently lied about their actions. These findings are similar to DePaulo et al. (1996). Most lies were self-oriented and particularly told for psychological reasons. This again reflects DePaulo et al.'s (1996) findings. Lies told so that others could obtain advantage were very rare, and so these lies are left out in

all subsequent analyses where “reason of the lie” was included as a factor. Finally, as DePaulo et al. (1996) found, the vast majority of lies the participants told were outright lies.

Table 4

*Frequency of Deceptive Social Interactions as a Function of Content of the Lie, Reason for Lying and Type of Lie*

CONTENT <sup>1</sup>	
Positive feelings	80 (28%)
Negative feelings	27 (9.4%)
Knowledge	22 (7.7%)
Actions	100 (34.8%)
Explanations	30 (10.5%)
Facts	28 (9.8%)
REASON <sup>1</sup>	
Self-psychological	113 (38.7%)
Self-advantage	76 (26.0%)
Other-psychological	95 (32.5%)
Other-advantage	8 (2.7%)
TYPE <sup>1</sup>	
Outright lies	198 (68.3%)
Exaggerations	59 (20.3%)
Concealments	33 (11.4%)

<sup>1</sup> The totals don't add up to 303 due to some missing values

#### *Content of the Lie and Social-interaction Characteristics*

In order to examine whether different categories of lie content are associated with different experiences, a MANCOVA was carried out with Content of the lie as the only factor and Participant as a covariate. The content factor had seven levels: the six content types (positive feelings, negative feelings, knowledge, actions, explanations, facts) and the truth condition. Dependent variables were the seven social-interaction characteristics. The multivariate effect was significant,  $F(42, 5683)$

= 6.67,  $p < .01$ ,  $\eta^2 = .04$ , and the univariate results are depicted in Table 5. Tukey posthoc tests revealed that the findings were primarily significant because the different content conditions differed from the truth condition; the content conditions did not differ significantly from each other. The ANCOVA for emotional closeness did not reveal a significant effect for content,  $F(1, 1467) = .83$ , *ns*. Our prediction that liars would experience less nervousness or cognitive load when lying about their feelings thus remains unsupported.

Table 5

*Social-interaction Characteristics as a Function of Content of the Lie*

	Content														F(6, 1217)	$\eta^2$
	Pos feelings		Neg feelings		Knowledge		Actions		Explanations		Facts		Truth			
	N = 80	N = 27	N = 22	N = 100	N = 30	N = 28	N = 938									
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
Feeling tense	3.69 <sup>b</sup>	1.8	3.67 <sup>b</sup>	2.3	2.66 <sup>ab</sup>	1.7	3.28 <sup>b</sup>	1.9	3.13 <sup>b</sup>	2.2	3.14 <sup>b</sup>	2.0	2.16 <sup>a</sup>	1.5	21.20**	.10
Thinking hard	3.83 <sup>b</sup>	1.8	3.59 <sup>b</sup>	2.0	3.27 <sup>ab</sup>	2.0	3.34 <sup>b</sup>	2.0	3.43 <sup>b</sup>	2.3	3.29 <sup>ab</sup>	2.1	2.40 <sup>a</sup>	1.7	15.44**	.07
Attempt to appear convincing	3.75 <sup>b</sup>	1.8	3.30 <sup>ab</sup>	1.9	3.82 <sup>ab</sup>	2.0	3.56 <sup>ab</sup>	1.8	3.57 <sup>ab</sup>	2.1	4.11 <sup>b</sup>	1.9	2.86 <sup>a</sup>	1.9	7.42**	.04
Embracing the statement	3.96 <sup>ab</sup>	1.3	3.37 <sup>a</sup>	1.3	3.93 <sup>ab</sup>	1.7	3.60 <sup>a</sup>	1.5	3.67 <sup>ab</sup>	1.6	4.29 <sup>ab</sup>	1.5	4.43 <sup>b</sup>	1.6	7.25**	.04
Sense of deliberateness	3.84 <sup>b</sup>	1.6	3.52 <sup>ab</sup>	1.9	3.63 <sup>ab</sup>	1.8	3.47 <sup>b</sup>	1.9	3.53 <sup>ab</sup>	1.9	3.75 <sup>b</sup>	2.0	2.69 <sup>a</sup>	1.7	11.44**	.05
Superficial – meaningful	4.67 <sup>ab</sup>	1.6	4.22 <sup>ab</sup>	2.1	4.55 <sup>ab</sup>	1.6	3.90 <sup>a</sup>	1.8	3.90 <sup>ab</sup>	1.7	4.43 <sup>ab</sup>	1.8	4.62 <sup>b</sup>	1.9	3.35*	.02
Unpleasant - pleasant	4.12 <sup>a</sup>	1.7	3.89 <sup>a</sup>	2.0	4.64 <sup>a</sup>	1.8	4.61 <sup>a</sup>	1.6	4.07 <sup>a</sup>	1.8	4.43 <sup>a</sup>	1.6	5.61 <sup>b</sup>	1.4	29.62**	.13
Emotional closeness <sup>1</sup>	4.61	1.7	4.61	1.7	4.29	1.6	4.33	1.6	4.24	1.7	4.46	1.7	4.60	1.8	.83	

\*  $p < .05$       \*\*  $p < .01$

<sup>1</sup> Based upon 86 positive feelings, 28 negative feelings, 28 knowledge, 110 actions, 31 explanations, 36 facts and 1156 truth

*Reasons for the Lies and Social-interaction Characteristics*

In order to examine whether different reasons for lying are associated with different experiences, a MANCOVA was carried out with Reasons for the lies as the only factor and Participant as a covariate. This factor had four levels: the three reasons (self-oriented for psychological reasons, self-oriented for personal advantage, other-oriented for psychological reasons) and the truth condition. Dependent variables were the seven social-interaction characteristics. At a multivariate level, the MANCOVA reached a significant effect,  $F(21, 3477) = 13.04$ ,  $p < .01$ ,  $\eta^2 = .07$ . The univariate results are shown in Table 6. Tukey posthoc tests showed that, similar to the content of the lie results, the significant effects were primarily due to the differences between the various reason conditions and the truth condition. Only one difference between reason conditions emerged. As we predicted, lies for personal gain were perceived as least meaningful. We also expected such lies to be more taxing in terms of feeling tenseness, cognitive load, etc. This prediction was not supported. The ANCOVA with emotional closeness as a dependent variable showed a significant effect,  $F(3, 1468) = 7.71$ ,  $p < .01$ ,  $\eta^2 = .02$ . As Table 6 shows, lies meant to benefit others psychologically were told to people the liars felt emotionally closer to than lies told for selfish reasons. This also supports our prediction.

Table 6

## Social-interaction Characteristics as a Function of Reason for Lying

	Reason								F(3, 1217)	eta <sup>2</sup>
	Self-psychological		Self-advantage		Other-psychological		truth			
	M	SD	M	SD	M	SD	M	SD		
	N = 113		N = 76		N = 95		N = 938			
Feeling tense	3.38 <sup>b</sup>	2.0	3.33 <sup>b</sup>	1.9	3.41 <sup>b</sup>	2.0	2.16 <sup>a</sup>	1.5	40.35**	.09
Thinking hard	3.41 <sup>b</sup>	2.1	3.54 <sup>b</sup>	1.8	3.69 <sup>b</sup>	2.0	2.40 <sup>a</sup>	1.7	31.67**	.07
Attempting to appear convincing	3.60 <sup>b</sup>	1.9	3.79 <sup>b</sup>	1.9	3.69 <sup>b</sup>	1.9	2.86 <sup>a</sup>	1.9	14.38**	.03
Embracing the statement	3.71 <sup>a</sup>	1.5	3.78 <sup>a</sup>	1.5	3.88 <sup>a</sup>	1.6	4.43 <sup>b</sup>	1.6	11.91**	.03
Sense of deliberateness	3.48 <sup>b</sup>	1.9	3.89 <sup>b</sup>	1.7	3.61 <sup>b</sup>	1.8	2.69 <sup>a</sup>	1.7	23.19**	.05
Superficial – meaningful	4.23 <sup>b</sup>	1.8	3.53 <sup>a</sup>	1.8	4.78 <sup>b</sup>	1.8	4.62 <sup>b</sup>	1.9	9.80**	.02
Unpleasant - pleasant	4.47 <sup>a</sup>	1.7	3.95 <sup>a</sup>	1.7	4.42 <sup>a</sup>	1.6	5.61 <sup>b</sup>	1.4	59.06**	.13
Emotional closeness <sup>1</sup>	4.34 <sup>ab</sup>	1.7	3.76 <sup>a</sup>	1.7	4.93 <sup>c</sup>	1.6	4.60 <sup>bc</sup>	1.8	7.71**	.02

\*  $p < .05$       \*\*  $p < .01$

<sup>1</sup> based upon 128 self-psychological lies, 80 self-advantage lies, 109 other-psychological lies and 1156 truths

### Type of Lie and Social-interaction Characteristics

In order to examine whether different types of lie are associated with different experiences, a MANCOVA was carried out with Types of lie as only factor and Participant as a covariate. The types of lie factor had four levels: the three types of lie (outright, exaggerations, and subtle) and the truth condition. Dependent variables were the seven social-interaction characteristics. The analysis revealed a significant multivariate effect,  $F(21, 3495) = 11.89$ ,  $p < .01$ ,  $eta^2 = .06$ . The univariate results are presented in Table 7. Tukey posthoc tests showed that all three types of lies differed in various aspects from the truth condition. However, they also showed some differences between the different types of lie categories. The characteristics appeared to be most strongly present in subtle lies: Participants experienced more cognitive load and a stronger sense of deliberateness when telling subtle lies compared to telling outright lies and exaggerations. Participants also tried harder to appear convincing when telling subtle lies compared to when they told exaggerations. We then compared the mean scores with the neutral “4” score of the Likert scale. The significant findings are underlined in Table 7 (all  $t$ 's  $> 2.12$ , all  $p$ 's  $< .05$ ). Apart from the scores regarding perceiving the deceptive social interaction as meaningful and pleasant, all mean scores for telling outright lies and exaggerations

were below “4” and many of them significantly below “4.” None of the mean scores for subtle lies differed from “4” (all  $t(32)$ 's  $< 1.87$ , all  $p$ 's  $> .07$ ). The ANCOVA with emotional closeness as dependent variable revealed a significant effect,  $F(3, 1474) = 4.81$ ,  $p < .01$ ,  $eta^2 = .01$ . Participants felt least emotionally close to the people to whom they told subtle lies.



Table 7

*Social-interaction Characteristics as a Function of Type of Lie*

	Type of lie								F(3, 1223)	eta <sup>2</sup>
	Outright		Exaggeration		Subtle		Truth			
	M	SD	M	SD	M	SD	M	SD		
	N = 198		N = 59		N = 33		N = 938			
Feeling tense	<u>3.29<sup>b</sup></u>	2.0	<u>3.14<sup>b</sup></u>	1.8	3.92 <sup>b</sup>	1.9	2.16 <sup>a</sup>	1.5	40.16**	.09
Thinking hard	<u>3.37<sup>b</sup></u>	2.0	<u>3.34<sup>b</sup></u>	1.8	4.36 <sup>c</sup>	1.8	2.40 <sup>a</sup>	1.7	32.65**	.07
Attempting to appear convincing	<u>3.60<sup>bc</sup></u>	1.9	<u>3.41<sup>ab</sup></u>	1.6	4.49 <sup>c</sup>	2.1	2.86 <sup>a</sup>	1.9	17.12**	.04
Embracing the statement	<u>3.76<sup>a</sup></u>	1.5	3.77 <sup>a</sup>	1.1	4.14 <sup>ab</sup>	1.7	4.43 <sup>b</sup>	1.6	11.94**	.03
Sense of deliberateness	<u>3.52<sup>b</sup></u>	1.8	<u>3.42<sup>b</sup></u>	1.7	4.54 <sup>c</sup>	1.7	2.69 <sup>a</sup>	1.7	26.61**	.06
Superficial – meaningful	<u>4.39<sup>ab</sup></u>	1.8	4.19 <sup>ab</sup>	1.7	3.70 <sup>a</sup>	1.9	4.62 <sup>b</sup>	1.9	4.26*	.01
Unpleasant - pleasant	<u>4.37<sup>a</sup></u>	1.7	<u>4.51<sup>a</sup></u>	1.7	3.91 <sup>a</sup>	1.8	5.61 <sup>b</sup>	1.4	56.12**	.12
Underlined scores differ significantly ( $p < .05$ ) from the neutral score '4'										
Emotional closeness <sup>1</sup>	4.68 <sup>b</sup>	1.6	4.18 <sup>ab</sup>	1.6	3.80 <sup>a</sup>	1.8	4.60 <sup>b</sup>	1.8	4.81**	.01

$p < .05$  \*\*  $p < .01$

<sup>1</sup> Based upon 210 outright lies, 69 exaggerations, 44 subtle lies and 1156 truths

*Lie Characteristics*

Table 8 gives an overview of the lie characteristics. All scores differed significantly from the neutral “4” score (all  $t(301)$ 's  $> 3.66$ ,  $p < .01$ ). Table 8 clearly demonstrates our prediction that most lies people told were minor. Most of them did not involve much planning, were not serious and it was not important if they were discovered. The other person rarely challenged the liar, and the liar mostly thought that the other persons believed their lies. The participants rarely felt that either they themselves, or the liar, would have been better off if the truth was told.

Table 8

*Lie Characteristics*

	M	SD	low (< 4)	medium (4)	high (> 4)
Planning	<u>2.86</u>	2.0	67.5%	6.5%	26.0%
Important to avoid getting caught	3.78	2.0	48.0%	12.0%	40.0%
Serious	<u>2.80</u>	1.7	70.0%	11.0%	19.0%
Did the other challenge?	<u>2.54</u>	2.0	71.0%	5.0%	24.0%
Did the other believe your lie?	<u>5.10</u>	1.8	31.0%	17.0%	52.0%
How would the deceived have felt with truth?	<u>4.84</u>	1.5	13.0%	34.0%	53.0%
How would you have felt with truth?	<u>4.37</u>	1.7	24.0%	29.0%	47.0%

Underlined scores differ significantly ( $p < .05$ ) from the neutral score '4'

Underlined scores differ significantly ( $p < .05$ ) from the neutral score '4'

MANCOVAs were carried out examining whether Content of the lie, Reason to lie, and Type of lie had an impact on these lie characteristics. The MANCOVA with lie Content (positive feelings, negative feelings, knowledge, actions, explanations and facts) did not yield a significant multivariate effect,  $F(35, 1150) = 1.35, ns$ . The MANCOVA with Reason to lie (self-psychological, self-advantage, other-psychological) as a factor was significant,  $F(14, 548) = 2.29, p < .01, \eta^2 = .06$ , so was the MANCOVA with Type of lie (outright, exaggeration, subtle) as factor,  $F(14, 536) = 2.33, p < .01, \eta^2 = .06$ . Table 9 shows the univariate results and reveals similar findings for Reasons to lie and Type of lie. For both, significant differences only emerged regarding the seriousness of the lie and how participants would have felt if they had told the truth. Lies told for the liar's own psychological benefit were perceived as less serious than lies told for another person's psychological benefit.

Table 9

*Lie Characteristics as a Function of Reasons for Lying*

	REASON						F(2, 280)	eta <sup>2</sup>
	Self-psychological		Self-advantage		Other-psychological			
	N = 113		N = 76		N = 95			
	M	SD	M	SD	M	SD		
Planning	2.63	1.9	3.28	2.1	2.94	1.9	2.95	
Important to avoid getting caught	3.56	1.9	3.87	2.2	4.14	1.9	2.44	
Seriousness	2.54 <sup>a</sup>	1.5	3.02 <sup>ab</sup>	1.9	3.07 <sup>b</sup>	1.6	3.06*	.02
Did the other challenge?	2.44	2.0	2.70	1.9	2.57	1.9	.49	
Did the other believe your lie?	5.15	1.9	4.87	1.7	5.32	1.7	1.19	
How would the deceived have felt with truth?	4.58 <sup>a</sup>	1.4	4.63 <sup>a</sup>	1.7	5.44 <sup>b</sup>	1.4	10.18*	.07
How would you have felt with truth?	4.41	1.8	4.33	1.8	4.38	1.8	.02	

*Lie Characteristics as a Function of Type of Lie*

	TYPE OF LIE						F(2, 286)	eta <sup>2</sup>
	Outright		Exaggerations		Concealment			
	M	SD	M	SD	M	sd		
Planning	2.81	1.9	2.66	1.8	3.58	2.4	2.25	
Important to avoid getting caught	3.71	2.0	3.54	1.8	4.57	1.9	2.85	
Seriousness	2.68 <sup>a</sup>	1.6	2.75 <sup>a</sup>	1.6	3.73 <sup>b</sup>	2.0	6.44**	.04
Did the other challenge?	2.51	2.0	2.69	1.9	2.61	1.9	.23	
Did the other believe your lie?	5.18	1.8	5.19	1.8	4.76	1.8	1.03	
How would the deceived have felt with truth?	5.01 <sup>b</sup>	1.5	4.44 <sup>a</sup>	1.4	4.67 <sup>ab</sup>	1.9	3.64*	.03
How would you have felt with truth?	4.40	1.8	4.43	1.6	4.15	2.0	.40	

\*  $p < .05$       \*\*  $p < .01$

Also, the participants thought that the deceived would have felt particularly worse if the participant had not told an other-oriented lie. Concealments were perceived as more serious than outright lies and exaggerations, and participants believed that the deceived would have felt particularly worse off if they had not told an outright lie.

We then correlated these seven lie characteristics with the lie scores of the emotional-closeness scale and the lie scores of the seven social-interaction

characteristics. For three of these seven lie characteristics, a substantial number of significant correlations emerged and they are reported in Table 10. As Table 10 reveals, the more the lie was planned in advance, the more tense the participants felt when lying, the more cognitive load and the more sense of deliberateness they experienced while lying, the harder they tried to appear convincing when they lied, and the less pleasant they perceived their deceptive interactions. As was predicted, the more important the participants found it to avoid getting caught, the more tense they felt when they lied, the more they had to think hard while lying, the more they tried to appear convincing when lying, the more they would embrace their statements, the more they experienced a sense of deliberateness during deception, and the less pleasant they perceived the deceptive interaction. An identical pattern of correlations emerged when seriousness of the lie was taken into account, again supporting our predictions.

Table 10

*Correlations between Social-interaction Characteristics and Lie Characteristics*

	Planned in advance N = 302	Important to avoid getting caught N = 302	Serious N = 302
Feeling tense	.20**	.37**	.42**
Thinking hard	.23**	.37**	.41**
Attempting to appear convincing	.25**	.37**	.41**
Embracing the statement	.11	.16**	.22**
Sense of deliberateness	.19**	.32**	.31**
Superficial – meaningful	.00	.00	-.01
Unpleasant - pleasant	-.15**	-.31**	-.37**
Emotional closeness <sup>1</sup>	.02	-.06	-.05

\*  $p < .05$       \*\*  $p < .01$

<sup>1</sup> Based upon the one conversation partner data only (N = 270)

*An Alternative Explanation: The Role of Emotional Closeness*

The results revealed significant differences between truths and lies for the social-interaction characteristics (being tense, thinking hard, trying to appear convincing, etc.). However, the data are correlational, and we therefore cannot rule out that factors other than deception have caused the differences between deceptive and truthful interactions. A plausible explanation is that the differences are caused by how close the participants felt to the person with whom they were interacting. In order to examine this, different analyses were carried out. First, the emotional-

closeness scores were correlated with the seven social-interaction characteristics. Separate analyses were conducted for deceptive and truthful interactions. Only the data for the interactions involving only one other person were included ( $N = 1074$ ), as the other social interactions resulted in multiple emotional-closeness data for each social interaction. Table 11 provides the results. It shows a clear relationship between emotional closeness and how the interactions were perceived. As we predicted, in general terms, participants felt more at ease in social interactions with people they were emotionally close to and interpreted these interactions as more meaningful and pleasant. This applied to both truthful and deceptive interactions.

Table 11

(i) Correlations between Emotional Closeness and Social-interaction Characteristics and (ii) Social Characteristics as a Function of Veracity Without and With Emotional Closeness as a Covariate

	Emotional closeness				Truth	Lie	F(1, 1071)	eta2	F(1, 1070)	eta2
	Truthful interactions		Deceptive interactions							
	n = 803		n = 271							
	M	SD	M	SD						
Feeling tense	-.38*	-.21**	2.13	1.6	3.39	1.9	116.27**	.10	102.92**	.09
Thinking hard	-.42**	-.18**	2.37	1.7	3.53	2.0	88.90**	.08	75.97**	.07
Attempting to appear convincing	-.21**	-.12*	2.83	1.9	3.68	1.9	40.75**	.04	34.10**	.03
Embracing the statement	.01	-.03	4.43	1.7	3.77	1.5	33.07**	.03	32.24**	.03
Sense of deliberateness	-.30**	-.21**	2.67	1.7	3.62	1.8	59.87**	.05	49.44**	.04
Superficial – meaningful	.43**	.54**	4.70	1.9	4.28	1.8	10.50**	.01	3.51	
Unpleasant – pleasant	.44**	.30**	5.63	1.4	4.25	1.7	175.24**	.14	164.50**	.13

\*  $p < .05$     \*\*  $p < .01$

□

We then ran two MANCOVAs. In the first analysis, Veracity was a factor and Participant a covariate. The seven social-interaction characteristics were the dependent variables. In the second MANCOVA, Veracity was the factor and Participant and Emotional closeness the covariates. The results are presented in Table 11. The first MANCOVA showed a significant multivariate effect for Veracity,  $F(7, 1065) = 35.09$ ,  $p < .01$ ,  $\eta^2 = .19$ , and the univariate tests revealed that participants were more tense, and experienced more cognitive load and a stronger sense of deliberateness in the deceptive conversations. They also tried harder to appear convincing in these conversations and embraced their statements less. They found their truthful interactions more meaningful and more pleasant. The second analysis also revealed a multivariate effect for Veracity,  $F(7, 1064) = 33.60$ ,  $p < .01$ ,  $\eta^2 = .18$ . As Table 11 shows, compared to the first analysis, the univariate results of the second analysis remained virtually the same. The only difference was that the effect of perceiving the interaction as meaningful disappeared.

## Discussion

### *Testing Deception Theories*

This is the first study where dominant theoretical perspectives about how people experience lying in everyday life have been put to an empirical test. We found strong support for the theoretical views that lying is somewhat more taxing than telling the truth. Compared to when our participants told the truth, they were slightly more tense, and experienced more cognitive load and sense of deliberateness when they lied. They also tried a bit harder to make a convincing impression when they lied, embraced their deceptive statements somewhat less, and found deceptive interactions somewhat less meaningful and pleasant. Although lying was thus more taxing than telling the truth, the average lie was minor. Typically, participants did not feel much tenseness or experience cognitive load when they lied, did not plan their lies much in advance, did not find it important to avoid getting caught, and did not find the lie serious. They were often not challenged by the other, and they often thought that the other believed their lie. They also felt that both they themselves, and the other person, were better off with the truth being withheld.

These findings have three important implications. First, it is the first empirical validation in a daily life situation of widely used theoretical perspectives on deception. Second, it sheds light on some of the ongoing debates in deception theory, particularly about the question of whether lying is typically cognitively more demanding than telling the truth. Our data revealed that it is. Third, it sheds light on the popular belief that liars are typically nervous (Akehurst, Köhnken, Vrij, & Bull, 1996; Bond & Rao, 2004; DePaulo & Morris, 2004; Strömwall, Granhag, & Hartwig, 2004; Taylor & Hick, 2007; Vrij, Akehurst, & Knight, 2006; Vrij & Semin, 1996). They are typically not. Indeed, our participants were on average a bit more tense when they lied compared to when they told the truth, but labeling them as “nervous” would be an exaggeration given the low levels of tenseness reported by the participants.

### *Different Lies, Different Experiences*

Participants' experiences were correlated with the type of lie they told. The more serious the lie was, and the more important it was to avoid getting caught, the more tenseness, cognitive load, and sense of deliberateness they experienced, the harder they tried to appear convincing, and the more unpleasant the interaction was. In other words, higher stakes lies are more taxing than lower stakes lies. Interestingly, we also found positive correlations between lies being taxing and the amount of planning that was put into the lie. Perhaps one would think that planning makes lying *less* taxing, yet this was not what we found. The lies that are planned in advance are likely to be more serious (our data support this: Planning of the lie and seriousness of the lie were significantly correlated,  $r(60) = .42$ ,  $p < .01$ ), and serious lies are more taxing. However, it may also suggest that people have little faith in their own planning. If they really were confident that their planning would lead to a successful lie, then lying should become less taxing. Future studies could examine

how much faith people have in planning their lies and what influences it. It could be that they think that planning would not much improve their lying skills. Alternatively, they may think that planning a lie is difficult, because they cannot predict how the deceptive conversation is going to develop exactly.

We also examined how the type of lie, content of the lie, and reasons to lie influenced participants' experiences. We predicted that participants would find lying for their own personal (material) advantage more serious than lying for psychological reasons or for the benefit of others. This was not the case. This may also explain why the lies told to pursue self-advantage were not perceived as more taxing in terms of tenseness and cognitive load. However, there was evidence that lies told for one's own material sake were perceived more negatively. As we predicted, the social interactions that incorporated these lies were seen as less meaningful.

We further predicted that participants would find lying about their opinions and feelings less taxing than lying about facts, perhaps because of the difficulties that observers face in verifying the veracity of statements about feelings. This prediction was not supported, and no differences between lying about opinions and feelings or actions emerged. Perhaps liars do not realize the difficulties that observers face in checking the veracity of their statements when they lie about their opinions and feelings, or, alternatively, perhaps our assumption that some types of lies are more difficult to verify than others is untrue.

The most striking differences emerged when we looked at the type of lie participants told: Subtle lies (concealments) were considered as more serious than outright lies and exaggerations. They also led to a greater sense of deliberateness than outright lies and exaggerations, and were perceived as cognitively more demanding than outright lies and exaggerations. The latter finding is interesting as it indicates that liars' perceptions of how cognitively demanding it is to lie are not just influenced by the difficulties they face in formulating the lie: Deliberately not saying something is obviously easier in terms of formulating the lie than fabricating a statement. The way in which the type of lie was related to the seriousness of the lie is also interesting. Observers typically perceive concealments as less serious than outright lies or exaggerations (Bavelas et al., 1990), yet our participants perceived concealments as more serious. We believe that this is because our participants chose to conceal information rather than fabricate a statement when they lied about more serious issues. Perhaps they did so because they thought that the consequences would be less serious in case they were caught, or perhaps they thought that concealing information would make the lie detection task for the other person more difficult because they did not provide information that could be verified. The extent to which people actually select the type of lie they tell, and the reasons why they do so, could be examined in future research.

### *Frequency of Lying*

With regard to the frequency of lying, the findings revealed that lying was a frequent event, with participants reported to have lied in one out of every four conversations they had. This 1:4 ratio is identical to the ratio found by DePaulo and her colleagues

in their diary study. Other findings also resembled DePaulo et al.'s (1996) findings: Most lies were told via an indirect medium (telephone, chat box or text message) rather than face to face; participants mostly lied by feigning positive feelings and opinions, but also lying about their actions was commonplace; most lies were self-oriented and particularly told to obtain psychological benefit; and most lies were outright.

### *Emotional closeness*

We also examined how emotionally close participants felt to the persons they interacted with. Again replicating DePaulo et al.'s (1996) findings, we found that lies were most often told to people to whom the participants felt emotionally less close. When we looked at the reason why the participants lied, we found that lies that benefited others were told to people the liar felt close to. We also found that how participants felt about their conversation partners affected how they experienced their social interactions. The more close they felt to their conversation partners, the more pleasant and meaningful they found the interaction, and the less tenseness, cognitive load, and sense of deliberateness they experienced in these interactions. The more close they felt to their conversation partners, the less hard they tried to appear convincing. As we predicted, these correlations emerged in both truthful and deceptive interactions. The latter suggests that people feel more at ease and more pleasant when they lie to people they like than when they lie to people they like less. We believe that this is because the positive feelings experienced by our participants when they interacted with someone they liked, overshadowed any negative feelings they may have felt because of the lie they told. It is important to realize that the average lie told in the present study was minor, and that this assumption relates to those minor lies. A totally different picture emerges when serious lies are told, as they elicit particularly negative feelings when they are told to people the liar feels close to (DePaulo, Ansfield, Kirkednol, & Boden, 2004; DePaulo, Wetzel, Sternglanz, & Walker Wilson, 2003).

### *Alternative Interpretations for the Findings*

Perhaps the main reason why we measured emotional closeness is to check whether it could provide an alternative explanation for our main finding that deceptive social interactions are perceived as slightly more taxing than truthful interactions. A limitation of our dataset is that it is correlational and that we cannot rule out that factors other than veracity have caused the differences between truthful and deceptive interactions. We expected emotional closeness to be the most obvious alternative interpretation. We predicted, and found, that participants would feel more at ease when they interacted with people to whom they feel close. We also predicted, and found, that participants were least likely to lie to people to whom they feel emotionally close. Combining the two could mean that participants found truthful interactions less taxing than deceptive interactions because they felt emotionally closer to the people to whom they spoke the truth. Our analyses provided no support for this alternative interpretation, because lies were still perceived as more taxing when we controlled for how emotionally close the liars felt to their conversation partner.

### *Implications for Professional Lie Catchers*

The experiment revealed that people lie frequently, often getting away with their lies. These findings could benefit professional lie catchers, such as police officers and security personnel. Due to the frequency and the success of lying in daily life, liars may gain confidence in their deception skills. However, this may be misplaced. Lying in daily life is not the same as lying in police interviews and security settings, and the lies told in daily life are probably easier than in such settings. One reason why liars get away with their lies in daily life is that lie catchers in daily life (e.g., romantic partners, friends, acquaintances) often exert a truth bias and tend to believe the stories told to them (Vrij, 2008). This is not the case for professional lie catchers who are often more suspicious (Meissner & Kassin, 2002, 2004). Another reason is that it is easier to fool people we know (e.g., romantic partners, friends, and acquaintances) than strangers (e.g., professional lie catchers). As relationships develop, people become more skilled at crafting communications uniquely designed to fool the known person. That is, throughout interactions with those known persons, liars have learned to tell a lie in such a way that it is difficult for these known persons to detect (Anderson et al., 1999; Vrij, 2008). Third, the negative consequences of getting caught are more serious in police interviews and security settings than in most daily life situations, and the higher the stakes, the more difficult it is to lie successfully, a phenomenon called the motivational-impairment effect (DePaulo & Kirkendol, 1989; Vrij, 2008). Fourth, conversation rules hamper lie detection in daily life (Vrij, 2008). These rules dictate that it is inappropriate, strange, or impolite for the listener to question a speaker, yet further questioning is often necessary to detect deceit (Vrij, 2008). Conversation rules further dictate that a listener looks the speaker in the eyes, yet the eyes generally do not reveal reliable information about deception (DePaulo et al., 2003; Vrij, 2008).

Professional lie catchers can employ certain interview styles that increase the chance of lie detection. Three styles have recently been recommended in the professional lie-detection literature,

- i. asking unanticipated questions,
- ii. imposing cognitive load, and
- iii. the Strategic Use of Evidence (SUE) technique.

One consistent finding in deception literature is that liars prepare themselves for possible interviews (Granhag, Andersson, Strömwall, & Hartwig, 2004; Granhag, Strömwall, & Jonsson, 2003; Hartwig, Granhag, & Strömwall, 2007; Vrij et al., 2009). However, this planning by liars can provide weaknesses that investigators can exploit. Specifically, this strategy for the liar to prepare is limited in its utility: It may work, but only if the liar correctly anticipates the questions that will be asked. If investigators ask questions that the liars did not anticipate, the liars will not be able to use their planned answers. Liars can refuse to answer these unanticipated questions but such “Don’t know” or “Can’t remember” answers will create suspicion if



the questions are about central aspects of the event which suspects should be able to answer. In an empirical test of the unanticipated-questions technique, pairs of liars and truth tellers were interviewed individually about having had lunch together in a restaurant (Vrij et al., 2009). The pairs of truth tellers did have lunch together whereas the liars were instructed to pretend that they had. All pairs were given the opportunity to prepare themselves for the interview. The interviewer asked typical opening questions which (as indicated after the interview) the interviewees had anticipated (e.g., "What did you do in the restaurant?"), followed by questions about spatial (e.g., "In relation to the front door and where you sat, where were the closest diners?") and temporal (e.g., "Who finished their food first, you or your friend?") information which the interviewees had not anticipated, and also an unanticipated request to draw a layout of the restaurant. Based on the correspondence in responses to the anticipated opening questions, pairs of liars and truth tellers could not be classified at a level above chance, whereas based on the correspondence in the unanticipated questions, up to 80% of liars and truth tellers could be correctly classified, particularly when assessing drawings. In summary, asking unanticipated questions about central topics gives rise to telltale inconsistencies amongst pairs of liars. By comparison, it has no effect on truth tellers since both members of the pair can rely on their memory of the event to provide consistent answers.

Asking unanticipated questions can also be effective when assessing individual interviewees rather than pairs of interviewees, for example by asking the same question twice in different formats. If liars have not anticipated a question, they are unlikely to have a stable memory of the answer they provide. The interviewer can exploit this by asking the same question twice in slightly different formats. This should not affect truth tellers, who can rely on their memory to provide consistent answers. In the restaurant study described above, the interviewees were asked both to verbally describe the layout of the restaurant in the interview and to sketch the layout after the interview (Leins, Fisher, Vrij, Leal, & Mann, in press). The truth tellers' statements and drawings showed more overlap than the liars' statements, drawings, 80% of truth tellers, and 75% of liars could be correctly classified with this lie detection method.

A lie detector could exploit the differential levels of cognitive load that truth tellers and liars experience to discriminate more effectively between them. Liars who require more cognitive resources than truth tellers for the act of story telling will have fewer cognitive resources left over than truth tellers. This makes liars vulnerable and so if cognitive demand is further raised, which could be achieved by making additional requests, liars may not be as good as truth tellers in coping with these additional requests.

One way to impose cognitive load on interviewees is by asking them to tell their stories in reverse order. This increases cognitive load because (a) it runs counter to the natural forward-order coding of sequentially occurring events (Gilbert & Fisher, 2006; Kahana, 1996) and (b) it disrupts reconstructing events from a schema (Geiselman & Callot, 1990). In an experiment, half of the liars and truth tellers were requested to recall their stories in reverse order, whereas no instruction was given to the other half of the participants (Vrij et al., 2008). More cues to deceit emerged in

this Reverse Order condition than in the control condition. More importantly, observers who watched these videotaped interviews could distinguish between truths and lies better in the Reverse Order condition than in the control condition.

Another way to increase cognitive load is by instructing interviewees to maintain eye contact with the interviewer. Instructing interviewees to maintain eye contact with the interviewer should increase cognitive load (Beattie, 1981). When people have to concentrate on telling their stories, which is likely when they are asked to recall what has happened, they are inclined to look away from their conversation partner (typically to a motionless point), because maintaining eye contact with the conversation partner is distracting (Doherty-Sneddon, Bruce, Bonner, Longbotham, & Doyle, 2002; Doherty-Sneddon & Phelps, 2005; Glenberg, Schroeder, & Robertson, 1998). When interviewees are instructed to maintain eye contact, their concentration on telling their stories is therefore likely to be hampered, and, since lying is more mentally taxing than truth telling, this should impair the storytelling of liars more than the storytelling of truth tellers. In an experiment, half of the liars and truth tellers were requested to maintain eye contact with the interviewer, whereas no instruction was given to the other half of the participants (Vrij et al., in press). Replicating the findings of the Reverse Order experiment, it was again found that more cues to deceit emerged in the Eye Contact condition than in the control condition and that observers who watched these videotaped interviews could discriminate between truths and lies, but only in the Eye Contact condition.

Guilty suspects (e.g., liars) and innocent suspects (e.g., truth tellers) enter police interviews in different mental states (Granhag & Hartwig, 2008). Guilty suspects will have exclusive knowledge about the crime, which, if it becomes known to the interviewer, makes it obvious that they are the perpetrator. Their main concern is therefore to ensure that the interviewer does not come to know what they did at the time of the crime. In contrast, innocent suspects face the opposite problem and may fear that the interviewer will not come to know what the suspect did at the time of the crime. Research has shown that these different mental states result in different strategies. Guilty suspects are inclined to use avoidance strategies (e.g., in a free recall avoid mentioning where they were at a certain place at a certain time) or denial strategies (e.g., denying having been at a certain place at a certain time when directly asked). In contrast, innocent suspects neither avoid nor escape but are forthcoming and “tell the truth liked it happened” (Granhag & Hartwig, 2008).

The Strategic-Use-of-Evidence (SUE) technique addresses how interviewers can exploit these different strategies employed by guilty and innocent suspects when interviewers have potentially incriminating information about a suspect (Granhag, Strömwall, & Hartwig, 2007; Hartwig, Granhag, Strömwall & Kronkvist, 2006). Suppose someone left his briefcase in a bookshop on top of a box of stationery and that, when he returned to the shop to collect his briefcase, he noticed that his wallet had been stolen from the briefcase. Further suppose that the police found fingerprints on the briefcase that did not belong to the owner but did belong to another customer who had visited the bookshop. This makes the customer a suspect but not necessarily the culprit of the theft, because an innocent explanation for the fingerprints is also possible: Perhaps the customer moved the briefcase to

look in the box of stationery. In such circumstances, the police need to interview the suspect to find out the truth.

The first step of the SUE technique is to ask the suspect to describe his or her activities, hence in the example above, to describe his or her activities in the bookshop. It is hereby important not to reveal the fingerprint evidence. It is more likely that truth tellers will mention the briefcase than liars will. Truth tellers have nothing to hide and will recall what happened and this includes having touched the briefcase; liars do not wish to associate themselves with the crime they have committed and thus distance themselves from the briefcase. However, not mentioning having touched the briefcase still does not indicate guilt. Truth tellers may simply have forgotten to mention this, in their eyes, peripheral detail. Therefore, further questioning is required after the free recall. In the second phase of the SUE technique, the questioning phase, the interviewer asks questions, including about the briefcase, without revealing the incriminating fingerprint evidence. There is a chance that a liar will deny having touched the briefcase, thereby contradicting the evidence known to the lie detector. Truth tellers are more likely to come forward with the information that they have moved the briefcase. The third phase of the SUE technique is to reveal the evidence and in cases where contradictions between the evidence and statement did emerge, to ask the suspect to explain these contradictions.

Hartwig et al. (2006) tested the SUE technique in their experiment, using the wallet taken out of the briefcase in the above-described scenario. Swedish police trainees interviewed the mock suspects. Half of the interviewers were trained in how to use the SUE technique prior to the experiment and were asked to use this technique in the subsequent interview. The other half of the interviewers did not receive training and were instructed to interview the suspects in the manner of their own choice. The untrained interviewers obtained 56.1% accuracy rate, which is similar to that typically, found in nonverbal and verbal deception detection research (Bond & DePaulo, 2006; Vrij, 2008). SUE-trained interviewers, however, obtained 85.4% accuracy rate. It appeared that guilty suspects contradicted the evidence more than innocent suspects did, but importantly, particularly when they were interviewed by SUE-trained interviewers.

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