

# Public Information of Psychological Preferences in One-Stage Trust Games: an experimental study

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## Extended Abstract

Even though one traditional assumption in neoclassical economics has been material self-interest, in the last few decades economists have studied the role played by *emotions* in generating human behavior, suggesting general ways of incorporating emotions and feelings into the economic models. In particular, it has under discussion among psychologists and economists whether and how in economic theory *feelings* can be expressed in terms of *belief-dependent motivations*, for example in terms of one's expectations about other agents' actions (first-order beliefs) and in terms of one's guess about other agents' expectations about her own action (second-order beliefs) and so on.

The point that belief-dependent motivation may be important for strategic decision making is first made by Geanakoplos, Pearce and Stacchetti (1989; henceforth GPS)<sup>1</sup>. They show the inadequacy of traditional methods to represent the involved preferences, and develop extensions of traditional game theory to deal with the matter: *psychological*

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<sup>1</sup>GEANAKOPOLOS, J., D. PEARCE and E. STACCHETTI (1989): "Psychological Games and Sequential Rationality," *Games and Economic Behavior*, **1**, 60-79.

*games* are games in which players' payoffs do not depend only on terminal nodes but also on beliefs (about choices, beliefs, or information) they hold. Battigalli and Dufwenberg (2005; henceforth BD)<sup>2</sup> generalize and extend GPS, providing a theoretical framework which gives reliable instruments for experimental economists to test several examples of psychological games in the laboratory.

In this paper, we restrict our attention on two-persons one-shot psychological games of trust. Our experimental setting is designed to investigate two main kinds of belief-dependent motivations influencing players' behavior in simple trust games: *guilt aversion* and *reciprocity*. Suppose that the truster (say,  $A$ ) is motivated only by material self-interest and the trustee (say,  $B$ ) is motivated also by *guilt aversion* and/or *reciprocity*. Let us call  $\theta_B^g$  and  $\theta_B^r$  the sensitivity of player  $B$  to *guilt aversion* and to *reciprocity* respectively. In a psychological game with *complete information*, both  $\theta_B^g$  and  $\theta_B^r$  are common knowledge among players. However, it is probably not realistic to assume that players know one another's psychological propensities. Unless one models interaction within a family (or amongst friends) and there is not an ex-ante stage in which all players' feelings sensitivities are (elicited and) transmitted to their co-players, we are dealing with a psychological game with (some form of) *incomplete information*.

In addressing this matter, the original contribution of the paper is twofold:

- from a *theoretical* point of view, we provide a specific framework in order to analyze and solve (one-stage) psychological games with *incomplete information*. In the simple trust game under consideration, both parameters  $\theta_B^g$  and  $\theta_B^r$  are not known to  $A$ : we suppose each of them is drawn from a different uniform distribution. Thus,  $A$  does not know the true values of  $\theta_B^g$  and  $\theta_B^r$ , but has a prior on each of the two. With this extended framework in place, we can regard trust games in which there is not an ex-ante communication of feeling sensitivities between truster and trustee (standard case) as psychological games with incomplete information.

- from an *experimental* point of view, we have designed a reliable mechanism of elicitation and transmission (from trustee to truster) of a good approximation of trustee's feelings sensitivities. Hence, in that treatment it is like the two parameters  $\theta_B^g$  and  $\theta_B^r$  are both *public information* among the two players. In that way, we are able to compare players' behavior in the "public information" treatment with that in the "standard treatment", i.e. when they play the (one-stage) game of trust without any kind of ex-ante belief-dependent motivations transmission.

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<sup>2</sup>BATTIGALLI, P. and M. DUFWENBERG (2005): "Dynamic Psychological Games", mimeo, August 2005 (previous version: IGIER working paper 287).

Our experimental results show that eliciting and transmitting  $B$ 's psychological preferences and thus letting the two players playing the *complete information* one-stage psychological game of trust leads them to behave in a visibly different manner (with respect to their behavior in the corresponding *incomplete information* psychological game setting). More precisely, the *public information* of the trustee's psychological preferences in the one-stage psychological game results in truster's perception of trustee's belief-dependent motivations (like guilt aversion and/or reciprocity) which otherwise would be underestimated. That in turn ends in a more cooperative behavior for both players. Our theoretical findings are well matched by our experimental results.