

Název / Title	Eseje o rozhodování pod stresem / Essays on Decision Making under Stress
Student	PhDr. Lubomír Cingl
Studijní program / Study program	Ekonomické teorie
Školitel / Advisor	PhDr. Michal Bauer, Ph.D.

Abstract

This dissertation comprises three thematically connected experimental studies of human behavior under non-standard conditions: time-pressure and stress. In the Introduction section I present the argument for why it is important for economists to recognize stress research as a valid part of the research in economics and how it can contribute to the growing knowledge of human behavior in general, including several examples from the literature. The first paper presented in Chapter 2 examines the effect of time pressure on the individual propensity to herd, while the remaining two papers examine the effect of acute stress on risk-preferences and herding behavior, respectively. Herding behavior is a very important phenomenon in human decision making since social influence is very frequent in our lives and economic decisions: consider traders in financial markets, wait-and-see investors, but also purchase behavior due to fads, fashion and top-ten lists. Risk preferences are another essential factor which determines many important economic outcomes, and the assumption of their stability is a building block of many economic theories.

The first article investigates the effect of time pressure on herding behavior. To do so, an experiment was run where subjects solved a cognitively simple task under three levels of time pressure in a within-subject design. After having performed first alone, they were then allowed to look at the decisions of others and according to that, change their own decision, which was taken as an indicator of herding behavior. The main finding is that people did frequently change their original decisions, but the rate of doing so was not different under the different levels of time pressure. Nevertheless, other variables implicitly associated with time pressure were significant as predictors of herding behavior, such as the time spent on the screen showing the decisions of others, reported subjective levels of stress and the increase in heart rate during the solution of the task. The fact that the increased heart-rate during the solution of the task correlated with the subjective levels of stress suggests time pressure can be used as a mild stressor. However heart rate is a rather crude measure of physiological stress as it can rise due to other factors, such as effort or simple movement, and not stress, and as a single measure of stress is not satisfactory. We also observe an interesting correlation between heart-rate increases and risk-preferences of men which suggests that there may be a relationship between physiological stress and risk-taking behavior.

In the second article we report on an experiment where we exposed 151 subjects to an efficient laboratory stress-inducing or a control procedure - the Trier Social Stress Test for Groups - in order to find the causal effect of stress on individual risk-attitudes. As a risk measure we used a standard externally validated multiple-price list method. Using three different measures, we first show that the subjects in the treatment-stressed group were both physiologically and psychologically stressed: their heart-rate and cortisol levels increased while they felt worse and more nervous compared to the baseline and to the control group. Our main result is that for men, the exposure to a stressor (intention-to-treat effect, ITT) and the exogenously induced psychosocial stress (the average treatment effect on the treated, ATT) significantly increase risk aversion when controlling for their personal characteristics. The estimated treatment difference in certainty equivalents is equivalent to 69% (ITT) and 89% (ATT) of the gender-difference in the control group. The effect on women goes in the same direction, but is weaker and insignificant.

The third article examines whether stress causes differences in individual herding behavior. To impose stress we employ the same methodology as in the second article, the Trier Social Stress Test for Groups, on a sample of 140 subjects and show using the same three measures as in the previous chapter (heart-rate, cortisol and mood questionnaire) that subjects were indeed stressed. Herding behavior was measured in a Bayesian updating task that allowed for full control over the information provided to subjects either from private or public sources. The main result is that herding behavior as a relative weight of public signals in individual decision making does not change under stress. Apart from that, the weight of private signals and the precision of the stated probabilities were also not

different between the treatment and control groups, even after controlling for personality characteristics and the subjects' psychological measure of conformity. On the other hand, we observe updating behavior comparable with other studies, including clusters of stated probabilities on multiples of five and conservatism.