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Gender differences in deception

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Abstract

Gneezy [Gneezy, U., 2005. Deception: the role of consequences. American Economic Review 95, 384–394.] recently showed that lying is costly. Using the same experimental design we test whether there is a gender difference in deception. We find that men are significantly more likely than women to lie to secure a monetary benefit.

Keywords: Deception; Gender; Experiments

JEL classification: C91; J16

1. Introduction

It has been demonstrated in numerous experiments that anonymous pre-play communication increases cooperation in social dilemmas and improves bargaining efficiency (Sally, 1995; Camerer, 2003; Valley et al., 2002; Ellingsen and Johannesson, 2004). This has been considered a puzzle, as individuals have no incentive to be truthful while engaged in such communication. One reason for the beneficial effect of communication may be that individuals have developed an aversion towards lying and that lying therefore incurs an emotional cost to the liar.

This is supported by recent experimental work by Gneezy (2005) in a setting where individuals could lie to secure a higher payment within the experiment. We use the same experimental setting as Gneezy (2005) to test whether there is a gender difference in the propensity to lie. The setting is a sender and receiver game in which the sender has a monetary incentive to send a deceptive message to the receiver. Our results indicate that men are more likely than women to lie in order to secure a monetary benefit. We also test whether there is any difference in trust between men and women, i.e. to what extent receivers trust the message of the sender. Here we find no significant gender difference.

This work adds an important finding to the growing body of work on gender differences in behavior (see Croson and Gneezy (2004) for an overview). The experimental design is described below, followed by a presentation of the results. We then conclude with some discussion and final remarks.

2. Experimental design

We use the same experimental design as in Gneezy (2005). Two individuals in different rooms are paired anonymously. These two persons are referred to as "sender" and "receiver" below. One of the individuals, the receiver, must choose between two actions, A and B. These two actions, A and B, are associated with different real monetary payments to the individuals. If action A is chosen, the sender earns SEK 40 and the receiver earns SEK 50 (SEK = Swedish kronor; $1 ≈ SEK 8). If action B is chosen, the sender earns SEK 50 and the receiver earns SEK 40. The receiver must choose between these two actions without knowing what the payoffs will be. Before the receiver makes the choice, the sender sends a message to the receiver. The sender, who is fully informed about the monetary payoffs of the actions, has to send either the message "Option A will earn you more money than action B" or the message "Option B will earn you more money than action A". The first message is true and the second message is false. Lying was measured as the fraction of individuals sending the deceptive message.

The extent to which receivers trusted the message of the sender was measured as the fraction of individuals following the advice offered by the sender. The study was carried out on a total of 312

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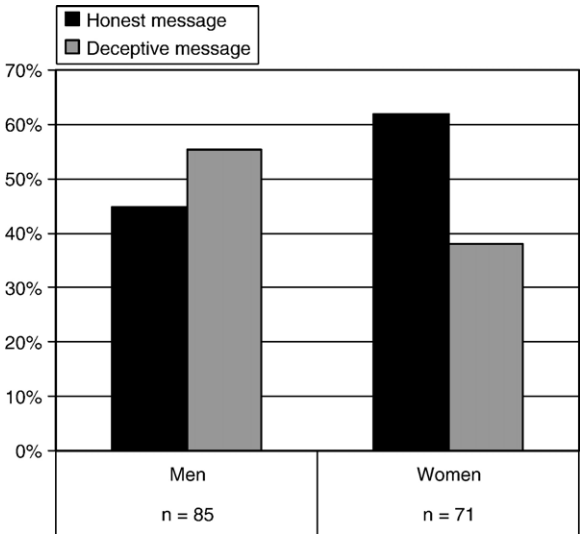

Fig. 1. The fraction of men and women that lied in the experiment (sent a deceptive message).

undergraduate students at Stockholm University, i.e. with 156 senders and 156 receivers. The experiment was designed to test for a difference in lying and trusting behavior between men and women. All participants wrote their names on the experimental instructions to collect information on gender. The receiver was informed about the gender of his or her counterpart by writing the first name of the sender on the instructions (the sender did not know that the receiver would be informed of his or her first name).[1] We use a Pearson chi-square test to test if there is any significant difference in deception and trust between men and women.[2] All reported p-values are two-sided.

3. Results

The results of the experiment are shown in Fig. 1. In total 85 male senders participated in the experiment and 47 (55%) of these senders lied to secure a higher payoff. There were 71 female senders in the experiment and 27 out of those 71 lied (38%). The difference in lying behavior between men and women is quite sizeable and statistically significant ($p=0.032$). Of course, in order for lying to be beneficial to the sender, the recommendation in the message has to be followed by more than 50% of the receivers. This turns out to be the case, as 76.1% of the receivers followed the recommendation offered by the sender. This finding roughly mirrors the findings of Gneezy (2005), where 78% of the receivers followed the recommendation in the message.

With regard to trust, we investigated several issues. First, we tested whether there was a difference in the extent to which men and women trusted the message of the sender. Here we found no significant gender difference: 75.4% (52/69) of the men followed the message and 76.8% (63/82) of the women followed the message ($p=0.833$).[3] Second, we investigated the possibility of a difference in the perceived trustworthiness of messages from men and women. We found that messages from women were followed by 76.1% (54/71) of the receivers and messages from men were followed by 76.5% (65/85) of the receivers. These fractions are almost identical and we cannot reject the null hypothesis ($p=0.952$). Third, we furthermore looked at whether men and women reacted differently depending on whether the message came from a man or a woman. We found no large or significant differences. Messages from men were followed by 73.8% (31/42) of the men and 79.1% (34/43) of the women ($p=0.568$). Messages from women were followed by 77.8% (21/27) of the men and 74.4% (29/39) of the women ($p=0.750$). The lack of significant differences in the results for trust is in accordance with what others have found for the trust game (see Croson and Gneezy (2004)).

4. Concluding remarks

It is interesting to compare our results with the study done by Gneezy (2005) who used three different monetary allocations in the deception game. The allocation closest to our experiment is the one where the choice of action A (B) gave the sender \$5 (\$6) and the receiver \$6 (\$5). The rate of deception for that treatment was 36%, which is relatively close to the overall rate of deception in our study, which was 47%. One reason for the somewhat higher rate of deception in our study may be that the monetary incentive to lie was slightly stronger in our study; about \$1.25 compared to \$1.00 in the Gneezy (2005) study.

Gneezy (2005) did not study gender differences in deception in his study, and to the best of our knowledge, this is the first study designed to test for a gender difference in lying within an economic setting. Within psychology, there exists a small body of literature that focuses on deception. However, the results are somewhat mixed regarding the role gender plays in determining the likelihood of engaging in deceptive behavior. This literature implies that women lie more frequently than men, but that they are also more likely to fake positive feelings and to tell more other oriented, as opposed to self-centered, lies (De Paulo et al., 1996; Tyler et al., 2006). The settings in the psychology studies differ substantially from our setting. First, lying in the former implies a non-anonymous interaction between individuals, whereas the sender and the receiver were fully anonymous in our study. Non-anonymous interaction introduces the possibility for reputation building, which may be a confounding factor. Secondly, lying is a selfish act in our study, which may not be the case in the other studies. Rather, lies can be beneficial for the subject to whom the lie is directed. Additionally, when the lie is selfish it can be for the purpose of gaining a psychic reward rather than a monetary one (De Paulo et al., 1996).

It is also useful to relate our findings to other reported gender differences in behavior. Women appear to be more altruistic, more risk averse, and less competitive than men (Eckel and Grossman, 1998; Byrnes et al., 1999; Gneezy et al., 2003;

[1] The complete experimental instructions are available from the authors upon request.

[2] We also carried out the statistical tests controlling for the subjects' field of studies in a logistic regression analysis. These tests led to similar results and do not affect the conclusions reported below.

[3] For the receivers we lack information about gender for five subjects that failed to write their name on the instructions.

Gneezy and Rustichini, 2004; Croson and Gneezy, 2004). Limited evidence exists as to the extent to which the observed gender differences are biological and/or cultural. It has been shown that behavior in economic experiments, such as the ultimatum game, can vary considerably across cultures, suggesting that cultural factors may be important (Heinrich et al., 2001). On the other hand many gender differences in behavior seem to be consistent across cultures (Croson and Gneezy, 2004), and some recent studies have also suggested that hormones may be important for behavior (Chen et al., 2005; Kosfeld et al., 2005; Van den Bergh and Dewitte, 2006). Oxytocin was shown to increase the degree of trust observed in a double-blind randomized experiment (Kosfeld et al., 2005), and a study on auction behavior suggests that estrogen decreases risk-taking behavior (Chen et al., 2005). Another study suggests that testosterone may be related to the level of rejection in the ultimatum bargaining game (Van den Bergh and Dewitte, 2006). To further disentangle the importance of cultural versus biological factors is clearly important.

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References

Byrnes, J., Miller, D., Schafer, W., 1999. Gender differences in risk taking: a meta analysis. Psychological Bulletin 125, 367–383.

Camerer, C.F., 2003. Behavioral Game Theory: Experiments in Strategic Interaction. Princeton University Press, Princeton.

Chen, Y., Katuscak, P., Ozdenoren, E., 2005. Why can't a woman bid more like a man? Working Paper. University of Michigan.

Croson, R. and Gneezy, U. 2004, Gender differences in preferences, Mimeo, Graduate School of Business, University of Chicago.

De Paulo, B.M., Kashy, D.A., Kirkendol, S.E., Wyer, M.M., Epstein, J.A., 1996. Lying in everyday life. Journal of Personality and Social Psychology 70, 979–995.

Eckel, C., Grossman, P.J., 1998. Are women less selfish than men? Evidence from dictator experiments. Economic Journal 108, 726–735.

Ellingsen, T., Johannesson, M., 2004. Promises, threats, and fairness. Economic Journal 114, 397–420.

Gneezy, U., 2005. Deception: the role of consequences. American Economic Review 95, 384–394.

Gneezy, U., Rustichini, A., 2004. Gender and competition at a young age. American Economic Review Papers and Proceedings 94, 377–381.

Gneezy, U., Niederle, M., Rustichini, A., 2003. Performance in competitive environments: gender differences. Quarterly Journal of Economics 118, 1040–1074.

Heinrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., McElreath, R., 2001. In search of homo economicus: behavioral experiments in 15 small-scale societies. American Economic Review Papers and Proceedings 91, 73–78.

Kosfeld, M., Heinrichs, M., Zak, P.J., Fischbacher, U., Fehr, E., 2005. Oxytocin increases trust in humans. Nature 435, 673–676.

Sally, D., 1995. Conversation and cooperation in social dilemmas: a meta-analysis of experiments from 1958–1992. Rationality and Society 7, 58–92.

Tyler, J.M., Feldman, R.S., Reichert, A., 2006. The price of deceptive behavior: disliking and lying to people who lie to us. Journal of Experimental and Social Psychology 42, 69–77.

Valley, K., Thompson, L., Gibbons, R., Bazerman, M., 2002. How communication improves efficiency in bargaining games. Games and Economic Behavior 38, 127–155.

Van den Bergh, B., Dewitte, S., 2006. Digit ratio (2D:4D) moderates the impact of sexual cues on men's decisions in ultimatum games. Proceedings of the Royal Society B 273, 2091–2095.