spudm23

23rd Subjective Probability, Utility, and Decision Making Biennial Conference

Abstracts of symposia

26 June 2011

Organisers

eadm The European Association for Decision Making

Department of Psychology Kingston University London

Symposium ID: 99
Time: MON 10:30 – 12:30

Recent Methodological and Analytical Advances in Decision Research

Organiser
Joseph Johnson
Miami University
johnsojg@muohio.edu

Discussant
Michael Schulte-Mecklenbeck
Swiss Federal Institute of Technology
michael@schulte-mecklenbeck.com

For half a century, empirical studies in JDM were dominated by examining choice outcomes among student populations. For example, classic results such as the Allais paradox or preference reversals were revealed by comparing pairs of choices from psychology undergraduates. This degree of detail was sufficient for informing theory development in the past, such as discriminating among utility functions. However, contemporary theories are increasingly more nuanced and more process-oriented, and therefore more difficult to diagnose based on outcomes alone. Furthermore, the generalizability of results beyond undergraduate populations seems dubious (cf. NDM and similar critiques). The proposed symposium will provide a survey of the state-of-the-art in methodological and analytic techniques that keep pace with this increased theoretical sophistication and departure from the exclusive use of undergraduate populations. Specifically, the symposium will include a balanced and coherent set of talks that introduce: new paradigms including interactive eye-tracking (Franco-Watkins), and measures of response dynamics (Koop); new analytic techniques for response times (Fific) and multiple dependent variables simultaneously (Jekel); means of access to entirely new populations with untapped potential (Paolacci). These advances are crucial for the development of JDM research and can be applied to essentially any domain.

Paper ID: 157

Interactive Eye-tracking for Decision Research: Decision Moving-Window Methodology

Ana Franco-Watkins
Auburn University
afrancowatkins@auburn.edu

Additional author:
Joseph Johnson Miami University

It has become increasingly more important for researchers to better capture the complexities of making a decision beyond outcome measures. Currently, a disparity exists between the process-level models decision researchers use to describe and predict decision behavior, and the methods implemented and metrics collected to test these models. To better measure cognitive processes such as attention and working memory during decision making, we introduce a new decision moving-window paradigm that combines the advantages of work in decision research (mouse-tracing with contingent information display) and cognitive psychology (eye-tracking paradigms from reading and scene perception) by presenting information contingent on eye-fixations. We demonstrate the effectiveness of this methodology by presenting the first application to risky decision making, and show how it compares to standard eye-tracking methods (without occlusion of information). We outline the practical, theoretical, and analytic advantages of this method and how it can advance both decision making research as well as the development of new metrics to capture cognitive processes in complex tasks.

Paper ID: 231

Response Dynamics: How Continuous Response Monitoring Can Test Modern Process Models

Gregory Koop
Miami University
koopgj@muohio.edu

Additional authors:
Joseph Johnson Miami University

As process models of decision making have become increasingly nuanced, the methods by which these models are judged and compared have not kept pace. For example, traditional tools like choice matrices only provide discrete acquisition data meaning choice processes can be inferred but not directly measured. Fortunately, in other areas within cognitive science, tools exist to provide the high-fidelity information needed to test the underlying assumptions of complex modern decision models. Recently, researchers have capitalized on the robust reciprocal connection between the motor system and the cognitive system to study the online formation of a response (Spivey, 2008). This work, labeled as the study of response dynamics (Johnson & Koop, 2011), allows for continuous recording of the motor trajectory that produces a response. We present two studies that introduce this paradigm and its innovative analyses to traditional areas of decision-making research. First, we validate the paradigm for decisions under risk using traditional economic gambles, and show systematic differences between risk-seeking and risk-averse response trajectories, as well as between gain and loss domains. Second, we extend the paradigm to moral decision making in order to test predictions of dual-systems models of moral judgment. We show differences in participants? mouse trajectories based on whether they accepted or rejected proposed courses of action. In summary, we propose that continuous response tracking is a robust technique that can provide the high quality data necessary to test modern process models.

How to Compare Process Models for Decision Making: A Multiple Measure Maximum Likelihood Approach to Model Evaluation

Marc Jekel
MPI for Research on Collective Goods
jekel@coll.mpg.de

Additional authors:
Andreas Gloeckner MPI for Research on Collective Goods
Susann Fiedler MPI for Research on Collective Goods

One of the limitations of classic 'as-if models' for judgment and decision making such as expected utility theory or weighted linear judgment models is that their predictions are naturally limited to choices or judgments only. Process models, in contrast, are more precise and additionally provide a wealth of testable predictions on multiple dependent measures such as decision times, confidence, information search, fixation duration, arousal, etc. This results in a methodological and a statistical challenge. First, it becomes harder to identify tasks that optimally differentiate between the set of models considered, second, the fit between data and predictions on multiple dependent measures (including binary and continuous data) has to be integrated into an overall evaluation for each model. We present an integrative approach that solves both issues at the same time. It is based on a maximum likelihood method for integrating multiple measures into a single likelihood index for model evaluation (Gloeckner, 2009, 2010) and a method to select the most diagnostic decision tasks systematically (Jekel, Fiedler, & Gloeckner, under review).

A Response Time Methodology for Tracing Processes in Decision Strategies

Mario Fific
Max Planck Institute for Human Development
fific@mpib-berlin.mpg.de

Additional author:
Joerg Rieskamp University of Basel

The current project aims to reveal a fine-grained structure of mental processes involved in decision making strategies. For this purpose we designed an experiment utilizing system factorial technology (SFT). SFT is based on analyzing response times (RT) and allows identification of the order (serial vs. parallel) and amount (restricted versus exhaustive search) of processing. Both properties allow for clear delineation between decision strategies used in compensatory or non-compensatory environments, as well as differentiation among strategies within each general class. We applied SFT to a pair-comparison inference task in which participants had to decide which of the two objects scored higher on a criterion. The SFT revealed distinct patterns of RT results: in the non-compensatory environments the decision strategies were based on serial cue-by-cue processing, with possible termination on the first discriminating cue, whereas in the compensatory environment the decision strategies were based on parallel exhaustive processing of all cues. The SFT test and RT patterns allowed for fine-grained insights into the processing structure of decision strategies, which could not be achieved by solely analyzing choice outcomes or simpler measures of RT (e.g. mean differences).

Paper ID: 72

Crowdsourcing Empirical Research: Amazon Mechanical Turk

Gabriele Paolacci
Ca' Foscari University of Venice
paolacci@unive.it

Additional authors:
Jesse Chandler Princeton University
Pam Mueller Princeton University

On online labor markets, 'requesters' can recruit 'workers' for the completion of computer-based tasks. On one such market, Amazon Mechanical Turk (AMT), researchers who use experimental and survey methods can reach a diversity of relatively high-quality participants in a cheap and timely fashion. These advantages come with little if any cost: AMT has features that allow researchers to avoid many threats to experimental validity, and our empirical investigations revealed no differences in data quality between workers on AMT and more traditional participants. As a result, AMT is now populated by a large number of researchers that run one-shot surveys on a continuous basis. Online labor markets offer opportunities for JDM researchers that go above and beyond those of a convenience sample for one-shot experiments: Qualifications allow experimenters to group together participants according to characteristics predefined by AMT (e.g., nationality) or previously measured ad-hoc variables (e.g., participation to a previous experiment), enabling researchers to conduct cross-cultural or longitudinal research. Moreover, messaging workers allows scheduling experiments that require simultaneous participation. Combined with the possibility of incentivizing behaviors using bonuses, this creates the opportunity of conducting game theoretic experiments. The ready availability and the 'shared nature' of online labor markets also place some concerns. For instance, pooling the data from several researchers and analyzing the results from a new survey, we found substantial reason to be concerned about duplicate responses on AMT. However, these concerns are not insurmountable and can be avoided if proper precautions are taken.

Symposium ID: 9
Time: MON 14:30 – 16:30

Using visual representations to improve JDM

Organiser
Mandeep K. Dhami
University of Cambridge
mkd25@cam.ac.uk

Discussant
Denis Hilton
University of Toulouse
hilton@univ-tlse2.fr

Scientists in the field of JDM have identified countless ways in which people may be biased when making judgments and decisions. The proposed symposium aims to show that errors in JDM may arise because of the use of inappropriate information formats that may complicate the task and mislead decision makers. The symposium includes five empirical presentations followed by a discussion from leading experts across the globe (USA, Germany, Spain, UK, and France). The presentations demonstrate the usefulness of visual representations for improving judgment and decision making (including risk and probability). The presentations refer to various types of visual representations (e.g., icon arrays, pictographs, bar graphs and tables) and decision makers (i.e., lay people in the medical and health domains, and professionals in the criminal justice domain). They demonstrate how visual representations can debias people e.g., reducing “side-effect aversion”, framing effects, and denominator neglect, and increasing understanding of statistical information. The studies also highlight some of the conditions under which visual representations outperform other forms of communicating information relevant for judgment and decision making, as well as the features of the visual representations that may make them effective, and the characteristics of individuals who may most benefit from visual representations. The findings from this growing body of research on visual representations has concrete implications for the policy and practice of presenting information relevant for JDM that can help both lay and professional decision makers across various domains make sound judgments and decisions.

Pictures and Frames: On Avoiding Framing Effects Using Visual Representations

Mandeep K. Dhami
University of Cambridge
mkd25@cam.ac.uk

Additional author:
Rocio Garcia-Retamero University of Granada

Framing effects appear to be ubiquitous. Studies show that people are risk-averse under gain frames and risk-seeking under loss frames. We propose the use of visual representations (i.e., icon arrays) as a debiasing technique for such framing effects. The present study (1) demonstrated the effect of gain-loss framing on criminal justice decision makers, and (2) examined the debiasing effect of visually structured risk messages. The study employed a mixed design: Message frame (gain vs. loss) was manipulated within-subjects, and message format (numerical vs. visual) was manipulated between-subjects. Data was collected from 60 senior police officers in two phases. In both phases, we measured officers' judgments of the accuracy of a counter-terrorism technique in identifying whether a known terror suspect poses an imminent danger. Officers also decided whether they would recommend the technique to the Home Office, and rated their confidence in this recommendation. Manipulations of message frame and message format were successful. We found that when information about the effectiveness of the counter-terrorism technique was presented in a numerical format, officers were susceptible to the gain-loss framing effect in their accuracy judgments and recommendations. However, when the information about the technique was represented visually using icon arrays, there were no such framing effects. Officers were significantly more confident in their recommendations when the information was represented visually than numerically. We offer potential explanations for the debiasing effect of visual aids, and implications for communicating risk to professional decision makers.

Effective communication of risks: How can we increase condom use and STD screening in young adults?

Rocio Garcia-Retamero
University of Granada
rretamer@ugr.es

Additional author:
Edward Cokely Michigan Technological University

Sexually Transmitted Diseases (STDs);including the human immunodeficiency virus (HIV)/AIDS;are among the most common infectious diseases in young adults. In a two-phase longitudinal experiment we examined the effects of a brief risk awareness intervention (i.e., a sexual health information brochure) in a large sample of sexually active young adults. We assessed the influence of gain- and loss-framed messages, and visual aids, on affective reactions, risk perceptions, attitudes, behavioral intentions, and reported behaviors relating to the prevention and detection of STDs. Results indicate that gain-framed messages induced greater compliance for prevention behaviors (e.g., condom use), whereas loss-framed messages were more effective in promoting illness-detecting behaviors (e.g., making an appointment with a doctor to discuss about STD screening). However, when visual aids were added to the health information, both the gain- and loss- framed messages were equally and highly effective in promoting health behaviors. Participants' attitudes towards the health behaviors and their behavioral intentions mediated the influence of the framed messages on prevention and detection of STDs. Theoretical, economic, and public policy implications of these results are discussed.

Paper ID: 24

Advantages and disadvantages of using visual displays to convey risk/benefit tradeoffs in medical treatment situations

Erika Waters
Washington University School of Medicine
waterse@wudosis.wustl.edu

This presentation will describe research examining decisions involving medical tradeoffs. The influence of visual displays on perceptions of risks, benefits, and decision-making will be reviewed and possible mechanisms will be explored. Many experiments have sought to determine whether, how, and under what conditions people make non-normative decisions when faced with preventive medical treatments that have side effects. Most experiments have recruited large samples (i.e., $N \geq 2000$) of both patient and non-patient populations to evaluate and make decisions about both real and hypothetical treatment tradeoffs. Multiple variables were manipulated across studies, including the presence/absence of a side effect, the presence/absence of a visual display, and the format of the visual display. Preventive treatment decisions were unduly influenced by side effects. This resulted from participants declining treatments with side effects even when the benefits outweighed the risks or when adding the side effect did not change the individual?s overall chances of illness. Visual displays, particularly standard pictographs and pictographs that highlight the incremental change in risk/benefit afforded by the treatment, increased comprehension. They also eliminated side effect aversion in some hypothetical decisions. However, they did not increase willingness to take a real medication with real side effects. Several explanations for the effects of side effects on treatment decisions were explored, including accurate comprehension of the tradeoff, but the precise mechanism remains unknown. The undue influence of side effects may discourage people from taking advantage of treatments that can reduce their risk of illness. Future research should explore the cognitive, affective, and social decision making processes surrounding these difficult decisions.

Paper ID: 87

Different People Benefit From Different Representations of Statistical Information

Wolfgang Gaissmaier
Max Planck Institute for Human Development
gaissmaier@mpib-berlin.mpg.de

Additional authors:
Odette Wegwarth Max Planck Institute for Human Development
David Skopec Zurich Univerisity of the Arts
Ann-Sophie Muller Zurich Univerisity of the Arts
Sebastian Broschinski Zurich Univerisity of the Arts
Mary Politi Washington University School of Medicine

Informed medical decision making requires comprehending statistical information. This study aims to improve the understanding of conveying health-related statistical information with graphical in comparison to numerical representations. First, we investigate whether the iconicity of representations (i.e., their abstractness versus concreteness) affected comprehension and recall of statistical information. Second, we investigate whether graph literacy helps identify individuals who comprehend graphical representations better than numerical representations. Participants (N=275) were randomly assigned to receive different representations of health-related statistical information, ranging from very low iconicity (numbers) to very high iconicity (icon arrays including photographs). Comprehension and recall of the information were assessed. Additionally, participants rated the accessibility of the information and the attractiveness of the representation. Graph literacy was assessed with a recently developed scale (Galesic & Garcia-Retamero, in press). It was shown that the only difference between representations that affected comprehension and recall was the difference between graphics and numbers, while the actual level of iconicity of graphics did not matter. Individuals with high graph literacy had better comprehension and recall when presented with graphics instead of numbers, and they rated graphics as more accessible than numbers, while the reverse was true for individuals with low graph literacy. Both groups judged graphics to be more attractive than numbers. An assessment of graph literacy distinguishes individuals who are best informed with graphical representations of statistical information, and those who are better suited to numerical representations.

Paper ID: 309

Visual Representations Reduce Conjunction and Disjunction Fallacies: Testing the Overlapping Classes Hypothesis of Fuzzy-Trace Theory

Valerie F. Reyna
Cornell University
vr53@cornell.edu

Additional authors:
Christopher R. Wolfe Miami University
Jordana F. Liberali Erasmus University

Although visual representations improve judgment, much work is not theoretically motivated. According to fuzzy-trace theory, conjunction fallacies, disjunction fallacies, and base-rate neglect are caused by class-inclusion confusions about the referents of nested or overlapping classes. As a result, reasoners focus on numerators, neglecting denominators (Reyna & Brainerd, 2008). The illusion is made more compelling by the presence of salient gist representations and by failure to retrieve reasoning principles that are known and understood. Visual representations that make classes discrete rather than overlapping are predicted to reduce reasoning errors. Such representations (e.g., icon arrays, tagging, and background-foreground salience using stacked graphs) have been implemented successfully. We present results of three experiments in which a novel visual representation—2X2 tables to represent discrete classes—is used to reduce errors in judging conjunction and disjunction probabilities (rather than frequencies). Specifically, gist representations were manipulated with analogies, and the strategy of ignoring relevant denominators was counteracted with training in using 2 x 2 tables to clarify class-inclusion relations. Estimated conjunctive and disjunctive probabilities were assessed for fallacies and semantic coherence – the latter a constellation of estimates consistent with class relations (e.g., subsets rather than identical sets). As predicted, in all experiments, analogies increased semantic coherence and using 2 x 2 tables reduced fallacies and increased semantic coherence. Results from an experiential learning paradigm are also presented, testing predictions of a mathematical model of conjunction and disjunction fallacies based on fuzzy-trace theory.

Symposium ID: 4
Time: TUE 10:30 – 12:30

Challenges and Advances in Modeling Risky Decision Making

Organisers
Thorsten Pachur and Renata Suter
University of Basel
thorsten.pachur@unibas.ch

Discussant
Neil Stewart
University of Warwick
neil.stewart@warwick.ac.uk

Describing and predicting risky decision making has been and continues to be one of the key challenges for decision science. Historically, the expectation framework?according to which risky options are evaluated based on a multiplicative combination of transformed outcome and probability information?has served as the key modeling framework for investigating this issue. The currently most popular model in that tradition is prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). Although widely used to study and quantify risky decision making, much of the work on prospect theory remains largely unconnected to recent modeling work in cognitive science (e.g., overfitting, developments in parameter estimation techniques, model selection). Moreover, given that prospect theory does not explicitly attempt to model the information processing steps preceding a decision, it is necessary to examine its relationship with process models, in particular heuristics. The goals of this symposium are (a) to present recent tests of prospect theory that build upon modeling developments in cognitive science and which provide new insights on the merits and best practices of fitting prospect theory to data; (b) investigate to what degree prospect theory and heuristics might be used as complementary rather than alternative modeling approaches, and (c) to give an overview of recent normative and empirical challenges to the question of how to define risk taking as well as alternative modeling frameworks to model behavior under risk and uncertainty.

Paper ID: 139

Hierarchical Bayesian Parameter Estimation for Models of Decision under Uncertainty

Hakan Nilsson
Uppsala University
hakan.nilsson@psyk.uu.se

Additional authors:
Jörg Rieskamp University of Basel
Eric-Jan Wagenmakers University of Amsterdam

Traditionally, model of decision under uncertainty are fitted to either individual or group-level data. Both of these approaches come with specific problems, the first is susceptible to noise in data and the second ignores individual differences. We argue that hierarchical modeling, where models are fitted simultaneously to individual and group-level data, provides an elegant compromise. We compare a hierarchical Bayesian implementation of CPT with a traditional implementation (fitted using a maximum likelihood approach) and show the benefits of the former approach. Our analysis also revealed the difficulties of estimating CPT's parameters reliable.

Paper ID: 205

Parameter Stability in Cognitive Models of Risky Choice: An Analysis of Prospect Theory

Thorsten Pachur
University of Basel
thorsten.pachur@unibas.ch

Additional authors:
Andreas Gloeckner Max Planck Institute for Research on Collective Goods

In the behavioral sciences, a popular approach to describe and predict behavior is cognitive modeling with adjustable parameters, which can be fitted to data. Adjustable parameters allow capturing stable differences between people. At the same time, parameter estimation also bears the risk of overfitting, but tests of the temporal stability of individually fitted parameters in cognitive modeling are very rare. We examined the parameter stability in cumulative prospect theory (CPT), arguably the most widely used framework to model decisions under risk. Specifically, we examined (a) the temporal stability of CPT's parameters; and (b) how well versions of CPT with different numbers of adjustable parameters predict individual choice. CPT was fitted to each participant's choices in two separate sessions, which were one week apart. All parameters were substantially correlated across time, in particular when using a simple implementation of CPT. CPT allowing for individual variability in parameter values predicted individual choice better than both an implementation with a common set of parameters for all participants and various simple heuristics. Prospect theory's parameters thus seem to pick up stable individual differences that need to be considered when predicting individual risky choice.

Paper ID: 50

Building Bridges between Alternative Accounts of Risky Choice: How Does Prospect Theory Reflect the Use of Heuristics?

Renata Suter
University of Basel
renata.suter@unibas.ch

Additional authors:
Thorsten Pachur University of Basel

Expectation-based theories of risky choice (e.g., prospect theory) and theories of heuristics are usually interpreted as opposite and incompatible views. Whereas prospect theory predicts choice behavior based on a multiplicative combination of all outcome and probability information, many heuristics assume limited information search or forgo information integration. However, prospect theory can also be understood as measuring psychophysical characteristics of decision making independently of the underlying information processing steps. From this perspective, prospect theory might offer a tool to characterize heuristic decision making based on established constructs such as probability sensitivity and risk aversion. Is prospect theory able to capture heuristic decision making in a meaningful way? And how is the use of heuristics reflected in prospect theory's parameters? To find out, we fitted cumulative prospect theory to the predictions of various heuristics (e.g., priority heuristic, minimax, most-likely). It turned out that heuristics that give only little attention to probabilities produced more strongly S-shaped weighting functions than heuristics that focus on probability. Moreover, heuristics that are generally risk seeking for gains resulted in more elevated weighting functions. Heuristics that mainly focus on outcomes produced more linear value functions than heuristics that ignore outcome information. The results suggest that prospect theory and heuristics can be viewed as complementary approaches to model risky choice. Observed differences in outcome sensitivity, probability sensitivity, and risk aversion do not necessarily result from a common process that considers all outcome and probability information but could instead result from different heuristics.

Paper ID: 197

On the Coefficient of Variation as a Predictor of Risk Sensitivity

Elke Weber
Columbia University
euw2@columbia.edu

The coefficient of variation (CV) has recently been questioned as a normative criterion for risk taking in risky choice because it predicts violations of dominance, as well as on descriptive grounds because such violations are not observed some reported studies. I counter the normative argument by suggesting that occasional violations of dominance might be the price that organisms with only limited processing capacity pay to achieve a broad set of goals. The consistency axioms of rational choice theory have a long history of falling short of accounting for such tradeoffs. I then address some reported instances of descriptive failures of the CV to predict risk taking (Cox & Sadiraj, 2010), showing them to be inappropriate or inconclusive arguments against the use of the CV as a measure of risk in risk?return models of human and animal risk taking. Finally, I present new behavioral and neuroscience evidence in support of the CV as a predictor of risk taking, especially in decisions from experience, for which the model was developed.

Paper ID: 226

Quantum Theory Applied to Risky Decision Making Behavior

Jerome Busemeyer
Indiana University
jbusemey@indiana.edu
Additional authors:
Zheng Joyce Wang, Ohio State University

The purpose of this paper is to introduce the application of quantum theory to cognitive and decision researchers. This research is not concerned with modeling the brain using quantum mechanics, nor is it directly concerned with the idea of the brain as a quantum computer. Instead it turns to quantum theory as a fresh conceptual framework for explaining empirical puzzles, as well as a rich new source of alternative formal tools. Can quantum theory provide new answers to puzzling results from decision research that have resisted formal explanations so far? To answer this question, this paper will show how a quantum model provides a simple and elegant explanation for two puzzling phenomena from decision research: Shafir and Tversky's (1992) disjunction effect, which violates Savage's sure thing principle; and dynamic inconsistency, which challenges axioms required for backward induction analysis of multistage decisions.

Symposium ID: 98
Time: TUE 14:30 – 16:30

Contributing to individuals, groups, and public causes

Organiser
Tehila Kogut
Ben-Gurion University
kogut@bgu.ac.il

Discussant
Ilana Ritov
Hebrew University
ilana.ritov@huji.ac.il

The research projects presented in this symposium explore different forms of pro-social giving such as charitable donation, real micro-financing decisions, and willingness to pay for public goods. The findings offer important insights pertaining to the determinants of the decision to give. These determinants include the nature of the target of help, the beliefs and attitudes of the decision maker, awareness of victims not helped and the circumstances of the decision. Although each project focuses on a somewhat different set of determinants, the findings may well generalize across the different types of choices, delineating a fuller picture of the psychological determinants of pro-social behavior and generosity.

Paper ID: 217

Pro-Social Behaviour in Moral Dilemmas: The Role of Dissonance Reduction in Donation Decisions

Stephan Dickert
Max-Planck-Institute for Research on Collective Goods, Bonn, Germany
dickert@coll.mpg.de

Additional authors:
Daniel Västfjäll Göteborg University and Decision Research
Paul Slovic Decision Research and University of Oregon

We conducted three studies to examine the effect of dissonance reduction on affective and cognitive evaluations of recipients of donations. When framed as a moral choice dilemma, donation decisions evoke dissonance that motivates changes in evaluations of people in need of help. Our results show that participants were motivated to reduce this dissonance by spreading evaluations when they are forced to make a decision, but not when the decision can be deferred to someone else or when the donation recipient is determined randomly. The moderating effect of decision deferral on spreading evaluations is stronger when the donation recipients are individuals vs. humanitarian aid programs. Also, people show the tendency to avoid the decision by not donating at all when no other means of decision deferral are given. We discuss these findings with regard to cognitive dissonance theory and recent work on emotions in pro-social behaviour and advance a model in which emotion regulation is a central determinant for charitable contributions.

Paper ID: 183

Microfinance Decisions

Deborah Small
The Wharton School, University of Pennsylvania
deborahs@wharton.upenn.edu

Additional authors:
Jeff Galak Carnegie Mellon University
Andrew Stephen INSEAD

Micro-financing has recently emerged as a leading contender to cure world poverty. Our research investigates the characteristics of borrowers that engender lending in a field setting with real world and consequential data. We observe that lenders favor individual borrowers over groups or consortia of borrowers, a pattern consistent with the identifiable victim effect. They also favor borrowers that are socially proximate to themselves. Across three dimensions of social distance (gender, occupation, and first name initial) lenders prefer to give to those who are more like themselves. Finally, we discuss policy implications of these findings.

Paper ID: 29

Ambient odors and evaluation of an environmental public good: the role of semantic congruence

Nicolao Bonini
University of Trento
nicolao.bonini@unitn.it

Additional authors:
Michele Graffeo University of Trento
Constantinos Hadjichristidis University of Trento.
Valentina Perrotta University of Trento.

Standard economic theory assumes that the evaluation of a public good is a function of the evaluation of expected cost/benefit. Following the constructed preference framework, we study whether the context where the public good is evaluated affects its evaluation. Specifically, we investigate whether the presence/type of a peripheral cue such as ambient odor affects preferences. The peripheral information is normatively irrelevant. The presence of the ambient odor does not give different information on the features of the public intervention and requested contribution compared to the neutral olfactive condition (e.g., costs, magnitude/type of intervention, modality of personal contribution, etc.). Findings show that the presence and type of olfactory cue affects the evaluation of environmental goods. Findings are discussed in terms of the interplay between cognitive and affective aspects.

Paper ID: 224

Pseudo-inefficacy: when awareness about those we cannot help deter us from helping those we can help

Daniel Vastfjall
Goteborg University and Decision Research
daniel.vastfjall@psy.gu.se

Additional authors:
Paul Slovic Decision Research and University of Oregon

In a charitable giving context, we examine if knowledge of those “out of reach” triggers negative feelings that counter the good feelings from giving aid, thus demotivating action. In this presentation we describe three studies examining the affective processes that contribute to this phenomenon. We hypothesized that awareness of those not helped reduces the “warm glow” (a positive feeling) associated with giving aid (e.g. a hedonic benefit). We tested this hypothesis by asking participants to rate their warm glow for various scenarios where we vary the number of children helped and not helped (e.g. helping 1 child, helping 1 not helping 1, helping 1 but not 6). We predicted, and found that the warm glow was greatest for single child and decreased as excluded children were highlighted. In study 2, using students in a class we found similar effects for a different set of scenarios; the single child got the highest ratings of warm glow. When it was help 1 child of 2, that percentage dropped. Help 2 of 3 increased slightly and, interestingly, help 6 of 7 increased further, but was still less than helping 1 of 1. In a third study we compared hypothetical donations requests and experienced positive and negative affect for a single victim with a scenario where participants could donate to another single child, but not six others. Consistent with our warm glow findings in studies 1 and, general positive affect and donations decreased in the pseudoinefficacy condition. Together, these studies show that awareness of those not helped create less positive emotion for-, and may demotivate from helping those they actually can help. This is a form of pseudo-inefficacy that is nonrational. We should not be deterred from helping one just because there are others we cannot help.

Paper ID: 5

Protective donation: When refusing a request for a donation increases the sense of vulnerability

Tehila Kogut
Ben-Gurion University
kogut@bgu.ac.il

Additional authors:
Ilana Ritov Hebrew University

May refusing a request for a donation be conceived as 'tempting fate'? Do people feel more vulnerable when they do not comply with such a request? In this paper we examine the link between subjective perceptions of vulnerability and people's willingness to help address a threatening cause. Results of our studies, examining a real life situation, hypothetical scenarios and a controlled lab game with actual monetary costs and rewards, show first, that deliberately helping is positively correlated with the perceived likelihood of becoming a victim of the same misfortune. Second, we show that refusing to donate to a threatening misfortune increases sense of vulnerability. Both phenomena occur especially for people with strong belief in a just world, who believe in a causal relationship between people's behavior and their fortune (rewards and punishments).

Symposium ID: 5
Time: THU 10:30 – 12:30

Clinical Reasoning

Organisers
Olga Kostopoulou and York Hagmayer
King's College London
olga.kostopoulou@kcl.ac.uk
york.hagmayer@kcl.ac.uk

Discussant
Valerie Reyna
Cornell University
vr53@cornell.edu

Studies on the decision making of clinicians in both medicine and mental health have shown that decisions are often only moderately reliable and prone to errors (Chapman, Bergus, & Elstein, 1996; Elstein, Shulman, & Sprafka, 1978; Garb, 2005; Kostopoulou et al., 2008; Poses, Cebul, & Wigton, 1995; Reyna & Lloyd, 2006). To understand these phenomena, recent research has focused on the cognitive processes underlying clinical judgements and decisions. Experimental methodologies are especially well suited to tap into these processes. The aim of the symposium is to present studies on a variety of aspects of clinical decision making using different paradigms. The symposium includes studies on memory, learning, information integration, and causal reasoning. Kostopoulou shows how early hypotheses about diagnoses can bias the evaluation and integration of further diagnostic evidence. Kim reports how the availability of a causal explanation affects judgements of normality in mental health diagnosis. Hagmayer investigates how assumptions about the causal mechanisms underlying a disorder, in addition to learning experiences, determine treatment decisions. Witteman reports how temporal delays between information acquisition and diagnosis affect classification and recall of clinical symptoms. The discussion will aim to identify open research questions and methodological issues for future research.

Causal vs. non-causal strategies in diagnosis and treatment decisions

York Hagmayer
King's College London
york.hagmayer@kcl.ac.uk

Additional author:
Katharina Mueller University of Goettingen

Two of the most important tasks of clinicians are diagnosis and treatment choice. There are a number of theoretical models of the underlying cognitive processes. Three of these models (exemplar, cue-abstraction and causal models) were compared in the present study. We hypothesized that assumptions about the causal mechanisms underlying a disorder would affect treatment decisions for novel patients even when participants observed numerous other patients before. An experimental study was conducted which allowed to differentiate between the models. Students of clinical psychology were confronted with a fictitious, but plausible mental disorder and learnt about its diagnostic criteria, aetiology and possible interventions. Participants' assumptions about the underlying causal relations were manipulated by instruction in three groups. In a learning phase participants received information about the symptoms, diagnostic score, treatment and treatment outcome of 60 patients. The learning input was equally compatible with all causal assumptions. In two test phases (before and after learning) participants were requested to estimate the diagnostic score, choose one of two interventions, and predict the resulting outcome for novel patients. The results showed that causal assumptions strongly affected treatment choice but not diagnostic judgments. An exemplar model, a cue abstraction model and a causal model model were used to predict the choice data. The exemplar model and the causal model model fitted the data on the group level very well. However, only the causal model model predicted the differential choices obtained. These findings indicate that knowledge of the causal mechanisms underlying a disorder, in addition to learning experience, may affect treatment decisions.

Paper ID: 68

Correctly remembering clients in mental health care

Cilia Witteman
Radboud University Nijmegen
C.Witteman@socsci.ru.nl

Additional author:
Marieke Tollenaar Leiden University

In two free recall studies, we addressed the question what the differences are in immediate and delayed recall of client information between mental health clinicians with different levels of experience, and how these recall differences are related to the accuracy of their diagnostic classifications. Clinicians were presented with two clinical cases, and were afterwards asked to give the appropriate classifications and to write down in as much detail as they could what they remembered of the cases, either directly or after one week. We found that very experienced clinicians remembered more abstractions when classifications and recall were given directly after having read the cases. The accuracy of the classifications was the same for all levels of experience, as was the amount of details recalled. After one week, very experienced clinicians remembered fewer details than the novices, and they classified worse. We discuss how the differences in recalled details and abstractions are associated with differences in performance, and we suggest implications for psychodiagnostic practice.

Paper ID: 90

Do clinical psychologists intuitively extend the bereavement exclusion for major depression to other stressful life events?

Nancy Kim
Northeastern University
n.kim@neu.edu

Additional authors:
Thao Nguyen Northeastern University
Daniel Paulus Northeastern University

In assessing cases of major depression, to what extent do clinicians interpret symptoms within the causal context of life events? Past research on clinicians' reasoning has shown that knowing a plausible life-event cause for a person's disordered symptoms makes the person appear more normal than if the cause was unknown (the understanding-normality effect). On the other hand, the current, 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) formally states that only bereavement-related life events should exclude a client from a diagnosis of depression, and the 5th edition (under development) of the manual proposes to eliminate the bereavement clause altogether. Our question was whether clinicians' judgments adhere to either of these formal DSM recommendations. We asked expert clinical psychologists to give diagnostic and abnormality judgments for realistic case study vignettes including a bereavement event, negative non-bereavement event, neutral event, or no event. Across all judgments, we found a robust understanding-normality effect for both bereavement and non-bereavement life event cases, indicating a departure from the DSM's recommendations (both current and proposed). For the first time, the understanding-normality effect was shown in diagnosis, cultural acceptability, and statistical normality judgments, in addition to global normality judgments. Implications for assessment and the clinical utility of the DSM's recommendations are discussed.

Paper ID: 153

Information distortion in clinical diagnostic judgements

Olga Kostopoulou
King's College London
olga.kostopoulou@kcl.ac.uk

Additional authors:
J. Edward Russo Cornell University
Brendan Delaney King's College London

Information distortion (changing the evaluation of new information to support an emerging belief) has been observed mainly with students making consumer and legal judgements. This study aimed to determine whether clinicians also distort information to support an emerging diagnosis.
Data were collected from GPs via an anonymous questionnaire. The 102 GPs in the experimental group read 3 patient scenarios. Each scenario started with 3 diagnostic cues that favoured 1 or the other of 2 diagnoses (the 'steer'). Respondents indicated their diagnostic belief on a 21-point VAS with the 2 diagnoses on either end. They were then presented with several non-diagnostic ('neutral') cues. After each cue, 1) they rated the extent to which it favoured the 2 diagnoses and 2) updated their diagnostic belief on the VAS. At the end of the final scenario, they rated 3 diagnostic cues that opposed the initial steer ('conflicting'). A control group of 36 different GPs rated the same cues but in random order and not as part of a scenario. Their mean cue ratings served as the baseline values for calculating distortion in the experimental group. Mean distortion was 1.50 ($p<0.001$) and its size increased systematically with the strength of belief in the current diagnosis. Neutral cues were interpreted as favouring one's working diagnosis, while conflicting cues were underweighted. 76% of respondents maintained their initial diagnostic belief throughout seeing the neutral cues and 70% of these continued to do so even after seeing the conflicting cues. The study showed and measured information distortion in medical diagnosis. Clinicians considering different diagnoses may interpret the same information differently to support their diagnoses and resist changing diagnosis despite encountering conflicting information.

Symposium ID: 3
Time: THU 14:30 – 16:30

Can intuition outperform deliberation?

Organisers
Gaelle Villejoubert and Marlene Abadie
Kingston University London and University of Toulouse
g.villejoubert@kingston.ac.uk and marlene.abadie@univ-tlse2.fr

Discussant
Robin Hogarth
Universitat Pompeu Fabra
robin.hogarth@upf.edu

So-called two-system accounts of judgment and decision-making (Evans, 2008; Kahneman, 2003; Darlow & Sloman, 2010) contrast processes that are unconscious, fast, automatic, and independent of individuals' cognitive abilities with those that are conscious, slow, deliberative and constrained by working memory capacity. The role of the two processes in determining a final judgment is assumed to depend on the task complexity. It is often hypothesized that, although intuitive responses are faster than deliberate ones, intuition becomes ineffective in situations that are too complex and demanding in executive resources. The fact that biased judgments are observed when executive resources are burdened is often presented as evidence in favor of this assumption. An alternative view posits that intuitive thinking may in fact be better suited to deal with complex choices than deliberative thinking. According to the Unconscious Thought Theory (Dijksterhuis & Nordgren, 2006),biases in complex situations originate from the failure of deliberative thinking and its limited processing capacity. Similarly, Fuzzy Trace Theory(Reyna & Brainerd, 1995) posits that individuals hold both verbatim and gist representations of information in memory. Gist-based thinking is conceived as a more advanced form of thinking that is acquired as expertise develops and allows experts to make effective intuitive judgments whereas novices are constrained by detail-oriented deliberative thinking. Thus, within those latter theoretical frameworks, intuition is conceived as a more efficient process than conscious deliberation for dealing with complex problems. This symposium aims to bring together contributions reviewing evidence from both theoretical perspectives to shed light on this apparent contradiction.

Paper ID: 84

Deliberation without attention requires fuzzy representations

Marlene Abadie
University of Toulouse, CLLE-LTC, France
marlene.abadie@univ-tlse2.fr

Additional authors:
Gaelle Villejoubert Kingston University London
Patrice Terrier University of Toulouse

Previous research suggested that when people face a complex choice between several alternatives described by a large number of attributes, they are likely to make better decisions if their attention is distracted from the problem rather than being focused on it while they deliberate on the best alternative. The present study aimed (a) to establish whether a detailed or global presentation format of the alternatives would trigger different levels of mental representation and (b) to examine the effect of presentation format on decision quality following a period of deliberation with or without attention. Results revealed that a detailed presentation format led to better decisions when deliberation was conscious, while also demonstrating that this presentation allowed participants to hold precise verbatim representations of the different alternatives. In contrast, a global presentation format resulted in improved decisions when deliberation occurred during a distraction period, while participants' representations of the different alternatives were also fuzzier. Implications of dual-memory approaches for the study of decision-making will be discussed.

Paper ID: 164

Is it better to think unconsciously or to trust your first impression? A reassessment of Unconscious Thought Theory

Laurent Waroquier
Université Libre de Bruxelles
laurentwaroquier@gmail.com

Additional authors:
David Marchiori Université Libre de Bruxelles
Olivier Klein Université Libre de Bruxelles
Axel Cleeremans Université Libre de Bruxelles

Intuition is defined as gist-based reasoning: fuzzy, unconscious, but characteristic of advanced reasoning. Based on experimentation and mathematical models, fuzzy-trace theory holds that gist-based reasoning: (a) is the basis for many (not all) heuristics and biases, and is the default mode; (b) is less subject to interference effects; (c) is generally independent of working memory capacity (executive processes such as inhibition are explanatory, not capacity); (d) increases with development (e.g., in experts); (e) is often unconscious. Reasoners engage in gist-based reasoning even when information is simple and visible (rather than to-be-remembered), as in framing problems or in the conjunction fallacy. If these principles are true, biases and heuristics should increase when gist representations are made more accessible, relative to verbatim representations. A series of experiments is presented testing this hypothesis. For example, in some experiments, judgments were made after a delay, when verbatim memory for probabilistic information was less accessible, but gist was retained. In other experiments, verbatim detail was omitted, and reasoners relied on intuitions operating on vague gist. In each experiment (on framing effects; conjunction and disjunction fallacies; and temporal discounting), subjects were asked about their confidence in their judgments. Confidence remained high when subjects committed fallacies or displayed biases (e.g., in framing problems), consistent with prior work on fuzzy-trace theory (i.e., gist-based reasoning operates unconsciously). Executive processes, such as inhibition, were associated with fewer fallacies and biases, as predicted by fuzzy-trace theory. However, as predicted, experts showed more biases than novices.According to unconscious thought theory, complex decisions are best made after a period of distraction assumed to elicit 'unconscious thought'. Here, we suggest instead that the superiority of decisions made after distraction results from the fact that conscious deliberation can deteriorate impressions formed on-line during information acquisition. We found that participants instructed to form an impression made better decisions after distraction than after deliberation, thereby replicating earlier findings. However, decisions made immediately were just as good as decisions made after distraction, which suggests (a) that people had already made their decision during information acquisition, (b) that deliberation without attention does not occur during distraction, and (c) that ruminating about one's first impression can deteriorate decision quality. Strikingly, in another condition that should have favored unconscious thought even more, deliberated decisions were better than immediate or distracted decisions. These findings were replicated in a field study.

Paper ID: 219

Probability matching reconsidered from an ecological perspective

Wolfgang Gaissmaier
Max Planck Institute for Human Development
gaissmaier@mpib-berlin.mpg.de

Additional author:
Lael Schooler Max Planck Institute for Human Development

Recently, Koehler and James (2009; 2010) have argued for a dual systems account that assumes the choice anomaly called 'probability matching' to be a fast and effortless response created by the intuitive system (see also West and Stanovich, 2003). Yet, at odds with this perspective, there are findings showing that people are more likely to maximize if their cognitive capacity is low (Gaissmaier, Schooler, & Rieskamp, 2006; Wolford et al., 2004). These results suggest that probability matching can also result from effortful behavior, and one effortful strategy that has been detected to underlie probability matching is pattern search (Gaissmaier & Schooler, 2008). Hence, probability matching can result from both 'underthinking' and 'overthinking', which shows that merely attributing it to either intuition (or System 1) or deliberation (or System 2) could not possibly represent a conclusive account. Instead, a more complete understanding of probability matching requires the development of more precise theories about cognitive processes that can lead to this (epi-)phenomenon, and to understand in which environments those strategies will fail or succeed. Data from a range of studies will be shown to demonstrate that probability matching on the outcome level results from a variety of cognitive strategies. Importantly, each of those strategies has different cognitive requirements, and none of them is good or bad per se, but each is a good response to a differently structured environment. Thus, a more precise understanding of the cognitive strategies allows making testable predictions about where, when and why these strategies will be used, and where, when and why they succeed or fail.

Paper ID: 108

Evidence for two modes of thinking in preference

Steven Sloman
Brown University
Steven_Sloman@brown.edu

Additional authors:
Philip Fernbach Brown University
Gideon Goldin Brown University
Nicki Morley Brown University

Dual system models in the domain of reasoning concern deliberation and intuition, both systems of cognition. In contrast, dual system models in the domain of preference concern deliberation and affect, i.e., a system of cognition versus one that concerns emotional reaction. We examine whether these two types of distinctions are parallel by examining whether preference is subject to the same dissociations as reasoning. Preference ratings were obtained for fictitious products varying in their intuitive and deliberative appeal. In Experiment 1, effort was manipulated by varying instructions. In Experiments 2a and 2b metacognitive difficulty was manipulated by varying font fluency. Experiments 2a and 2b also assessed the effect of individual differences in tendency to deliberate as measured by the Cognitive Reflection Test (Frederick, 2005). In Experiments 3a and 3b participants were either asked to generate explanations about products or to report perceptual characteristics. In Experiment 4 cognitive load was manipulated using a working memory task. Greater deliberation was associated with instructions to deliberate, a high score on the CRT, explaining how the item worked, and the absence of cognitive load. Intuitive responding was associated with instructions to respond based on first impressions, disfluency, being asked to report a perceptual feature of the product and the presence of cognitive load. These findings, along with multivariate analyses across all of the experiments, suggest that there are two dissociable modes of thought that determine preference, and that products differ in the extent to which deliberation will enhance or diminish their appeal.

Paper ID: 159

Intuitive and unconscious cognitive processes in Fuzzy-Trace Theory: An advanced approach

Valerie Reyna
Cornell University
vr53@cornell.edu

Intuition is defined as gist-based reasoning: fuzzy, unconscious, but characteristic of advanced reasoning. Based on experimentation and mathematical models, fuzzy-trace theory holds that gist-based reasoning: (a) is the basis for many (not all) heuristics and biases, and is the default mode; (b) is less subject to interference effects; (c) is generally independent of working memory capacity (executive processes such as inhibition are explanatory, not capacity); (d) increases with development (e.g., in experts); (e) is often unconscious. Reasoners engage in gist-based reasoning even when information is simple and visible (rather than to-be-remembered), as in framing problems or in the conjunction fallacy. If these principles are true, biases and heuristics should increase when gist representations are made more accessible, relative to verbatim representations. A series of experiments is presented testing this hypothesis. For example, in some experiments, judgments were made after a delay, when verbatim memory for probabilistic information was less accessible, but gist was retained. In other experiments, verbatim detail was omitted, and reasoners relied on intuitions operating on vague gist. In each experiment (on framing effects; conjunction and disjunction fallacies; and temporal discounting), subjects were asked about their confidence in their judgments. Confidence remained high when subjects committed fallacies or displayed biases (e.g., in framing problems), consistent with prior work on fuzzy-trace theory (i.e., gist-based reasoning operates unconsciously). Executive processes, such as inhibition, were associated with fewer fallacies and biases, as predicted by fuzzy-trace theory. However, as predicted, experts showed more biases than novices.