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## Behavioural Experiments in Health: an Introduction

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This special issue in Health Economics comprises eight papers that were presented at the *Fourth Workshop on Behavioural and Experimental Health Economics* at the University of Cologne (Germany) on 4-6<sup>th</sup> December 2016. Previous workshops – initiated by Heike Hennig-Schmidt (University of Bonn), Mylene Lagarde (LSHTM), and Geir Godager (University of Oslo) – took place at the University of Oslo (Norway) in January 2014; at McMaster University in Hamilton (Canada) in January 2015; and at the University of Duisburg-Essen (Germany), in December 2015. The workshop in Cologne was organized by one of us (DW), and was supported by the Center for Economic Analysis of Risk (CEAR) at Georgia State University (US), and by the *Behavioural Experiments in Health Network* ([BEH-net](#)).

BEH-net is an international network of researchers and policy-makers pioneering the use of behavioural experiments in health that we founded in 2015. The aim was to bring closer

together the two research communities of behavioural and experimental economists and of health economists, that we believed were at the moment quite disconnected; to foster research and grant application collaborations on behavioural and experimental health economics, policy, practice, and management; and to establish a platform to facilitate interactions and collaborations between researchers, policy-makers, and practitioners.

BEH-net is now supported by outstanding scientific advisory and policy and practice advisory boards, that include most of the world-leading experts and scholars in the area; it brings together more than 100 people among researchers, policy-makers, and practitioners around the world; and its active management board animates a regular annual workshop (now at its fifth edition, to be held in Atlanta in December 2017), regular special sessions in leading international conferences (including ESA, EuHEA, iHEA, the LSE International Health Policy Conference), and training, dissemination, and outreach events. A dedicated working papers series is also going to be launched soon.

An introductory special issue cannot start without an operational definition of “*behavioural experiments in health*”. In a forthcoming review article (Galizzi and Wiesen, 2017), we provide arguably the first of such a definition:

*Behavioural experiments in health make use of a broad range of experimental methods typical of experimental and behavioural economics to investigate individual and organisational behaviours and decisions related to health and healthcare.*

These experimental methods cover the entire continuum spectrum spanning the lab to the field in the spirit of the comprehensive taxonomy of experiments proposed by Harrison and

List (2004), that is: (i) *conventional lab* experiments, that involve student subjects, abstract framing, a lab context, and a set of imposed rules; (ii) *artefactual field* experiments, that depart from conventional lab experiments in that they involve non-student samples; (iii) *framed field* experiments, that add to artefactual field experiments a field context in the commodity, stakes, task or information; and, finally, (iv) *natural field* experiments, that depart from framed field experiments in that subjects undertake the tasks in their natural environment, and subjects do not know that they take part into an experiment. Furthermore, behavioural experiments in health consider and test principles and insights from both behavioural economics and conventional economics (and their combination), and the decision situations in behavioural experiments in health are usually set or framed in a health, healthcare, or medical context.

Common to experimental social and behavioural sciences, moreover, the outcomes of behavioural experiments in health are “behavioural”, that is, they consist of directly observable and measurable behavioural responses, rather than self-reported statements. Typically, subjects in behavioural experiments in health are directly observed in field situations or face real consequences for their stated choices or behaviours through aligned monetary and non-monetary incentives. Behaviours and decisions of participants to a behavioural experiment in health are thus typically (whenever possible) “incentive-compatible”, in the usual experimental economics sense that participants bear real behavioural consequences for their choices in the experiment.

As witnessed by some of the papers selected for this special issue, the current community of behavioural health experimentalists interprets behavioural experiments in health with a fair degree of tolerance, flexibility, and open-mindedness when it comes to, for example, the

measurement of economic preferences in the health domain. This is not because the community disagrees with the traditional experimental economics view that answers to hypothetical questions can significantly differ from responses to incentive-compatible tests because “talk is cheap” if there are no real behavioural consequences (the so-called “hypothetical bias”). Rather, it is because at the moment the literature on behavioural experiments in health lacks a systematic body of consensus methods to measure health-related preferences with real non-monetary consequences.

Finally, and following the usual convention in experimental economics, in behavioural experiments in health subjects are typically not deceived. Some behavioural experiments in health can, however, entail some degree of “obfuscation” when, in the attempt to minimise possible “experimenter demand effects” (Zizzo, 2010), subjects are not told about the exact purpose and research question of the experiment. This is in line with the spirit of those experiments that intend to minimise the alteration of, and interference with, naturally occurring behaviour by *not* telling subjects that they are part of an experiment (that is, in the spirit of “natural field experiments” according to the taxonomy by Harrison and List, 2004; and also of “lab-field” experiments as in Dolan and Galizzi, 2014).

To sum up, five characterising features of behavioural experiments in health are therefore: (a) the fact that the decisions and behaviours are health-related; (b) the fact that, whenever possible, the outcomes of the decisions in the experiment are “behavioural” in the sense of consisting of directly observable and measurable behavioural responses, or of bearing real consequences for the decision-makers; (c) the consideration and testing of principles and insights from both behavioural economics and conventional economics, as well as their combination; (d) the use of a broad range of experiments spanning from the lab to the field;

and (e) the tendency to avoid deception which, however, does not prevent the use of obfuscation, natural field experiments, and lab-field experiments.

The papers selected in this special issue do not cover the entire spectrum of the behavioural experiments in health from the lab to the field, since virtually all papers are lab experiments framed in medical or health contexts. However, they report a selection of lab experiments on topics that, we believe, are of broad interest for both health economists and experimental economists, such as: how competition and incentives affect physicians' medical service provision; how physicians sort into different payment systems; and how the organisation of healthcare affects the efficiency and quality of medical services.

The special issue begins with three papers analysing behaviour in *healthcare markets*, all of which are well grounded in theory to derive behavioural predictions for the experiments. First, the paper by *Jeannette Brosig-Koch*, *Burkhard Hehenkamp*, and *Johanna Kokot* present a laboratory experiment that investigates how competition affects physicians' provision behaviour, and whether competition can reduce unintended effects such as overprovision under a fee-for-service regime. Their results suggest that, in line with theoretical predictions, competition reduces over-treatment and under-treatment which are prevalent under fee-for-service and capitation, respectively. Also considering a lab experimental healthcare market, *Ben Greiner*, *Le Zhang*, and *Chengxiang Tang* analyse the effect of separating physicians' prescription and treatment activities on the efficiency in the provision of medical services. They find that separating prescription and treatment activities leads to a reduction in over-treatment and thus an increase in efficiency. This only holds, however, under regulated prices. Employing a lab hospital decision-setting, *Nadja Kairies-Schwarz*, *Johann Han*, and *Markus Vomhof* investigate the relationship between hospital mergers and the quality of

medical services. Due to market consolidation, they find a reduction in healthcare quality after the hospital merger.

The following papers in the special issue consider individual health decisions in *non-market* settings. Focusing on physician decision-making, *Johanna Kokot*, *Jeannette Brosig-Koch*, and *Nadja Kairies-Schwarz* employ a medically framed lab experiment in the fashion of Hennig-Schmidt et al. (2011) to study how physicians sort into fee-for-service and capitation payment systems. They find that subjects in their lab experiment strongly prefer fee-for-service over capitation. Relating to the broader literature on nudges and individuals' preventive behaviour, *Robert Böhm*, *Nicolas Meier*, *Lars Korn*, and *Cornelia Betsch* explore the effect of different recommendations (e.g., universal and risk-group-specific) in a repeated interactive vaccination game in the lab. They find that risk-group-specific recommendation increases vaccine uptake of high-risk types and, at the same time, decreases vaccine uptake of low-risk types.

The role of risk preferences in health decision-making is further investigated in the two succeeding articles of the special issue. *Robert Nuscheler* and *Simon Binder* analyse how risk preferences relate to immunisation choices in the lab. By implementing a surgery frame and two neutral frames varying in complexity, they also analyse whether risk preferences in immunisation decisions are domain-specific. Behavioural results indicate a significant effect of risk preferences on vaccination decisions. Differences between domains are gender specific: female subjects choose the safer alternative significantly more often in the surgery frame than in the vaccination frame. Besides, the experimental results imply that the health contexts improve subjects' decision-making leading to more consistent choices compared to the neutral frames. Also focusing on the effect of different health domains, *Ariadna Garcia*

*Prado, Alejandro Arrieta, Paula Gonzalez, and Jose-Luis Pinto Prades* investigate how risk attitudes in lab medical decisions for others vary across three different end-of-life contexts. The authors report risk aversion in all domains, while the intensity of risk aversion varies in the different health contexts.

Finally, the special issue ends with a study by *Glenn Harrison* using data from the *National Epidemiologic Survey on Alcohol and Related Conditions* in the United States. He shows that behavioural responses to surveys can significantly affect inferences about population prevalence of nicotine dependence: statistical corrections for sample selection responses to “gateway” survey questions lead to significantly higher estimates of the prevalence.

All papers in the special issue underwent regular scientific peer review. A total of fifteen papers were originally submitted to the special issue, eight of which were accepted for publication.

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