Brief Report



# Rich and Easy to Deceive? The Influence of Money Priming on the Ability to Detect Deception

Luise Ende and Marc-André Reinhard *

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# Rich and Easy to Deceive? The Influence of Money Priming on the Ability to Detect Deception

**Luise Ende and Marc-André Reinhard ***

* Correspondence: reinhard@psychologie.uni-kassel.de

**Abstract:** Based on recent popular money priming research results, which conclude that money makes self-sufficient (e.g. less interest in other people), we assumed that people are less interested in finding out whether others are lying or telling the truth. In a laboratory experiment, 163 students (85 women, 78 men, $M_{Age}$ = 23.08, ranging from 18 to 36 years) were primed by actively handling money (versus paper sheets). Afterwards, they classified 24 video statements as true or deceptive (senders describing their most/least favorite movie), rated their classification confidence for each decision and then answered control questions. Results revealed no influence of priming condition on judgmental bias, classification accuracy and classification confidence. Also the level of self-reported motivation to find out who lied or told the truth did not differ between conditions. Higher motivation was correlated to higher classification confidence. Additionally, and in line with Reinhard (2010) and Reinhard et al. (2011), higher classification accuracy correlated to a higher use of verbal content cues for classification decisions. Thus, while we were able to replicate these findings, our results contradict the assumption of a money prime influence on lie detection ability. Concluding, our results make self-sufficiency in this context questionable and offer next steps for research

**Keywords:** money; money prime; credibility judgment; deception detection; lie and truth classification

## 1. Introduction

"Money makes people self-sufficient", a discussed assumption based on results of the pioneer research by Vohs and colleagues regarding the influence of a money prime on social orientation [1]. They define *self-sufficiency* "as an insulated state wherein people put forth effort to attain personal goals and prefer to be separate from others" [1] (p. 1). The results of nine experiments, in which the type of the money prime and the type of the dependent variable were varied, supported their assumption. The authors primed with descrambling tasks, reading an essay in front of a video camera, playing monopoly, having play money, imagination, looking at a screensaver or a poster. The dependent measures for self-sufficiency varied from persistence on the problem before asking for help (time), or volunteering for help (number of solutions), donating money, or sitting with someone (distance between the chairs), to preference for activities alone vs. together (survey) see also [2–4]. In 2020, [5] published results which replicated the finding by [1] that being primed with money (screensaver showing money bills vs. fish floating through water) encouraged to prefer rather solitude activities (Cohen's $d$ = 0.37, but the results might be reliant on the kind of data analysis). [6] measured self-focus on trial basis with the imitation-inhibition task and found higher congruency in the control condition and so more self-focus under money priming ($d_z$ = .19). Another pro argument for a higher self-sufficiency when priming with money is provided by the results of [7] on Chinese participants that suggested an instrumentality orientation in social interactions then (Experiment 1 and 2). In Experiment 1, the money prime manipulation was facilitated by a picture evaluation task, and the dependent variable was measured with a 20-item objectification scale (see also [8]). The results showed higher objectification when participants were primed with money (compared to the control group). In Experiment 2, a sentence-descrambling task was utilized as the money prime. After the money prime manipulation, a goal for the participants was set. They were instructed to complete a task that requires mathematics skills and logical thinking. Then participants read a profile of an anonymous student. Depending on the condition, that student was described as majoring in math,

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being a fan of math, and planning to become a financial analyst after graduation (instrumental) or as majoring in Chinese, loving to read and write, and planning to become a writer after graduation (non-instrumental). Next, the approach intention of the participants was measured by asking them to what extent they would choose the student as their work partner on the mathematical task, feel good about the student and make friends with the student. The measurement of the perceived instrumentality followed with two items, asking the participants how much the student could help on the task and how useful the student is. Under the money prime, approach intention was increased when the perceived instrumentality was high. The effect did not occur under high competence of achieving a goal self-employed (Experiment 3). In Experiment 3, participants received feedback about their Sudoku achievement (manipulation of the competence for achieving a goal self-employed by different benchmarks) and were asked to collaborate for a next Sudoku with an anonymous student who was described as being good in math. Therefore, under money priming, people seem interested in others only when they need them to reach an own goal. In accordance, people also seem to be less distressed about social exclusion under the money prime [9], what refers to independence and self-sufficiency.

Beside the effect of the competence of achieving a goal self-employed on the outcomes of being primed with money, there also exists research regarding the feeling of socioeconomic status. [10] found that especially in the money prime condition, the feeling of a high economic status led to justifying the existing socioeconomic system (USA) more strongly (Study 1), and people believed more in the justness of its social outcomes (Study 2). In both studies, the authors used a word-descrambling task as money priming method and measured the socio economic status with the *Mac Arthur Scale of subjective SES* [11]. In Study 1, an 8-item *System Justification Scale* [12,13] was conducted as the dependent measure. In Study 2, the dependent variable was measured with the 20-item *Belief in a Just World Scale* [14]. Results therefore suggested, that money primed people seem to be more trustful when a feeling of higher economic status is activated and therefore would be more susceptible to deception. In line with our reasoning, a new study developed theoretical arguments that power (inducible by money) could be correlated with less deception detection [15]. To sum up, under the money prime, subjects show less interest in others, what others do, how they feel (self-sufficiency) and trust more; following, less interest whether others tell the truth or lie is assumable.

### *1.1. Deception detection in everyday life*

In general, humans tend to have a low ability to detect deception. Overall, we are slightly above chance level in accurately judging the veracity of true or invented statements [16-18]. Further, based on meta-analysis results by [16], people seem more accurately identifying the truth as non-deceptive than lies as deceptive (*Truth Bias*). Research showed that neither education, sex, age, nor confidence with the judgment are significantly related to accuracy of truth and lie classification [19]. Nevertheless, the use of verbal cues in contrast to nonverbal cues for the judgment can enhance the accuracy rate [17]. In line with this, [20] tested the theoretical assumption that high task involvement (Experiment 1) and high cognitive capacity increase the use of verbal (therefore content) information in credibility judgments (Experiment 2 and 3). Based on research findings regarding what kind of verbal and nonverbal cues people use to evaluate the credibility of a statement [21-27], the authors manipulated four versions of a short film that displayed a social interaction between two persons (same film in Experiment 1 and 2, another version in Experiment 3). One person was shown in the video, whereas the other person could only be heard. Four versions were created: Deceptive verbal and deceptive nonverbal vs. deceptive verbal and truthful nonverbal vs. truthful verbal and truthful nonverbal vs. truthful verbal and deceptive verbal behavior. Participants were assigned to one of these conditions. Beforehand, in Experiment 1, task involvement was manipulated by the information on how important the participation was for science (high vs. not, between-subjects). In the high-involvement condition, participants differentiated between the deceptive and non-deceptive cues for their credibility judgment (higher credibility for non-deceptive cues and lower for deceptive cues), while in the low-involvement condition, there was no differentiation. In Experiment 2 and 3, the authors manipulated cognitive load by assigning the participants either to a distracting task (high

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cognitive load) or no task (low cognitive load) before watching the videos. In both experiments, while nonverbal cues were used under high cognitive load, the verbal cues were only used by individuals with low cognitive load, and so higher cognitive capacity. Moreover, in Experiment 3, the authors additionally asked for reasons for the credibility judgments; their analysis yielded results in line with the assumption that participants in the low cognitive load condition mainly used verbal cues.

Accordingly, in following studies, the authors further confirmed that the use of verbal cues was correlated to higher lie detection accuracy [28,29]. To summarize, using verbal cues (that automatically focus on the content compared to nonverbal cues) predicts better deception detection accuracy. People use these verbal cues more often when they are highly involved in the detection task and expend their cognition. When people are less interested in others (self-sufficient), they should be less involved in the task and, according to dual process theories, consequently use more effortless ways (nonverbal behavior) to arrive at a judgment [30,31]. Combining these arguments, we hypothesized that the money prime decreases classification accuracy of truths and lies concerning other peoples' statements (in comparison to a control group).

## 2. Materials and Methods

### *2.1. Participants*

In 2014, a total of 163 students from a German University participated in the study (83 in the treatment group, 80 in the control group). A bar of chocolate and the possibility to win a game console were offered as incentives. The age of the participants ranged from 18 to 36 years ($M_{Age}$ = 23.09, $SD_{Age}$ = 4.14); two participants did not report their age. 85 women (52.15%) and 78 men (47.85%) participated.

### *2.2. Design and conditions*

We tested our hypothesis with a 2 (Prime: Money vs. Paper) x 2 (Message type: Truth vs. Lie) Mixed-Methods-Design in a laboratory experiment, with prime and set of the messages as between-subject factors and message type as within-subject factor. In reference to [19], we included the variables gender and classification confidence to our analysis and according to [32] also the control variable set of the messages.

A sensitivity power analysis (G*Power; [33]) for the given sample size of $N$ = 163 (Manova: Repeated measures, between factors; correlation between repeated measures of $r$ = .039, $\alpha$ = .05) showed that a minimum effect size of Cohen's $d$ = 0.32 could be detected with a power of 80%.

### *2.3. Procedure and stimuli*

At first, we thanked for the participation and participants were instructed that the study investigates the ability to recognize deception and truth. An informed consent followed. Afterwards, participants were randomized to one of two priming conditions (between-subjects, Money vs. Paper). We operationalized the money prime with the method of actively handling money due to it yielding the largest money priming effects (see meta-analysis by [34]). Participants were instructed to assess the value of the banknotes that were presented filled in a jar. They had to grab into the jar and touch the banknotes twice. After the first time, they wrote down the estimated value. After the second time, they wrote down the estimated number of bank notes. For the control group (paper prime condition), instead of money (banknotes), now participants were presented a jar filled with paper sheets and the same procedure followed. Here, in the first task, participants were instructed to estimate the weight of the paper sheets (by touching it). The next step of the experiment, the truth and lie detection task, followed on the monitor (see Appendix A). After the task, the demographic data of the participants was collected.

#### 2.3.1. Stimulus material for the veracity judgments

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Due to us wanting to present a basic scenario of social interactions without offering an instrumentality [7], we used videos about a personal statement regarding an individual attitude as stimulus material. The material was taken from a study by [28] (Experiment 3): 36 female and 36 male students were filmed, so that the head and upper body was to be seen, while they described for about one minute a movie they liked or disliked. In the truth condition, they actually liked or disliked the described movie. In the lie condition, they stated to like (or dislike) the described movie when they actually disliked (or liked) it. All participants were instructed to make their statement as truthful as possible. There was the opportunity to receive an extra reward of five Euros if the interviewer (blind to the experimental conditions) believed that they indeed liked or disliked the movie. In accordance to [28], we created three sets with 24 messages (see also [32]). Each set contained 12 truthful and 12 deceptive messages (balanced valence of senders' attitudes and gender, no difference in video length across conditions).

#### 2.3.2. Deception detection task

Participants were instructed that out of 24 videos of students that talk about films that they like and that they do not like, they have to evaluate who is telling the truth and who is lying. The videos were presented one after another. After each video, participants judged if the report was true or lied. As a control variable according to [19], they rated their confidence for each decision (on the next page) via a percentage scale (from 0% = *not at all sure* to 100% = *completely sure*) right after their judgment. Then, we measured their task motivation, (Cronbach's $\alpha$ = .72; "It was important to me not to judge people who tell the truth as liars", "It was important to me not to overlook people who are lying.", "It was important to me to properly assess people who tell the truth", "It was important to me to recognize liars as such") which were assessed on a 7-point scale (from 1 = *does not apply at all* to 7 = *applies exactly*). Parallel to [28] and [29], we also asked, if participants used more verbal or nonverbal behavioral cues for their classification decision as true or deceptive, with two items (Cronbach's $\alpha$ = .85; "I based my judgment more on …" "In watching the messages, I tended to pay more attention to …"; scale from 1 = *nonverbal behaviour* to 7 = *verbal content*).

## 3. Results

### *3.1. Judgmental bias*

Overall, participants judged 52.30% (*SD* = 11.53%) of the video-statements as true. This differed with a small effect size from 50%, $t(162) = 2.55$, $p = .012$, 95% CI [0.52, 4.08], $d_{Cohen} = 0.20$, resulting in a truth bias (see also Table 1). An one-way ANOVA with priming condition (Money vs. Paper) as independent variable and number of truth judgments as dependent variable revealed no effect of priming condition, $F(1, 162) = 1.88$, $p = .172$, $\eta_p^2 = .01$, 95% CI [-6.03, 1.09] (see also Table 2). So, the participants' classification decision regarding the messages as true or deceptive did not depend on the priming condition. An additional univariate analysis of variance revealed no main effect of gender of the judges on the judgmental bias. Further, no interaction with the priming condition was found. We also found no interaction between set of the messages and priming condition, so the priming results did not depend on the set of the messages (see Appendix B).

**Table 1.** Means, standard deviations, and results of the one-way analyses of variance for the truth bias, classification accuracy, and classification confidence depending on the priming manipulation (bank notes vs. paper sheets).

| Variable | Money prime | | Paper prime | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Truth bias | 53.51% | 10.56% | 51.04% | 12.39% |
| Overall classification accuracy | 55.52% | 11.05% | 56.04% | 10.44% |
| Classification accuracy for true messages | 59.04% | 13.09% | 57.08% | 13.20% |
| Classifications accuracy for deceptive messages | 52.01% | 17.20% | 55.00% | 18.73% |

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| | | | | |
|---|---|---|---|---|
| Overall classification confidence | 70.74% | 9.43% | 69.70% | 14.97% |
| Classification confidence for true messages | 70.53% | 10.32% | 68.77% | 15.57% |
| Classification confidence for deceptive messages | 70.96% | 10.53% | 70.63% | 15.39% |

**Table 2.** Results of the mixed analysis of variance for the truth bias, classification accuracy, and classification confidence depending on the priming manipulation (bank notes vs. paper sheets) and the message type (truth/lie).

| Variable | $F(1, 162)$ | $p$ | $\eta_p^2$ |
|---|---|---|---|
| Truth bias | | | |
| Between-subjects effects | | | |
| Money prime | 1.88 | .17 | .01 |
| Classification accuracy | | | |
| Between-subjects effects | | | |
| Money prime | 0.10 | .76 | .00 |
| Within-subjects effects | | | |
| Message type | 6.40 | .01 | .04 |
| Money prime x message type | 1.88 | .17 | .01 |
| Classification confidence | | | |
| Between-subjects effects | | | |
| Money prime | 0.28 | .60 | .00 |
| Within-subjects effects | | | |
| Message type | 3.03 | .08 | .02 |
| Money prime x message type | 1.19 | .28 | .01 |

*3.2. Classifcation accuracy*

The overall classification accuracy of 55.78% ($SD$ = 10.72%) differed with a medium effect size from chance level (50%), $t(162) = 6.88$, $p < .001$ , 95% CI [4.12, 7.44], $d_{Cohen} = 0.54$. True statements were classified more accurately ($M$ = 58.08%, $SD$ = 53.48%) with a small effect size than false statements ($M$ = 53.48%, $SD$ = 17.97%), $F(1, 162) = 6.40$, $p = .012$, $\eta_p^2 = .04$ (see also Table 1). To test our hypothesis, a 2 (Prime: Money vs. Paper) x 2 (Message type: Truth vs. Lie deceptive) mixed-design ANOVA with classification accuracy (in %) as the dependent variable was run. Against our hypothesis, the analysis revealed no effect of priming condition, $F(2, 161) = 0.10$, $p = .758$, $\eta_p^2 = .00$, 95% CI [-2.81, 3.85], so the money prime did not decrease classification accuracy compared to the paper prime (see also Table 2). An additional univariate analysis of variance revealed no main effect of gender of the judges and no with the priming condition. Moreover, no interaction between set of the messages and priming condition on the classification accuracy was found (see Appendix B).

Based on that our results did not match the assumption, we additionally tested whether the power hypothesis or the null hypothesis is more likely to explain our findings. The Bayesian analysis found that the BF01 value of 7.82 was a moderate evidence for the null hypothesis. From this can be concluded that the probability is 7.82 times higher for that the null hypothesis occurs compared to our hypothesis.

*3.3. Classification confidence*

Overall classification confidence was $M$ = 70.23% ($SD$ = 12.43%). Confidence ratings regarding true statements ($M$ = 70.80%, $SD$ = 13.10%) did not differ to confidence ratings regarding false statements ($M$ = 69.67%, $SD$ = 13.15%), $F(1, 162) = 2.96$, $p = .087$, $\eta_p^2 = .02$ (see also Table 1). A 2 (Prime: Money vs. Paper) x 2 (Message type: Truth vs. Lie) mixed-design ANOVA with classification confidence (in %) as the dependent variable yielded no effect of priming condition on classification confidence, $F(1, 162) = 0.28$, $p = .595$, $\eta_p^2 = .00$, 95% CI [-4.90, 2.82] (see also Table 2). An additional univariate analysis of variance revealed no main effect of gender of the judges and no interaction

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with priming condition, and further no interaction between set of the messages and priming condition on the classification confidence (see Appendix B).

*3.4. Self-reported task motivation*

In an univariate ANOVA with priming condition as independent variable and self-reported task motivation as the dependent variable, there was no main effect of money prime, $F(2, 161) = 0.37$, $p = .546$, $\eta_p^2 = .00$, 95% CI [4.80, 5.31]. Against our assumption, participants in the money prime condition did not report less task motivation ($M = 5.05$, $SD = 1.18$) compared to participants in the paper prime condition ($M = 4.94$, $SD = 1.15$). Further, neither the judgmental bias, $r = .03$, $p = .715$, nor classification accuracy, $r = .07$, $p = .367$, was correlated with the task motivation. However, higher classification confidence was correlated with higher self-reported motivation to correctly classify the statements as true or lied, $r = .21$, $p = .007$.

*3.5. Self-reported use of verbal content versus nonverbal information*

In an univariate ANOVA with prime condition as independent variable and self-reported use of nonverbal versus verbal content information as the dependent variable, no main effect of money prime was found, $F(2, 161) = 1.78$, $p = .184$, $\eta_p^2 = .01$, 95% CI [-0.15, 0.75]. In contrast to our assumption, participants in the money prime condition did not report less use of verbal content information ($M = 3.53$, $SD = 1.38$) than participants in the paper prime condition ($M = 4.04$, $SD = 1.51$). Judgmental bias was not correlated to verbal content use, $r = .01$, $p = .907$. In line with the findings of [26] and [27], higher classification accuracy was low correlated with more self-reported use of verbal content (versus nonverbal) information, $r = .16$, $p = .039$. The negative correlation between classification confidence and verbal content use was only small, $r = -.10$, $p = .196$.

**4. Discussion**

In this study, we hypothesized that people are less accurate in their classification of video-messages as true or deceptive under a money prime compared to a neutral prime (paper). While the participants' overall accuracy (of 55.78%) was a medium effect size better than chance (see also [16]), the results did not support our hypothesis that classification accuracy depends on the priming condition. Against our theoretical reasoning, the analysis of the control questions revealed that priming with money did not lead to less motivation and less use of (the more valid) verbal content information. So, the results of our control questions did not indicate a lower interest in detecting lies of others about a personal theme when participants were primed with money.

We found a small effect that true statements were classified as accurate more often than lied statements, which might be caused by a small judgmental bias. In line with the meta-analysis results by [19], classification accuracy was also not influenced by the control variable gender (just as judgmental bias and classification confidence). The overall classification confidence was 70.23%.

We investigated our research question in a laboratory experimental study with the money priming method that recently offered the highest self-sufficiency effects, actively handling money [34]. Furthermore, we presented 24 stimuli to each person (3 sets), [32] showed that with a minimum of 20 stimuli, the classification accuracy measurement becomes valid. Respectively, we found no interaction between set of the messages and prime condition, for neither judgmental bias, classification accuracy, nor classification confidence what ensures the reliability of our stimulus material. While our method was appropriate, we did not find an effect regarding our assumption.

*4.1. Limitations*

Recent research by [35] suggested that the consequences effected by priming with money depended on the constitution of the bank note, in detail if it is an unused new one versus a used one. A new banknote enhanced feelings of empathy regarding co-workers (Study 2) and decreased self-serving behavior compared to a used one and a general money priming (without information of the newness, Study 3). Further, priming with new money led to perceived stronger norms of social

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conscientiousness and higher helping intentions (Study 4). The authors conclude, priming with new money induces peoples' warmth (prosocial behavior).

One could argue that the money prime manipulation did not work, no manipulation check was assessed. Nevertheless, also without a manipulation check, we could have found effects if they actually existed. From a methodological perspective, we did not differ in manipulating the money priming to recent research that found the money priming effect and have even chosen the most powerful method of actively handling money. In the research of the pioneer paper by [1], no manipulation checks are reported either. Also the available research papers listed in the meta-analysis by [34], with the priming method actively handling money, did not check for an effective manipulation.

Based on the fact that people show low deception detection ability in general [16-18] and our sensitivity analysis presuming an effect size of a minimum Cohen's $d$ = 0.32, it is possible that the effect actually exists but was too small to be found with our sample size of 163 participants. [34] however detected in their meta-analysis, which included papers from the published status until 2017, a Hedges' $g$ of 0.58 for the priming with actively handling money. Our sample size was big enough to reveal an effect of that size and nevertheless, with a rather small effect of Cohen's $d$ = 0.32, we were able to find a difference between the overall accuracy means (treatment vs. control) of minimum 3.5 percent if it exists. From a perspective that focuses on applied settings, a smaller difference would not have as much relevance, for example in organizational contexts. Meta-analysis results by [36] found an influence of money priming on the organizational-relevant outcomes performance (Cohen's $d$ = .38) and selfishness (Cohen's $d$ = .33). Either way, the results of our control questions showed an increased classification accuracy by a higher use of verbal content cues than nonverbal cues in the classification decision. Further, higher task motivation led to an increase in classification confidence. The results of both control measurements were independent from the priming condition.

An indirect argument for the nonexistence of an effect of money priming on deception detection are the results by [15] that exposed an increase in deception detection under power (asymmetric control over valued resources in social relationships, see [37]). Money implicates having power, being independent from others and, as explained before, seems to let people interact with others only when it is needed to instrumentalize them for reaching an own goal [7]. However, [15] found in their experiments that having power over others enhanced the accuracy of one's veracity assessment. In line, in the present study, we did not find a decrease of classification accuracy by money priming. In accordance and contrasting [7] (Experiment 3), [38] revealed that enhancing self-affirmation (writing an essay explaining the personal importance of a core value) weakened the influence of money priming on self-sufficiency regarding different dependent measures: Such as donating more money under high self-affirmation, being more likely to request help, choosing more leisure experiences to be shared with others (versus individually focused ones) and feeling distressed after social exclusion (Cyberball, see [39]).

While our study and data collection in 2014 was based on the theoretical assumptions and the concerning published research findings at that time, revealing an existing money priming effect on self-sufficiency, nowadays published critiques by several experts point out the possibility of an absence of the money priming effect in general. For example, only one study out of 36 replications [40] was able to replicate the money priming effect by [12]. In line, [41] detected a selective re-porting by [12]. Furthermore, we want to highlight that in the meta-analysis by [34], only published results until 2017 were included. In terms of the publication bias, it was rather untypical to publish null-effects in that time. In accordance, integrated were rather less precise studies with lower sample sizes than more precise studies with higher sample sizes. These tendencies stay in line with our results (already in 2014), both display the assumption that money priming makes self-sufficient as quiet questionable. Otherwise, the null-effects in our study would implicate deception detection being a separate paradigm with which it is not possible to depict "self-sufficiency" what could be found with other dependent measurements.

However, someone could critically argue that our data collection might be "too old" to verify our conclusions for nowadays because crises in society like COVID-19 happened later on and had

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influences on customer experiences (e.g. [42]). Nevertheless, the year of data collection is transparent and the theory regarding the effects of money priming is not time sensitive, it rather follows the standard to be generalizable. In the last 100 years, comparable crises (for example "The 1918–1920 flu pandemic", "World War II", "9/11 terrorist attacks", a. o.) caused by the environment occurred and if the theoretically embedded effect actually exists, it should not be affected by such changes in society. The results of our (reliable laboratory) study more likely display an important contribution in the wake of the replication crisis. The relevance of the publication of studies that found null-effects (see our Bayesian analysis) increased in importance and are especially interesting for meta-analytical reviews that present a progression over time. Therefore, the publication of the current study is in line with the arguments of the open science debate.

### *4.2. Future research*

At first, in further research, manipulation checks should be accessed. According to [5], a possible manipulation check for a primed mindset could be the participants' indication of their positivity toward words related to the prime, here money, compared to neutral words. Investigations on the information processing level depending on money priming seem to be essential as well. If a money prime makes self-sufficient (therefore being less interested in others), and based on dual-process theories [30,31], one could argue that these participants show lower motivation and so a lower level of attention regarding various social measures. To find out how the process level functions, distraction and time pressure are variables that could be manipulated, counterbalanced in both prime conditions.

The literature shows that the effect varies according to variations in the methodological operationalization and dependent variable (e.g. [5,34,40]). So, it seems relevant to focus on a different operationalization for being primed with money than actively holding it (and estimating its value) to answer the question if money makes self-sufficient. Beyond, it is thinkable that the way this priming was operationalized in its recently most powerful kind, that in fact was not so powerful at all as the lot failed replications represent (e.g. [34,40]), could have rather an influence in the undesirable direction. One could assume that holding the money and estimating its value could activate rather a comparing process with the own financial situation and so possibly the feeling of having less money. For children (3 to 6 years old), that are not in such a comparing position, handling money seems to lead to pro-social helpful behavior (number of crayons retrieved to the experimenter who asked for help) [43]. Against this assumption, research results from 2022 pointed out a buffering effect of money priming on negative emotions, especially for subliminal priming (versus supraliminal priming) and that it occurs automatically and unconsciously while the early phase of perception [44]. Nevertheless, for example, the influence of the present socio-economic status (see also [10]) and how satisfied the participants are with it on lie detection ability could reveal other effects than those found in the current study. Referring, [45] found that the socio-economic status positively influenced financial self-efficacy under the prime of gaining money.

Another variable that might offer some new insights is emotional intelligence. [46] showed in their research that high scoring emotionally intelligent people rather figured out mismatches between facial expression (nonverbal behavior) and verbal content information of the lying or the truth telling senders. Nevertheless, a good liar could even control facial expressions or body movements. As explained in the introduction, nonverbal cues do not seem to be connected to a better classification accuracy [28,29]. In line, while [47] found that emotional intelligence leads to a higher use of nonverbal cues, deception detection was not heightened; emotional intelligence rather seems to lead to an overestimation of the own lie detection ability [48]. [49] concluded that the aspect "perception of emotions" of emotional intelligence supported the deception detection. Moreover, based on findings by [50] that indicate a money priming effect on increased lying and cheating, further research not only regarding deception detection ability but also the actual lying behavior seems to be plausible.

**Author Contributions:** Research idea und theoretical hypotheses: Main contribution by the second author and additional contribution by the first author. Development of material and data collection: Full contribution by the

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second author. Data analysis: First and second author made equal contribution. Discussion: Main contribution by the first author and additional contribution by the second author.

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**Institutional Review Board Statement:** The study was conducted in full accordance with the Ethical Guidelines of the German Association of Psychologists (DGPs) and the American Psychological Association (APA). Moreover, by the time the data were acquired it was also not customary at University of Mannheim, nor at most other German universities, to seek ethics approval for simple studies on lie detection ability. Therefore, ethical approval was not required for this study in accordance with the national and institutional guidelines. The study exclusively makes use of anonymous questionnaires. No identifying information was obtained from participants. Every participant had to read (and agree to) an informed consent. They were thereby explicitly informed that all data are treated confidentially and that they may withdraw from the study at any time without giving explanation. Contact information of the researchers was available from the beginning of the study until the end.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Data is available on demand, https://osf.io/sa9w7/.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

*Appendix A.1. Instruction money prime condition (presented on a printed paper sheet)*

**Task 1:**

In the following we would like to ask you to do an estimation task. The experimenter will show you a jar filled with bank notes.

Please estimate the value of the bank notes.

Studies show that the ability to estimate improves when the goods to be estimated can be touched. Therefore, please reach into the glass to touch the bank notes.

**Now please go to the experimenter and reach into the jar.**

Write down the estimated value of the bank notes:

**Task 2:**

Please estimate the number of bank notes.

Please reach into the glass again to enable a more accurate estimate.

**Now please go to the experimenter and reach into the jar.**

Write down the estimated number of bank notes:

**WHEN YOU ARE FINISHED, PLEASE CONTACT THE EXPERIMENTER SO THEY CAN ASSIGN YOU TO A PC!**

*Appendix A.2. Instruction paper prime condition (presented on a printed paper sheet)*

**Task 1:**

In the following we would like to ask you to do an estimation task. The experimenter will show you a jar filled with paper sheets.

Please estimate the weight of the paper sheets.

Studies show that the ability to estimate improves when the goods to be estimated can be touched. So, to give you a more accurate estimate, you are allowed to put your hands inside the jar.

**Now please go to the experimenter and reach into the jar.**

Write down the estimated weight of the paper sheets:

**Task 2:**

Please estimate the number of the paper sheets.

To give you a more accurate guess, you may put your hand in the jar again.

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**Now please go to the experimenter and reach into the jar.**

Write down the estimated number of leaves:

**WHEN YOU ARE FINISHED, PLEASE CONTACT THE EXPERIMENTER SO THEY CAN ASSIGN YOU TO A PC!**

## Appendix B

*Appendix B.1. Supplementary material, additional analysis*

### Appendix B.1.1. Judgmental bias

No influence of the control variable gender on judgmental bias was found, $F(1, 162) = 0.27$, $p = .603$, $\eta_p^2 = .00$, 95% $CI_{female}$ [-8.41, 8.21]. There was no interaction between gender and priming condition, $F(1, 162) = 1.27$, $p = .261$, $\eta_p^2 = .01$. Unexpectedly, the analysis yielded a large main effect for the control variable set of the messages, $F(2, 161) = 14.38$, $p < .001$, $\eta_p^2 = .16$ (set 1: $M = 56.85\%$, $SD = 11.55\%$; set 2: $M = 45.41\%$, $SD = 9.09\%$; set 3: $M = 53.56\%$, $SD = 10.71\%$), 95% $CI_{set\ 1}$ [-9.95, 8.28], 95% $CI_{set\ 2}$ [-12.49, 5.05]. However, no interaction between priming condition and set of the messages on judgmental bias was found, $F(1, 162) = 0.77$, $p = .465$, $\eta_p^2 = .01$. There was no three-way interaction, $F(2, 161) = 0.70$, $p = .501$, $\eta_p^2 = .01$ (see also Tables A1 and A2).

### Appendix B.1.2. Classification accuracy

Further, the analysis yielded no main effect for the control variable gender on classification accuracy, $F(1, 162) = 3.48$, $p = .064$, $\eta_p^2 = .02$, 95% $CI_{female}$ [-4.38, 10.66].

Gender and priming condition did not interact, $F(1, 162) = 0.32$, $p = .570$, $\eta_p^2 = .00$. Unexpectedly, the analysis yielded a large main effect of the control variable set of the messages on classification accuracy, $F(2, 161) = 21.87$, $p < .001$, $\eta_p^2 = .23$, 95% $CI_{set\ 1}$ [-5.44, 11.05], 95% $CI_{set\ 2}$ [7.83, 23.71]. Nevertheless, we found no interaction between priming condition and set of messages on classification accuracy, $F(2, 161) = 1.87$, $p = .158$, $\eta_p^2 = .02$. There also was no three-way interaction, $F(2, 161) = 1.21$, $p = .302$, $\eta_p^2 = .02$ (see also Tables A1 and A2).

### Appendix B.1.3. Classification confidence

Further, for the control variable gender, no main effect on classification confidence was shown, $F(1, 162) = 0.32$, $p = .575$, $\eta_p^2 = .00$, 95% $CI_{female}$ [-12.78, 7.01]. Further, no interaction between gender and priming condition emerged, $F(1, 162) = 0.59$, $p = .444$, $\eta_p^2 = .00$. There was also no main effect for the control variable set of messages on classification confidence, $F(2, 161) = 0.08$, $p = .926$, $\eta_p^2 = .00$, 95% $CI_{set\ 1}$ [-12.64, 9.06], 95% $CI_{set\ 2}$ [-15.51, 5.38]. In line, the analysis further yielded no interaction between priming condition and set of the messages on classification confidence, $F(2, 161) = 1.81$, $p = .167$, $\eta_p^2 = .02$. There was no three-way interaction, $F(2, 161) = 0.93$, $p = .396$, $\eta_p^2 = .01$ (see also Tables A1 and A2).

**Table A1.** Results of the additional univariate analysis of variance for judgmental bias, classification accuracy, and classification confidence depending on the prime and on the gender of the judges.

| Variable | Main effect (gender) | | Interaction (gender x prime) | |
|---|---|---|---|---|
| | $F(1, 162)$ | $\eta_p^2$ | $F(1, 162)$ | $\eta_p^2$ |
| Truth bias | | | | |
| Overall | 2.40 | .02 | 1.85 | .01 |
| Classification accuracy | | | | |
| Overall | 0.37 | .00 | 0.13 | .00 |
| True messages | 3.48 | .02 | 2.22 | .01 |
| Deceptive messages | 0.38 | .00 | 0.42 | .00 |
| Classification confidence | | | | |

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| | | | | |
|---|---|---|---|---|
| Overall | 0.33 | .00 | 0.20 | .00 |
| True messages | 0.77 | .01 | 0.00 | .00 |
| Deceptive messages | 0.04 | .00 | 0.75 | .01 |

**Table A2.** Results of the additional univariate analysis of variance for judgmental bias, classification accuracy, and classification confidence depending on the prime and on the set of the messages.

| Variable | df | $F$ ($N$ = 163) | $p$ | $\eta_p^2$ |
|---|---|---|---|---|
| Truth bias | | | | |
| Money priming | 1 | 1.78 | 0.184 | 0.01 |
| Messages-set | 2 | 14.38 | < .001 | 0.16 |
| Money priming x messages-set | 2 | 0.77 | 0.465 | 0.01 |
| Classification accuracy | | | | |
| Money priming | 1 | 0.6 | 0.441 | 0 |
| Messages-set | 2 | 21.87 | < .001 | 0.23 |
| Money priming x messages-set | 2 | 1.87 | 0.158 | 0.02 |
| Classification confidence | | | | |
| Money priming | 1 | 0.13 | 0.72 | 0 |
| Messages-set | 2 | 0.08 | 0.926 | 0 |
| Money priming x messages-set | 2 | 1.81 | 0.167 | 0.02 |

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