

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Edita Ďurovčiková
Advisor:	PhDr. Julie Chytilová Ph.D.
Title of the thesis:	Comparison of progress in information processing after a term of studies of mathematical and non-mathematical programs

OVERALL ASSESSMENT *(provided in English, Czech, or Slovak):*

In her thesis, Edita Ďurovčiková scrutinizes a very interesting topic of cognitive biases among students of mathematical and non-mathematical programs. She then analyzes, if the program itself shapes the style of thinking. It is an innovative and relevant idea since not only it could be the case that students with more rigorous thinking style self-select into mathematical programs but also educational program trains them in certain kind of thinking which even widens the gap. The main contribution then lies in an experiment which Edita conducted among students from various fields at the Charles University.

In first two section, Edita defines behavioral economics and describes couple of cognitive biases which she uses then for her experiment. All of the biases as framing effect or conjunction fallacy are very well-known and have been studied heavily in the past. Therefore, it is a pity that they are described mostly with the only source (book of Daniel Kahneman) and the author does not summarize at least the main findings from the literature. In general, I would appreciate literature review section because in the section two (Studied effects), Edita mixes description of effects with introduction of her own adjusted questions for the experiment what makes the section a bit difficult to read. Just a small remark to the history section (1.2.) for potential future versions of the text, neither Adam Smith, nor Jeremy Bentham were neoclassical economists, but moral philosophers.

Then the author jumps to the main part of the thesis, the experiment. Even though the design and survey questions have a few shortcomings, it is still a contribution which is adequate or even exceeding the bachelor level. From my personal experience, I know that collecting own data is very demanding, therefore, small sample size is disadvantage for the analysis but I would not consider it as a problem in general. Nevertheless, due to small sample size, it would be great to see the recruitment process. Were participants friends of the author or were random students asked via email? It is also not described on which faculties non-mathematicians study. It could be quite important for understanding potential differences. Secondly, I would personally choose different strategy for data collection. Even though it is quite smart to divide sample into two groups and change the order of questionnaires, the effects could be driven by different speed of learning between two groups because questions in both surveys are very similar. I would probably divide sample into two groups and use the same survey for one group at the beginning and for second group at the end of the semester. With sufficient sample size and successful randomization this process should work well, however, small sample size as in the thesis is a limitation, therefore I understand choice of the author. Lastly, adjustments of some survey questions is problematic. By changing probabilities in the framing effect and quantity expression, the author changes character of questions. In the survey it does not have to be about two abovementioned effects but about differences in computational skills. Transferring question about rare event into different environment and given no context, it makes this question very unclear and ambiguous.

On the other hand, results are analyzed and interpreted very carefully. Edita uses number of statistical tests and supports her arguments with regression analyses. She also explores alternative explanations as gender differences or ceiling effect. I would only suggest to report results in more succinct and coherent way because it is quite difficult to follow the text in this section.

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The thesis deals with very interesting topic of resiliency to cognitive biases among mathematical and non-mathematical students. The topic is very innovative and relevant, moreover the author conducts her own experiment which is a very nice contribution to the thesis. More extensive literature review would improve quality of the thesis. The experiment is carefully conducted and analyzed but for potentially further developments of the research idea (e.g. for master thesis), there is couple of problems which need to be considered. From all of the abovementioned argument, I recommend the thesis for the defence and suggest **grade B (good)**.

Potential questions for the defence:

- 1) How did you recruit participants for your experiment?
- 2) Why is it important to study differences in thinking between mathematicians and non-mathematicians and how is their style of thinking shaped by university education? Do you see potential implications from your research?

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
Literature (max. 20 points)	8
Methods (max. 30 points)	27
Contribution (max. 30 points)	25
Manuscript Form (max. 20 points)	10
TOTAL POINTS (max. 100 points)	70
GRADE (1 – 2 – 3 – 4)	2

NAME OF THE REFEREE: PhDr. Václav Korběl

DATE OF EVALUATION: 1.6.2015



Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong Average Weak
20 10 0

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

Strong Average Weak
30 15 0

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

Strong Average Weak
30 15 0

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Strong Average Weak
20 10 0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě