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Harmful lie aversion and lie discovery in noisy expert advice games

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ABSTRACT

This study tests whether individuals are reluctant to tell lies, or perhaps only "harmful lies", in a previously untested environment: an expert sending a message to a decision maker whose interpretation of that message is subject to error, i.e. a noisy sender–receiver game. In the *Aligned* treatment, the expert can send a "white lie" to the receiver, eliminating the negative effects of noise and improving both parties' payoffs. In the *Conflict* treatment, lies are harmful and the inability to commit to truthtelling destroys all meaningful communication in equilibrium unless there is a cost of lying. In the experiment, receivers are overly trusting and experts learn to take advantage of this. As experts gain experience they tell stronger and more frequent lies in both treatments, consistent with models of reinforcement learning. The findings suggest that neither harmful nor universal lie aversion is a factor when communication is noisy, provided individuals have time to discover their personal benefits of lies.

1. Introduction

In many settings decision makers rely on information provided to them by someone whose interests do not align perfectly with their own. For example, investors who lack financial expertise often rely on analysts to assist them in making important investment decisions, even when the analysts may have a stake in certain investment options. Many empirical and experimental studies summarized below have shown that individuals often tell the truth despite a monetary incentive to lie. This phenomenon, known as lie aversion, is still not fully understood. In what environments, contexts, and conditions does lie aversion emerge? In this study, I test the extent lie aversion exists in a previously untested environment: expert advisors sending a cheap-talk message to a decision maker whose interpretation of that message is subject to error, resulting in noisy communication.

A broader research question is to understand the driving forces behind lie aversion. One explanation with ample experimental support is that individuals suffer a psychological cost-of-lying. Indeed the results of Erat and Gneezy (2012) and Lopez-Perez and Spielgelman (in press) can only be explained by a cost associated with pure lie aversion. This cost appears to only partially depend on the amount of harm caused, the benefit received, and the expectation that others in the same situation would tell the truth. Another explanation is that truth telling is an initial focal point or default option when subjects are uncertain about how they should behave or how others will react.[1] In other words, there could be cognitive costs associated with optimization and forming beliefs about others' play that initially dissuade subjects from lying. Repeated

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[1] For example, Blume et al. (2001) find that communication based on focal points can deteriorate as senders become more sophisticated. Cai and Wang (2006) explain the fact that senders are too truthful and receivers too trusting with models of bounded rationality.

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play could therefore allow subjects to *learn* to lie. In this study, I find that the psychological costs of pure lie aversion are not robust to noisy communication, while the cognitive costs (or other cognitive obstacles) associated with learning to lie appear to matter and do not depend on the harm caused to others by the lie.

In this study, experimental subjects are assigned to either the role of "analyst" or "investor" and participate in a series of investment games with noisy advice. In the *Aligned* treatment, lies are beneficial as they decrease the probability that the investor makes the wrong decision. In the *Conflict* treatment, lies are harmful because they destroy the informativeness of communication. Analysts' incentives are kept the same across treatments so that their behavior can be directly compared. Also, I use anonymity and rematching techniques designed to eliminate reputation concerns while still allowing for subjects to learn over the course of the experiment. If truthtelling is an initial focal point or the result of strategic uncertainty, there should be a reduction of lie averse behavior over time.

Lie aversion may be due to a truth-telling norm which is inculcated to all members of a society which values honesty. But, if motivated by a desire not to cause harm to others, an expert must firmly question this norm if given the opportunity to help someone make a better decision by falsely overstating their position. Experts such as doctors, military advisors, economic forecasters, and financial analysts all have information that is vital to other decision makers, and this paper is concerned with the open question of how their expert advice depends on an inherent concern to help others. Furthermore, this study will examine whether our propensity to tell the truth dissipates as we get more feedback about the consequences of telling the truth and the forgone profits of not telling lies. The rest of the paper is as follows: Section 2 reviews the relevant literature, Section 3 presents the experimental methods used, Section 4 summarizes theory and hypotheses, Section 5 describes the results, and Section 6 concludes.

2. Literature review

Crawford and Sobel (1982) show that a biased sender can credibly transfer information to a receiver by partitioning the state of the world into subsets. In testing this theory, Dickhaut et al. (1995), Cai and Wang (2006), and Sánchez-Pagés and Vorsatz (2007) discovered that messages from biased senders to decision makers typically contain more information about the state of the world than predicted in the most informative equilibrium. This result, known as overcommunication, is consistent with earlier results on the evolution of communication in games where parties have some common interest (Blume et al., 2001). Serra-Garcia et al. (2011) find that leaders in a sequential public goods game choose strategies which reveal the state of the world despite the fact that this should not happen in even the most informative equilibrium.[2] In each study, bounded rationality (often in the sense of McKelvey and Palfrey, 1995 or Nagel, 1995) plays some role in the result that messages are overly informative.

As an alternative to bounded rationality, Ellingsen and Johannesson (2004) and Kartik (2009) model lie aversion as an explicit cost of lying added to one's utility function, and I will use this feature when deriving predictions of the noisy advice game. The results of Gneezy (2005) support a cost of lying explanation because the decision to lie is sensitive to the harm it causes and the benefit received.[3] In the Pareto white lie treatment of Erat and Gneezy (2012), 35% of subjects choose to tell the truth, despite the fact that by lying they could likely increase both sender and receiver payoff by $10.[4] However, if a sender can perfectly reveal his information and payoffs are common knowledge, then a lie cannot improve the payoff of the receiver. This is because the receiver can always decide for himself what is optimal once he has all the sender's information. Therefore, when a receiver knows how his payoffs are determined, a lie can only be helpful if communication is noisy or vague, and in this experiment I focus on noisy communication.[5]

3. Experimental design

Six 1.5 h sessions, each with between 20 and 26 subjects for a total of 140 subjects, were conducted at the Experimental Social Science at Florida State (xs/fs) Laboratory using Z-tree (Fischbacher, 2007). Subjects were Florida State undergraduates recruited with ORSEE (Greiner, 2003) and paid their cumulative earnings over 16 rounds plus a $10 show-up fee for an average of $22.25. Instructions were read aloud by an experimenter after which all subjects took a payoff quiz to ensure the common knowledge of payoffs. After the experiment, subjects answered a non-incentivized questionnaire and were paid by check. A copy of the instructions and the questionnaire can be found in Appendix A.

[2] Fosgaard et al. (2013) show that subjects may be unaware of the potential for dishonesty. This also could lead to overcommunication in a sender–receiver game.

[3] See also Boles et al. (2000), Brandts and Charness (2003) and Charness and Dufwenberg (2006) for a look at the role of beliefs and expectations; Mazar et al. (2008) for an explanation for the sensitivity of lies to harm. Lundquist et al. (2009) show that the magnitude of lies matter. Hurkens and Kartik (2009) show that social preferences are an important factor in lie aversion, and deceptive truth-telling (Sutter, 2009) also casts doubt on the simple notion of an aversion to superficial lies.

[4] In Erat and Gneezy (2012), it is possible for the sender to reveal the true state of the world (the outcome of a die roll), but because the receivers do not know the payoffs associated with their actions, it is better for the receiver to not know the true outcome of the die roll.

[5] Blume et al. (2007) show that noisy talk can be beneficial in overcoming the problems of strategic communication, and Lightle (forthcoming) shows that senders rationally and paternalistically bias their information when communication is noisy in order to help the receiver make a good decision. Note that the partitioning of states in some treatments of Serra-Garcia et al. (2011) are not invertible, and "Pareto vagueness" can occur even in the absence of noise.