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Lying opportunities and incentives to lie: Reference dependence versus reputation ☆

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ABSTRACT

Recent experiments on lying behavior show that the lying frequency in case of low outcomes increases in the ex-ante probability of high outcomes. This finding is in line with models consisting of internal lying costs and external reputation costs and rejects certain other models, but does not allow for a clean test of models with reference dependent loss aversion. To compare the explanatory power of reputation models and loss aversion models, we manipulate the ex-ante probability that lying is possible at all. We show that the reputation model predicts that the lying frequency decreases in the probability that lying is possible, while the loss aversion model predicts the opposite. Our experimental results strongly support the reputation model. From an applied perspective, our results suggest that reducing the probability that lying is possible may be counterproductive.

1. Introduction

In recent years, many laboratory experiments have investigated the degree of misreporting of private information (lying) in cases where such behavior increases the own payoff and can neither be observed nor punished. There is a large heterogeneity in behavior ranging from truth-telling to partial lying to payoff maximization, but subjects often forgo about 70% of their potential gain (Abeler et al., 2017). Theories based on internal lying costs, external reputation costs, social conformity and loss aversion are suggested as explanations for example, but only few papers aim at testing those theories. To contribute to this growing literature, we have designed an experiment for which two prominent theories yield strictly contradictory predictions: The first theory assumes that subjects face reputation costs which increase in the lying probability assumed by outside observers.[1] The second theory assumes that subjects are loss averse, with losses defined

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[1] To avoid misunderstandings it is worth noting that "reputation" in the literature we draw on refers to preference costs arising from the assumed perception of outsiders, and has thus nothing to do with reputation effects of lying in dynamic games (for the latter string of literature see e.g. Charness et al. (2011) where reputation about being trustworthy positively affects other parties' behavior).

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with respect to reference points. Our experimental results support the reputation model and reject the loss aversion model.

Our analysis draws on papers by Abeler et al. (2017) (henceforth ANR, 2017), Garbarino et al. (2016) (henceforth GSV, 2016) and Gneezy et al. (2018) (henceforth GKS, 2018) who all vary the success probability in lotteries. In line with predictions by reputation models, all three papers find that the lying frequency in case of low outcome increases significantly with an increasing success probability (ANR, 2017; GKS, 2018). While variations in p are well suited for the comparison of certain models, they do not allow for a clean test of models based on loss aversion. GSV (2016) define the expected outcome of the lottery as reference point and then show that, in line with the reputation model, the loss aversion model predicts that the lying frequency increases in p. However, in the more general approach that accounts for rational beliefs on strategies in the formation of reference points in the tradition of Kőszegi and Rabin (2006), the loss aversion model lacks a clear prediction.[2]

To compare the reputation and the loss aversion model, we consider two treatments which only differ in the probability that lying is possible at all (q). As shown in our theory part, the reputation model predicts that lying in case of low outcome decreases in q, while the loss aversion model predicts the opposite. The intuition is that outsiders assign a higher lying probability after observing high reports as q increases, thereby reducing the lying incentive due to higher reputation costs.[3] In contrast to the reputation model, the behavior with loss aversion depends only on the own expectations about outcomes. Higher q increases the expected payoff whenever an individual decides to lie with positive probability, and this upward shift in the reference point increases the perceived monetary loss if the outcome is low and individuals are loss averse. The incentive to lie thus increases in q.

We run two treatments, one with a high ex-ante probability of 90% that lying is possible in case of low outcome (treatment H) and one with a probability of only 50% (treatment L). As lying is only an issue in those cases where the outcome is low and lying is possible, many observations are needed for the statistical analysis. Therefore, we decided to perform an online experiment and used Amazon Mechanical Turk (Mturk) to recruit and pay participants. 320 subjects participated in treatment H and 576 subjects in treatment L, so that the expected number of subjects who have the possibility to lie, given by $(1-p)\,q$, is identical and equals 216 in both treatments. We framed the decision situation in a neutral way and ensured participants understood that their actual outcome was unobservable by the experimenter (see section 3 for details). Our results clearly support the reputation model: The lying frequency in case lying is feasible is 38% in treatment H compared to 50.5% in treatment L. This amounts to a decrease of about 25%; significant at the 1%-level in a χ^2-test, and is opposite to the prediction made by the loss aversion model. In addition, we performed a laboratory experiment with the same design as a robustness check, with 120 (216) subjects participating in treatment H (L). The difference in the respective lying frequencies was even more pronounced as 65.4% lied in treatment H compared to 85.2% in treatment L. While the overall lying frequency is higher than on Mturk,[4] the laboratory results clearly confirm our treatment effect.

Our results underline the view that reputation issues play a crucial role in lying behavior. ANR (2017), GSV (2016) and GKS (2018) find that a higher success probability increases the lying frequency. We complement their results by showing that lying decreases in the probability that lying is feasible, and conclude that theories should be consistent with the finding that altering these two probabilities has opposite impacts. Only reputation models predict this: Models based on lying costs only (e.g. Ellingsen and Johannesson, 2004; Kartik, 2009; DellaVigna et al., 2017) predict invariance with respect to both manipulations; simply because a lie is a lie anyway. In models based on social conformity (e.g. Weibull and Villa, 2005; Charness and Dufwenberg, 2006; Gibson et al., 2013; Diekmann et al., 2015) where individuals feel less guilty when norms are also violated by others, lying costs decrease in the expected frequency of lying by others. While an increase in p leads ceteris paribus to less lying and establishes truth telling as a norm, the opposite holds for an increase in q. This model type thus predicts the opposite of what is observed.

The main purpose of our design is to get opposing predictions for the two theories in our horse race. Nevertheless, our setting also seems relevant from an applied perspective. Assume that a principal delegates the evaluation of two mutually exclusive projects A and B to an agent who derives a private benefit from project A. With probability q, the evaluation yields only soft information difficult to understand, so that the agent can use e.g. earnings manipulation techniques to display project A as superior even when it is not. The principal knows that this may be possible with probability q, but as the agent has superior knowledge, the principal cannot find out ex-post whether the agent could actually have misguided her, and hence follows the agent's advice (i.e. she delegates real authority in the terminology of Aghion and Tirole, 1997). Our experimental results then suggest that reducing the ex-ante probability of the possibility of manipulations partially backfires as it increases the frequency in case misreporting is possible.[5]

Concerning our theoretical models, two points should be noted; one for the loss aversion model and one for the reputation model: For the loss aversion model, we apply a full-fledged Kőszegi and Rabin (2006)-type model (henceforth KR-type model) that accounts for rational beliefs on strategies in the formation of reference points. This implies that sub-

[2] Somewhat simplified, an increase in p leads to a higher incentive to lie after a low outcome if the loss aversion-effect in the monetary dimension outweighs the loss aversion-effect in the lying dimension.

[3] The effect is more subtle as the observer's belief depends on the equilibrium reports of all subjects, but the basic intuition prevails.

[4] See the discussion in the end of the results section.

[5] In the conclusion, we discuss why our setting extends to the less extreme case in which the principal gets an additional signal on lying from observing the agent's report. We postpone this discussion to the conclusion as we first need to present the mechanics of the two theories.