

## **Final Publishable Summary Report for Project EU-FP7 IRG 239529**

In line with the research objectives of the proposal, Dr. Ertac completed several experimental projects, which individually address different parts of the proposed research questions. In terms of topic, these experiments can be classified into (1) experiments studying gender effects in self-selection and their interaction with the properties of the institutional framework, (2) experiments studying the impact of interim performance feedback on self-confidence, incentive scheme choice, and the motivation to exert effort in dynamic settings. In terms of methodology, an interdisciplinary array of measurement methods have been employed: (1) laboratory experiments, (2) field experiments, (3) personality tests, (4) neural measurements. While carrying out these experiments, Dr. Ertac has worked jointly with senior and junior researchers from the United States, Europe and the host country, as well as the three master's students she supervised within the duration of the project. The project has led to significant knowledge transfer and the initiation of new research collaborations, in addition to its tremendous contribution to the researcher's career development and successful integration.

It is a well-documented fact that fewer women than men are at top positions in the workplace, in certain occupations and educational paths, as well as in leadership positions both in the private sector and in public service or politics. One major branch of the project aims at running experiments to understand the reasons for the relative absence of women from these positions and to explore what types of institutional factors might influence the observed gender differences. In these set of experiments, Dr. Ertac focuses particularly on gender-based self-selection over two domains: self-selection into leadership and self-selection into competitive incentive schemes. To study the former, motivated by the observation that leadership in reality requires making risky decisions that influence others, Ertac and Gurdal (2012a) implement an experimental setup where subjects can choose whether they would like to be the one to make a decision on behalf of a group under risk, the outcome of which will determine the payoffs of everyone. A striking gender difference emerges, with a significantly lower proportion of women willing to make the group decision than men. In addition, male-led groups end up implementing more risky group decisions than female-led groups. In Ertac and Gurdal (2012c), the researchers explore the effects of different dimensions of the institutional structure of group decision-making on leadership willingness and group risk-taking. Specifically, the goal is to understand how the willingness of men and women to be leaders, and the amount of risk taken on behalf of the group change when there is a communication mechanism through which group members can relay their preferences/advice to the leader. The main finding is that the leadership selection mechanism crucially affects group decisions, and interacts strongly with the response to advice. Male leaders take significantly higher risk for the group than female leaders, but only when leadership is voluntary. When communication of group preferences to the leader is possible, the transmitted information has a significant effect on the leader's decision only when the leader is not a self-selected leader. Moreover, self-selected male leaders deviate significantly more from the group advice than assigned male and female leaders. The results on leadership willingness confirm Ertac and Gurdal (2012a), in that women are significantly less willing than men to be leaders. Interestingly, neither individual differences in risk attitudes nor the availability of advice can explain the leadership decisions of females. This, in fact, emerges as one finding that motivates the use of personality tests in understanding leadership behavior. Using a version of the "Big Five" personality inventory, Ertac and Gurdal (2012b) find openness to experience and agreeableness to be significant determinants of willingness to lead, with men and women more agreeable and less open to experience being more likely to refrain from leadership. Overall, the results from these experiments show that when leaders are determined through voluntary mechanisms, one would expect there to be more male leaders, and for these leaders to take more risk and be less influenced by advice from group members. These effects can be mitigated by assigning leadership roles randomly in risky group situations, or by giving women more incentives to select into leader roles.

In the second main branch of the project, Dr. Ertac focuses on exploring how institutional factors such as free or costly performance feedback affect self-confidence, motivation and competitive choices in dynamic settings, answering five separate questions within this topic using the methodologies of laboratory, field and neuroeconomics experiments. A very important policy question in both educational settings and the workplace

is how much performance feedback to give to agents (workers, students), since feedback can crucially affect self-confidence, effort, and subsequent task performance, as well as self-selection into incentive schemes. The self-selection issue is especially important, since there is an important literature showing that women tend to shy away from situations involving competition, creating a social inefficiency due to high-ability women not reaching reach top career positions. Experimental data from this branch of the project reveal several significant results: (1) Giving individuals mandatory experience with competitive incentive schemes eliminates the gender differences in subsequent competitiveness and self-confidence (Ertac and Maximiano (2012)), (2) Performance feedback reduces gender differences in competitiveness; however, women may respond to performance feedback differently than men--in one subject population, the data show that women's self-confidence may fall more after negative feedback than men (Ertac and Coskunlar (2012)) (3) Culture and societal gender roles can significantly influence gender differences: Andersen et al. (forthcoming) show that boys become more competitive than girls around puberty in patriarchal societies, but not in matrilineal societies with more equal gender roles. Moreover, in related field experiments with performance feedback, it is found that women in matrilineal societies are more likely to be motivated by positive performance feedback than patriarchal women. In terms of the question of how to enhance task motivation, Dr. Ertac finds some preliminary evidence that assigning individuals responsibility over another person's payoff can be a way to induce higher effort and performance, especially in women (Ertac and Uzrek (2012)).

In another set of experiments, Dr. Ertac further studies how positive and negative feedback affect beliefs and choices in decision contexts that are related to self-image and ego. In Augenblick et al. (2012), Dr. Ertac and colleagues find some evidence for "escalation of commitment" in response to performance feedback, in decisions that are related to self-image and self-perceived expertise. In Ertac and Kotan (2012), Dr. Ertac finds that after receiving negative performance feedback in ego-relevant contexts, individuals update their beliefs pessimistically but are also willing to pay a higher amount of money for additional information than when they receive positive feedback. Yet another experiment (Ertac and Guclu (2012)), for which data analysis is currently ongoing, uses the interdisciplinary method of neural measurements (through electroencephalography) in order to understand the impact of positive and negative performance feedback in the brain under dynamic competition, uncovering the neural basis of task motivation and competitive effort. Results from this experiment will contribute to our understanding of why some people get discouraged and give up while some people work harder after negative performance feedback, and can also shed light on why women might shy away from competitive situations in the first place.

Overall, the project has generated significant insights on a variety of economic decisions, including self-selection into competitive incentive schemes and leadership, group decision-making under risk, and effort choice, by exploring the effects of beliefs and attitudes, such as personality traits and self-confidence about one's ability. Moreover, the institutional factors and policies that could affect these behaviors and outcomes are explored, which can potentially generate implications for policy design. Due to the interdisciplinary nature of the project, the research results have direct relevance to scientists from diverse areas such as economics, psychology, management, and neuroscience, and therefore the conducted research is expected to have a wide scientific impact that goes beyond economics. In addition, since the project provides insights on the effects of different organizational and institutional policies on leadership, self-confidence, motivation, which could potentially influence educational and labor market outcomes across gender, the project results are very relevant to policymakers and the society at large. For example, the issue of how performance feedback affects self-confidence and effort has direct relevance to organizational design as well as to the design of information revelation and confidence/morale-management policies in education. The results on gender differences in economic behavior and the institutional factors that mitigate or exacerbate them are also expected to have wide social impact, especially in light of the fact that preventing/eliminating gender inequality is an important goal of policymakers.

**References:**

Andersen, S., Ertac, S. Gneezy, U., List, J. A., Maximiano, S. "Gender, Competitiveness and Socialization at a Young Age: Evidence from a Matrilineal and a Patriarchal Society", *Review of Economics and Statistics*, forthcoming.

Ertac, S., Gurdal, M. Y. (2012) Deciding to Decide: Gender, Leadership and Risk-Taking in Groups, *Journal of Economic Behavior and Organization*, 83(1), pp. 24-30.

\*Note: Please see the attached *List of Studies and Publications* for information about the other studies.