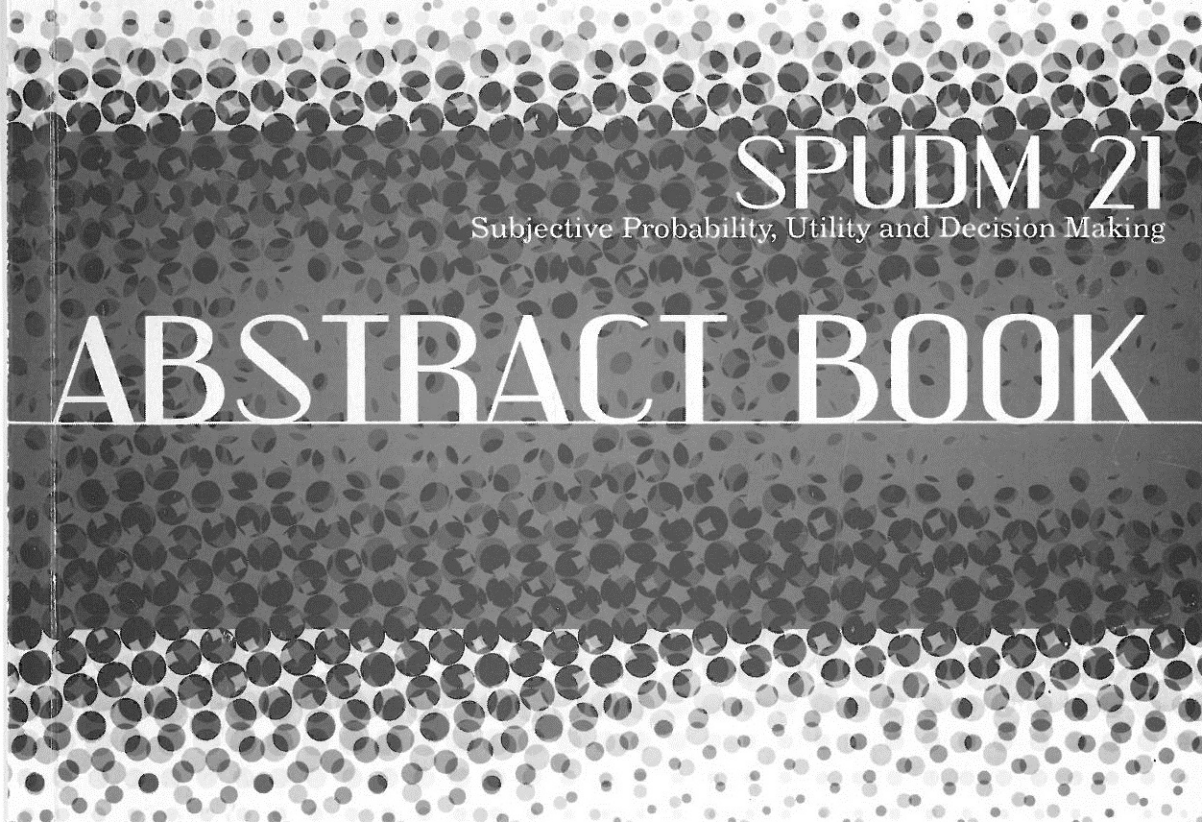




SPUDM 21

Subjective Probability, Utility and Decision Making

ABSTRACT BOOK

2007

Warsaw 19th August - 23rd August

SPUDM 21 Conference
Subjective Probability, Utility and Decision Making

ABSTRACT BOOK

19th August – 23rd August 2007
Warsaw, Poland

Organizing Committee

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The host institution in Poland

Warsaw School of Social Psychology

free space & technical facilities

Dear Colleagues and Friends,

On behalf of the Organizing Committee (Nicolao Bonini, Craig Fox, Joanna Sokolowska and Tomasz Zaleskiewicz) we welcome you to Warsaw for SPUDM 21, the bi-annual conference run by the European Association of Decision Making.

The SPUDM Conferences have a long history and one of the earliest meetings – SPUDM 6 was held in Warsaw. After thirty years SPUDM is coming back to Poland.

The organizers of the upcoming meeting have been dedicated to continuing the long tradition of SPUDM conferences as the primary venue for exchanging novel ideas in psychological and economic decision-making and attracting the new generation of researchers to the field. We hope that we will meet these goals and that you will enjoy the meeting.

We would like to thank Prof. Andrzej Elias, the President of Warsaw School of Social Psychology for being sympathetic to and supportive of this meeting and for providing a considerable administrative and financial assistance. The School has provided free space and technical facilities for our meeting.

We also greatly appreciate financial support from the National Bank of Poland and from National Committee for Scientific Research.

On behalf of the Organizing Committee we wish you a stimulating and enjoyable time during SPUDM 21.

Joanna Sokolowska and Tomasz Zaleskiewicz

GUIDELINES FOR SYMPOSIA , ORAL AND POSTER PRESENTATIONS

Preparation Room

The rooms 128 and 129 are designated as the preparation rooms. They are equipped with a pool of PC computers. You may check your presentation there or ask for uploading it to the computer in the room, in which you will be giving your presentation.

General Information

Each presentation room for symposia and parallel sessions will be equipped with a PC (with MS Power Point software) and a projector. To ensure the smooth running of the meeting all speakers should upload their presentations **NO LATER THAN IN THE MORNING (8:00 - 9:00 am) ON THE DAY**

ON WHICH THE PRESENTATION IS SCHEDULED. However, to avoid unforeseen problems, we strongly encourage all speakers to have their presentations uploaded and checked well in advance.

Symposia Guidelines

To allow full discussion, workshop presentations should not exceed 15 minutes. Conveners are kindly requested to enforce these time limits.

Oral Presentations Guidelines

Presenters have 20 minutes for their talks followed by 10 minutes for questions and discussion.

The last speaker in each paper session is designated as a chairperson. Chairpersons are kindly requested to follow and if necessary rigorously enforce the time limits.

Poster Guidelines

Presenters will be able to place their posters in rooms 340 and 341 after 6 pm on Tuesday, August 21 and in the morning on the Wednesday, August 22. Each poster will be placed on a panel of size 95 cm (width) by 240 cm (height). Posters may be left on display for the full length of the conference.

Conference Office

During the meeting you will find the conference desk at the Entrance Hall, which will be opened from 10:00 till 22:00 on Sunday, from 9:00 till 19:00 on August 20-21, and from 9:00 till 16:00 on August 22-23.

Email and the Internet Access

To check your email you can use freestanding computer stations, in the Entrance Hall and on the third floor. Your login name is spudm, your password is swps. The computer rooms will be open from Sunday 10:00 till Thursday 16:00.

Sunday, August 19, 2007	
10:00-22:00 Entrance hall	
17:30-18:00 Auditorium room 218	REGISTRATION Opening and Welcome
18:00-19:00 Auditorium room 218	Presidential address Robin Hogarth, Universitat Pompeu Fabra Barcelona "Mapping the world of decisions" chair: Craig Fox
19:00-21:00	RECEPTION – ENTRANCE HALL

Monday, August 20, 2007				
REGISTRATION				
8:00-9:00 Entrance Hall	Keynote address: John W. Payne Fuqua School of Business, Duke University, USA In a world of constructed preferences, is the decision advice of Benjamin Franklin still valid? chair: Joanna Sokolowska			
9:00-10:00 Auditorium room 218				
10:00-10:30	COFFEE BREAK			
Parallel sessions	RISKY CHOICE	JUDGMENT	AFFECT and DM	
10:30 – 12:30	Expected and non-expected utility Chair: Peter P. Wakker Room 308 Arthur Attema Greg B. Davis Philip Wickham Peter P. Wakker	The priority heuristic Chair: Michael Schulte-Mecklenbeck Room 307 Anuj K. Shah Guy Hochman (Shahar Ayal) Eduard Brandstaetter Michael Schulte-Mecklenbeck	Probability Chair: Maya Bar-Hillel Room 340 Christopher Olivola Håkan Nilsson Katya Tentori Maya Bar-Hillel	Affect Chair: Bernd Figner Room 341 Piotr Winkielman Robin M. Hogarth Therése Kobbeltvedt Bernd Figner
12:30 – 13:30	LUNCH BREAK			

13:30–15:30	Expected and non-expected utility <i>Chair:</i> Mirta Galesic <i>Room 308</i>	Other heuristics <i>Chair:</i> Ben Newell <i>Room 307</i>	Probability <i>Chair:</i> Mandeep K. Dhami <i>Room 340</i>	Affect <i>Chair:</i> Jose Kerstholt <i>Room 341</i>
	Petko Kusev Rob Ranyard Tim Rakow Mirta Galesic	Rui Mata Ralph Hertwig Julian N. Marewski Ben Newell	N. Karelaia Pavlo Blavatsky Thomas Oberlechner Mandeep K. Dhami	Alexandre Bachkirov Marieke de Vries Emma Soane Jose Kerstholt
COFFEE BREAK				
15:30–16:00	Loss aversion/framing <i>Chair:</i> Jing Qian <i>Room 308</i>	Other heuristics <i>Chair:</i> York Hagmayer <i>Room 308</i>	Judgment <i>Chair:</i> Mitja Pirc <i>Room 340</i>	Affect <i>Chair:</i> Yaniv Shani <i>Room 341</i>
	Thomas Langer A. Peter McGraw Janet Schwartz Jing Qian	Tal Shavit Ulrich Sonnemann Daniel Read York Hagmayer	Karl Halvor Teigen Crystal C.Hall Thorsten Pachur Mitja Pirc	Eldad Yechiam, Michele Graffeo Niels van de Ven Yaniv Shani

Tuesday, August 21, 2007

9:00-10:00 Auditorium room 218	Keynote address: Alex Kacelnik Zoology Department, Oxford University, UK State-dependent valuation and violations of rational choice: Humans, birds and grasshoppers			
10:00-10:30	chair: Tomasz Zaleskiewicz COFFEE BREAK			
Parallel symposia 10:30-12:30	Judgment and Decision Making in Person Transportation Convenor: Ola Svenson Discussant: Henry Montgomery Ola Svenson Tommy Gärling et al. Caspar Chorus et al. <i>Room 308</i>	Assesing Clinical Thinking and decision Processes Convenors: Nick Sevdalis and Olga Kostopoulou Discussant: Nigel Harvey Rosamond Jacklin et al. Olga Kostopoulou et al. Len Dalgleish and Carl Thompson Cilia L.M. Witteman, Silja Renooij, and Pieter Koele <i>Room 307</i>	Decisions about food and eating Convenor: Jie W. Weiss Discussant: Peter Ayton Stephanie Kurzenhäuser Jutta Mata Ellen van Kleef Jie Weiss <i>Room 340</i>	On the Role of Loss Aversion Convenor: Ido Erev Discussant: Ido Erev Eyal Ert Robin Hogarth Eric Johnson Peter Wakker <i>Room 341</i>
12:30-13:30	LUNCH BREAK			

Parallel sessions	PROBABILITY	CHOICE	SOCIAL CONTEXT	Affect/Political Behavior
13:30 – 15:30	Probability Chair: Guy Hochman	Choice Chair: Odilo W. Huber	Social Context Chair: Wibecke Brun	Affect Chair: Michaela Huber
	<i>Room 308</i> Nathan Berg	<i>Room 307</i> Claudia Gonzalez-Vallejo	<i>Room 340</i> Rocio Garcia-Retamero	<i>Room 341</i> Marijke van Putten
	David Budescu	Jörg Rieskamp	Nigel Harvey	Ilona E. de Hooge
	Sari Carp	Neda Kerimi	Maria Andersson	Daniel Västfjäll
15:30-16:00	Guy Hochman	Odilo W. Huber	Wibecke Brun	Michaela Huber
COFFEE BREAK				
16:00 – 18:00	Probability Chair: Andrzej Piegat	Choice Chair: Martin Kocher	Social Context Chair: Guido Biele	Political Behavior/Norms Chair: Rob Nelissen
	<i>Room 308</i> Stian Reimers,	<i>Room 307</i> Zur Shapira	<i>Room 340</i> Jack Soll	<i>Room 341</i> Daniel G Goldstein
	Andreas Gloeckner	Yvette van Osch	Ilan Yaniv	Stefan T. Trautmann
	Gaëlle Villejoubert	A. Peter McGraw	Henrik Olsson	Craig R. Fox
18:00-19:00	Andrzej Piegat	Martin Kocher	Guido Biele	Rob Nelissen
Auditorium Room 218	EADM General Assembly			

Wednesday August 22, 2007

Keynote address: Tadeusz Tyska Leon Koźmiński Academy of Entrepreneurship and Management in Warsaw, Poland Judgments and choices among alternatives with moral consequences chair: Nicolao Bonini				
9:00-10:00 Auditorium Room 218				
10:00-10:30	COFFEE BREAK			
Parallel sessions	AMBIGUITY	DELAYED OUTCOMES	JUSTICE/GAME THEORY	MEDICAL DM & VARIA
10:30-12:30	Ambiguity Chair: Aurelien Bailion Room 307 David V. Budescu Ferdinand M. Vieider Laetitia Placido Cherng-Hong, Lan	Delayed Outcomes Chair: Michal Krawczyk Room 308 Kirsten I.M. Rohde Jeffrey Stevens Jeff Galak Tal Shavit	Justice/Game theory Chair: Ilan Fischer Room 206 Ilan Fischer Artur Dumurat Hans-Ruediger Pfister Ilona Banaszak	Medical DM/Varia Chair: Bethany Weber Room 209 Vered Rafaely Danielle Timmermans Ylva Skånér (Lars Backlund) Chris Dewberry
12:30-13:00	LUNCH BOX			
13:00-15:00	POSTER SESSION			
15:00-16:00	Ambiguity Chair: Aurelien Bailion Room 307 Aurelien Bailion Manuela Gussmack	Delayed Outcomes Chair: Michal Krawczyk Room 308 Michal Krawczyk Helena Szrek	Justice/Game theory Chair: Ilan Fischer Room 206 Ilan Fischer Yoella Bereby-Meyer	DM & Neural System Chair: Bethany Weber Room 209 Bethany Weber Linnea Karlsson
20:00-23:00	CONFERENCE DINNER			

Thursday August 23, 2007

Thursday August 23, 2007				
09:00-09:45 Auditorium Room 218	De Finetti Prize Talk: Xianchi Dai INSEAD, France			
09:45-10:30 Auditorium Room 218	chair: Peter Wakker			
Jean Beattie Award Talk: Marcel Zeelenberg Department of Economic and Social Psychology, Tilburg University, The Netherlands				
chair: Robin Hogarth				
COFFEE BREAK				
10:30-11:00 Parallel symposia 11:00-13:00	Experience-based Decisions Convenor: Liat Hadar Discussant: Dan Goldstein Liat Hadar & Craig Fox Robin Hau Greg Barron Christoph Ungemach Room 307	Aspirations and Reference Points in Risky Decisions and Judgment Convenors: Enrico Diecidue and Elke U. Weber Discussant: John W. Payne Enrico Diecidue Ido Erev Joanna Sokolowska Elke Weber Room 308	Judgment of Duration and Frequency Convenor: Tilman Betsch Discussant: Arndt Broder Tilmann Betsch Peter Sedlmeier Madlen Glauer Isabell Winkler Room 206	What Could Have Been, What Would Have Been, and What Never Will Be Convenors: Jochen Reb and Marcel Zeelenberg Discussant: Peter Ayton Marcel Zeelenberg Nick Sevdalis Jochen Reb Daniel Västfjäll Room 209
LUNCH BREAK				
13:00-14:00 Auditorium Room 218	Panel discussion Chair: David Budescu Participants: Alex Kacelnik, John W. Payne, Tadeusz Tyszka, Peter Wakker, Elke U. Weber			

RISKY CHOICE				JUDGMENT	AFFECT and DM
Expected and non-expected utility <i>Chair:</i> Peter P. Wakker <i>Room 308</i>	The priority heuristic <i>Chair:</i> Michael Schulte-Mecklenbeck <i>Room 307</i>		Probability <i>Chair:</i> Maya Bar-Hillel <i>Room 340</i>	Affect <i>Chair:</i> Bernd Figner <i>Room 341</i>	
1) Measuring the Utility of Life Duration; Arthur Artema Han Bleichrodt Peter Wakker	1) Heuristics Made Easy: An Effort-Reduction Framework; Anuj K. Shah Daniel M. Oppenheimer		1) Randomness in Retrospect: Exploring the Interactions Between Memory Biases and Biased Beliefs About Randomness; Christopher Olivola Daniel M. Oppenheimer	1) Taking gambles at face value; Piotr Winkielman Brian Knutson Martin P. Paulus Jennifer L. Trujillo	
2) Shifting Reference Points and Dynamic Risk Attitudes; Greg B. Davis	2) A compen-satory selection among non- compensatory tools; Shahar Ayal Guy Hochman		2) A study of the conjunction fallacy using an ecologically representative design were the representativeness heuristic can not be applied; Håkan Nilsson Anders Winman	2) What risks do people perceive in everyday life? A perspective gained from the experience sampling method (ESM); Robin M. Hogarth Mariona Portell Anna Cuxart	
3) The impact of outcome value on probability weighting: Distinguishing probability sensitivity and probability attractiveness effects; Philip Wickham John Maule	3) Mind-Reading as a Scientific Method; Eduard Brandstaetter Manuela Gussmack		3) Confirmation may depend on more than probability Katya Tentori Vincenzo Crupi Daniel Osherson	3) Risk-as-feelings in a theory of planned behaviour perspective; Therese Kobbeltvedt Katharina Wolff	
4) Proper Scoring Rules and Prospect Theory; Theo Offerman, Joep Sonnemans, Gijs van de Kuilen Peter P. Wakker	4) Process models deserve process data: The Priority Heuristic from a process perspective; Michael Schulte-Mecklenbeck Eric J. Johnson Martijn C. Willemsen		4) Predicting the Mondial: Do goals seem more likely when they pay off?; Maya Bar-Hillel David Budescu Moty Amar	4) Affective versus deliberative processes in risk taking: The role of cognitive control in risky decision making in younger and older adults; Bernd Figner Ryan O. Murphy Elke U. Weber	

Expected and non-expected utility <i>Chair:</i> Mirta Galesic <i>Room 308</i>	Other heuristics <i>Chair:</i> Ben Newell <i>Room 307</i>	Probability <i>Chair:</i> Mandeep K. Dhami <i>Room 340</i>	Affect <i>Chair:</i> Jose Kerstholt <i>Room 341</i>
1) Exaggerated risk: Taking precautions is not the same as choosing gambles; Petko Kusev Peter Ayton Paul van Schaik Nick Chater	1) The Development of Adaptive Strategy Selection; Rui Mata Bettina von Helversen Jörg Rieskamp	1) Excess entry: the roles of judgmental fallibility and overconfidence; R. M. Hogarth N. Karelaia	1) The impact of distinct emotions on multiattribute decision making: A process tracing investigation of the appraisal-tendency and valence-based approaches; Alexandre Bachkirov ✱ John Maule
2) Violations of dominance and transitivity in risky decisions: The role of cognitive effort and numeracy; Andrea Taylor Rob Ranyard	2) The fluency heuristic: A model of how the mind exploits a by-product of memory retrieval; Ralph Hertwig Stefan Herzog	2) Betting on own knowledge: Experimental test of overconfidence; Pavlo Blavatsky	2) Fitting Decisions: Mood and Intuitive versus Deliberative Decision Strategies; Marieke de Vries Rob W. Holland Cilia L. M. Witteman ✱
3) Not experience versus description, but sample versus population; Tim Rakow Kali Demes Ben Newell	3) The cognitive niche of the fluency heuristic; Julian N. Marewski Lael J. Schooler	3) Overconfidence of Professional Traders in Financial Markets; Thomas Oberlechner Carol Osler	3) The influence of emotions on the decision making and performance of traders; Emma Soane ✱ Mark Fenton-O'Creevy Nigel Nicholson Paul Willman
4) Adaptive versus random sampling: Revisiting some common assumptions about sampling in cognitive theories Mirta Galesic Henrik Olsson Jörg Rieskamp	4) Adjusting the spanner: Testing an evidence accumulation model of decision making; Ben Newell Patrick Collins Michael Lee	4) Are Additive Probability Estimators Likely to be Utility Maximizers? Mandeep K. Dhami David R. Mandel	4) The role of affect in person evaluation as measured by pupil dilation; Jose Kerstholt ✱

16:00 – 18:00	Loss aversion/framing <i>Chair:</i> Jing Qian <i>Room 308</i> 1) Framing Effects in Stock Market Forecasts: The Difference Between Asking for Prices and Asking for Returns; Markus Glaser Thomas Langer Jens Reyniers Martin Weber 2) Loss Aversion is Comparative; A. Peter McGraw Jeff Larsen Daniel Kahneman David Schkade 3) Justifying the high price of medication: How relational framing reduces consumer distress; Janet Schwartz A. Peter McGraw 4) A Sampling Model of Stereotype Formation; Jing Qian Rocio Garcia-Retamero	Other heuristics <i>Chair:</i> York Hagmayer <i>Room 307</i> 1) Under-diversification and the Role of Recency and Probability Matching; Uri Ben Zion, Ido Erev Eman Haruvy Tal Shavit 2) Partition Dependence in Prediction Markets; Thomas Langer Craig R. Fox Ulrich Sonnemann Colin F. Camerer 3) The Similarity Heuristic; Daniel Read Yael Grushka-Cockayne 4) What shall I do? – A simple causal heuristic to derive interventions from observations; York Hagmayer Björn Meder	Judgment <i>Chair:</i> Mitja Pirc <i>Room 340</i> 1) More is better than maximum: Communicative implicatures of lower and upper limit estimates; Karl Halvor Teigen * Anne-Marie Halberg K. I. Karevold 2) The Technique of Error Parsing as a Method of Judgment Analysis; Crystal C.Hall Daniel M. Oppenheimer 3) How feedback format affects performance in multiple-cue judgment; Thorsten Pachur Henrik Olsson 4) It matters how you pay: cost salience dependence on payment mechanisms; Mitja Pirc	Affect <i>Chair:</i> Yaniv Shani <i>Room 341</i> 1) Poor theory of mind is associated with erratic choice behavior but not with IQ: Findings in Aspergers and healthy subjects; Eldad Yechiam Meir Druyan 2) The role of the price comparative format and the numeracy ability on the acceptance of a commercial offer; Michele Graffeo Nicolao Bonini 3) Delay, Doubt and Decision Making: How a Delay of a Choice Influences that Choice; Niels van de Ven * Thomas D. Gilovich Marcel Zeelenberg 4) When Ignorance is Not Bliss: How Feelings of Discomfort Promote the Search for Negative Information; Yaniv Shani * Orit E. Tykocinski Marcel Zeelenberg
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Expected and non-expected utility, 10:30–12:30, room 308

Measuring the utility of life duration in a Risky versus a Risk-Free Situation

Arthur Aterna, Hans Bleichrodt, Peter Wakker
Erasmus University, Rotterdam

This paper proposes a new method to measure the utility of life duration. A major advantage of our method is that it avoids the use of probabilities and of the outcome death. People tend to have difficulties handling probabilities, leading to biases in the elicited utilities, and the possibility of death tends to produce extreme risk aversion. To compare the elicited utility of our risk-free method to utility under risk, we also measured the utility of life duration using two familiar risky elicitation methods, the certainty equivalence method and the tradeoff method. We found the certainty equivalence method to be more concave than the risk-free method, but when we adjusted the certainty equivalence method for the violations of expected utility modeled by prospect theory the difference vanished. In addition, the tradeoff method, which is not prone to bias caused by probability weighting, did not differ significantly from the risk-free method. Hence, our risk-free method provides a reliable measure of utility. In addition, people indicated that they found the risk-free method significantly easier than the other two methods, thereby increasing feasibility for practical purposes.

Expected and non-expected utility, 10:30–12:30, room 308

Shifting Reference Points and Dynamic Risk Attitudes

Dr. Greg B Davies

Department of Psychology – University College London

MONDAY

The effects of shifting the Cumulative Prospect Theory reference point have received very little attention. Reference points are considered exogenous and each decision is examined in isolation. However, behavioural observations, e.g., the “house money” effect, suggest that risk attitudes are affected by recent outcomes and that reference points shift gradually as uncertainty is resolved. Risky choice is affected both by the dynamic path of the reference point following gains or losses, and by related changes in the shape of value and decision weighting functions. Employing new notation which renders these concepts tractable, I analyse the role of shifting reference points on prospect evaluation. This permits a comparison of the effect of endowments, as well as analysis of the house money effect and dynamic reactions to previous outcomes.

Reference points have, however, been extensively studied for riskless choice. I embed risky prospects in the riskless choice framework, unifying the two in a single more general theory. Extending concepts from riskless consumer behaviour (e.g., Willingness-To-Pay and Willingness-To-Accept effects) to risky prospects provides initial evidence for how preferences shift with status quo changes, placing constraints on the nature of shifts in value and decision weighting functions as the reference point shifts.

The impact of outcome value on probability weighting: Distinguishing probability sensitivity and probability attractiveness effects.

Philip A Wickham

Institute of Transport Studies, University of Leeds

A. John Maule

Centre for Decision Research, University of Leeds

In Prospect Theory it is assumed that risk valuation is dependent on outcome value change and probability distortion (weighting) effects and that these two are independent of each other. Prelec (2000) has proposed a constant relative risk aversion – compound invariance (CRRA-CI) model that distinguishes value, probability sensitivity and probability attractiveness effects. Also, he introduces an axiom of diagonal convexity that eliminates the probability attractiveness parameter. We report an experimental study (with analysis at the level of individual respondents) that shows probability weighting to be sensitive to outcome value. An original feature of our study is a demonstration that value affects probability attractiveness but not probability sensitivity facets of probability weighting. This represents a systematic violation of the axiom of diagonal convexity. We present a cognitively rationale for the effect and propose a modified three-parameter CI-CRRA model that reflects outcome value-probability weighting interaction. We discuss our findings more generally in terms of questions about ecological risk behaviour and the descriptive application of Prospect Theory.

References

- Etchart-Vincent, N. (2004) “Is probability weighting sensitive to the magnitude of consequences? An experimental investigation on losses”, *The Journal of Risk and Uncertainty*, **28**(3):217-235.
- Kahneman, D. and A. Tversky (1979) “Prospect theory: An analysis of decision-making under risk”, *Econometrica*, **47**:263-291.
- Prelec, D. (1998) “The probability weighting function”, *Econometrica*, **66**(3): 497-527.
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- Tversky, A & D. Kahneman (1992) “Advances in prospect theory: Cumulative representation of uncertainty”, *Journal of Risk and Uncertainty*, **5**:297-323.

Expected and non-expected utility, 10:30–12:30, room 308

Proper Scoring Rules and Prospect Theory

Theo Offerman, Joep Sonnemans, Gijs van de Kuilen
CREED, Dept. of Economics, University of Amsterdam
Peter P. Wakker
Econometric Institute, Erasmus University, Rotterdam

MONDAY

AIM. Proper scoring rules, introduced in the 1950s, efficiently elicit subjective beliefs about likelihoods. They are, however, based on the assumption of expected value maximization. This paper shows how proper scoring rules can be made valid under the presently leading theory for decision under risk, i.e. prospect theory. Thus, on the one hand, analyses of proper scoring rules are improved and, on the other hand, ambiguity attitudes can be examined using proper scoring rules which is way more efficient than through preferences.

METHOD. From $N = 93$ participants the subjective probabilities for future performance were measured. We also calibrated their risk-attitude components of prospect theory and corrected for them, getting their unbiased beliefs.

RESULTS. Our method was feasible. Significant corrections of beliefs for risk attitudes had to be carried out. Violations of additivity of subjective beliefs are reduced by our method but not are eliminated. The quality of reported probabilities is better under repeated small incentives than under single large incentives.

CONCLUSION. Prospect theory helps to better analyze proper scoring rules and to better find out what beliefs of people are. Proper scoring rules help prospect theory to measure subjective probabilities and attitudes toward ambiguity more easily than through binary preferences.

The priority heuristic, 10:30–12:30, room 307

Heuristics Made Easy: An Effort-Reduction Framework

Anuj K. Shah and Daniel M. Oppenheimer
Princeton University—Princeton

The word “heuristic” has lost its meaning. That is to say, researchers have used the word so widely as to render it a vague, catch-all term for explaining decision processes. We propose a new framework for understanding and studying heuristics. We posit that heuristics primarily serve the purpose of reducing the effort associated with a task. As such, we propose that heuristics can be classified according to a small set of effort-reduction mechanisms. We use this framework to build upon current models of heuristics, examine existing heuristics in terms of effort-reduction, and outline how current research methods can be used to extend this effort-reduction framework. This framework reduces the redundancy in the field and helps to explicate the domain-general mechanisms underlying heuristics.

The priority heuristic, 10:30–12:30, room 307

A compensatory selection among noncompensatory tools

Shahar Ayal

The Open University of Israel

Guy Hochman

Technion – Israel Institute of Technology

MONDAY

Noncompensatory models for choice propose a good approximation for the way individuals choose among several alternatives. These models assume that individuals use a cue-wise search pattern (by preferring to gather information about the same cue for the different alternatives) in a lexicographical order, with no compensatory principles, such as weighting and summing. Recently, Gigerenzer and colleagues proposed fast and frugal heuristics which generalized the noncompensatory principles to human preferences (e.g., Priority Heuristic) and inferences (e.g., Take The Best Heuristic). According to the authors, these heuristics model cognitive processes, and not just predicts behavior. However, empirical evidences support these allegations are scarce and inconsistent. To directly examine the validity of this claim, we present two studies in which we first replicated the specific environment of these two heuristics and then tested predictions that directly derived from these frameworks. Our results of indirect measures such as reaction time and confidence ratings violate the building blocks of these simple heuristics, and suggest that choice processes require, at least to some extent, compensatory processes which enable trade-off.

The priority heuristic, 10:30–12:30, room 307

Mind-Reading as a Scientific Method

Eduard Brandstätter and Manuela Gussmack

Johannes Kepler University of Linz, Austria

Previous research identified several process-tracing methods, including verbal protocols, information display boards, tracing of eye movements, phased narrowing, and computerized process tracing such as mouse-lab. In this article, we present a process-tracing method, called mind-reading. In a mind-reading experiment participants do not make their own choices, but guess how the majority of people had decided previously. Immediately after their guess (majority chose gamble A or B), participants receive feedback, whether their guess was right or wrong; then the next choice problem occurs on the computer screen. People make 25 guesses and after each guess they get immediate feedback. Every five guesses, participants are requested to formulate the majority's choice rule. After the experiment two independent raters code their last answers. In a series of between-participants experiments we contrast mind-reading to mouse-lab (Payne et al., 1993). The mouse-lab experiments show that people look at one gamble after the other; this conforms to models like prospect theory, cumulative prospect theory, security-potential/aspiration theory, or the transfer of attention exchange model. The mind-reading experiments show that participants examine one reason (i.e., minimum gains, probability of the minimum gains, maximum gains) after the other; this conforms to simple heuristics such as the priority heuristic (Brandstätter, Gigerenzer, & Hertwig, 2006). We discuss future potentials of mind-reading for investigating the choice process.

The priority heuristic, 10:30–12:30, room 307

Process models deserve process data: The Priority Heuristic from a process perspective

Michael Schulte-Mecklenbeck, Eric J. Johnson, Martijn C. Willemsen
University of Bergen, Columbia University, Eindhoven University of Technology

MONDAY

Aim: The aim of this paper is to investigate process data collected in decision tasks with different types of gambles (gambles that had two options with two outcome-probability pairs each and gambles that had five options with two outcome-probability pairs each). The results are compared to the recently proposed Priority Heuristic (Brandstätter, Gigerenzer, Hertwig, 2006) especially to the suggested steps participants are supposed to follow while using this heuristic.

Method: The gambles were presented with a process tracing tool called MouseLabWEB (<http://www.mouselabweb.org>) which enables the researcher to run experiments that collect process data with high accuracy. In this methodology a computer mouse is used by the participant to uncover hidden information from a matrix. As soon as the mouse is moved over an information cell, the content is displayed; after moving the mouse out of the box the content is hidden again. Frequency and length of viewing is recorded as well as the sequence of acquisition and the final decision the participant makes after the information search.

Results: There are three central results from this research. We found differences between individuals in their search process, differences between different gamble types and, as a third result, very frequent transitions between outcomes and their probabilities. Especially the third result is important because the Priority Heuristic does not predict occurrence of such a transition in large amounts.

Conclusions: Our results challenge the predicted process steps in the Priority Heuristic. We find the predicted differences in attention between a reading and a choice phase (more attention to outcomes in the reading, compared to the choice phase), and some support for differences between different gamble types (more attention to certain information types in three reason compared to one reason gambles). However, the strongest pattern we in the data are the transitions between outcomes and their probabilities, this is regardless of different gamble types, presentation or counterbalancing orders. One interpretation of this result is a weighing process of the outcomes by their probabilities.

Probability, 10:30–12:30, room 340

Randomness in Retrospect: Exploring the Interactions Between Memory Biases and Biased Beliefs About Randomness.

Christopher Y. Olivola & Daniel M. Oppenheimer

Department of Psychology, Princeton University

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People make systematic errors when they reason about randomness and random events such as the outcomes of dice rolls and coin-flips. They tend to believe that sequences of random events produce fewer and shorter runs of the same event than is actually the case. While these errors have been demonstrated repeatedly and in many forms, nearly all studies of this “randomness cognition” have focused on how people think about random events occurring in the present or future. In contrast, very little research has examined how people think about past random events. This paper examines how our erroneous beliefs about randomness interact with properties of memory to influence our judgments about and memory for past random events. We explore this interaction in both directions by examining (i) how beliefs about randomness affect our memory for random events and (ii) how certain properties of memory affect our categorization of random events. Across 3 studies we demonstrate the impact of three well-established but distinct properties of memory: (1) primacy and recency effects, (2) duration neglect, and (3) the reconstructive nature of memory. In our conclusion we discuss the implications and applications of this research.

Probability, 10:30–12:30, room 340

A study of the conjunction fallacy using an ecologically representative design were the representativeness heuristic can not be applied.

Håkan Nilsson & Anders Winman

Department of Psychology, Uppsala University

MONDAY

The conjunction fallacy has been found to be a very frequent and robust phenomenon. The most common explanation to why conjunction fallacies occur is the representativeness hypothesis. A limitation of the representativeness hypothesis is that it only can account for conjunction fallacies in situations where the two conjuncts refer to the same agent (as in the classical Linda demonstration where the task is to judge the probability that Linda is both a feminist and a bank-teller). The present study focuses on two main questions. First, do conjunction fallacies occur when the conjuncts do not refer to one agent (e.g., what is the probability that Sweden have more inhabitants than France and that Italy have more inhabitants than Spain)? Second, will an ecologically representative design, previously found to eliminate both overconfidence and hindsight bias, eliminate the conjunction fallacy? Data showed that conjunction fallacies appear frequently also in situations where the representativeness heuristic does not apply and that the conjunction fallacy is not eliminated by an ecologically representative design.

Probability, 10:30–12:30, room 340

Confirmation May Depend On More Than Probability

Katya Tentori

University of Trento

Vincenzo Crupi

University of Trento

Daniel Osherson

Princeton University

Epistemologists often suppose that the extent to which evidence e confirms hypothesis H depends on probabilities involving e , H , and nothing more. We report an experiment to test this assumption.

The experimental procedure allowed comparisons between confirmation judgments in a “rich” scenario (e.g., e = an individual X loves soccer, H = X is male) and in a corresponding urn-based “lean” scenario (e.g., e = a drawn object X is striped, H = X is red), such that relevant probability values were precisely matched across both scenarios.

Results show that confirmation judgments can differ significantly even when the relevant probability judgments are the same. More specifically, lean scenario confirmation judgments were found to be systematically more extreme than corresponding rich scenario confirmation judgments. This suggests that judgments of confirmation depend on more than probabilities over e and H . In light of this finding, we will discuss the opportunity to refine standard Bayesian models of confirmation to achieve higher descriptive accuracy.

Probability, 10:30–12:30, room 340

Predicting World Cup results: Do goals seem more likely when they pay off?

Maya Bar-Hillel, David V. Budescu, Moty Amar

The Hebrew University at Jerusalem

University of Illinois at Urbana-Champaign

The Hebrew University and Ono College

MONDAY

Optimism is a robust and ubiquitous human phenomenon. Yet, in a series of experiments, Bar-Hillel and Budescu (1995) failed to find a desirability bias in probability estimation. The World Cup in soccer (2002, 2006) provided an opportunity to revisit the phenomenon, in a context where wishful thinking is notoriously rampant (e.g., Babad, 1991). Participants estimated the probabilities of various teams to win their upcoming games. They were promised money if one particular team, randomly designated by the experimenter, would win its upcoming game. Participants judged their target team more likely to win than other participants, whose promised monetary reward was contingent on the victory of its rival team. *Prima facie* this seems to be a desirability bias. However, in a follow-up study we made one particular team salient, without promising monetary rewards, by simply stating that it is “of special interest”. Again participants judged their target team more likely to win than other participants, whose “team of special interest” was the rival team. Moreover, the magnitude of the two effects was very similar. On grounds of parsimony, we conclude that what seemed like a desirability bias may just be a salience bias, and the wishful thinking effect still remains elusive.

Taking gambles at face value: Effects of emotional expressions on risky decisions

Piotr Winkielman, Brian Knutson, Martin P. Paulus, Jennifer L. Trujillo
Department of Psychology, UC San Diego

Emotional facial expressions are ubiquitous yet potent social stimuli that can signal favorable and unfavorable conditions. Previous research demonstrates that emotional expressions influence simple preference judgments and basic approach-avoidance behaviors. Here, we examined whether emotional expressions can influence complex decisions such as choices between gambles, and predicted greater risk taking after positive than negative expressions. This hypothesis was tested across three tasks that varied in implementation of risks, payoffs, probabilities, awareness of faces, and temporal decision requirements. In all three tasks, the likelihood of a risky choice was greater after exposure to positive versus negative facial expressions. Similar effects on risky choice occurred after presentation of different negative expressions (e.g., fear, anger, disgust, and sadness), suggesting that these effects are related to general activation of positive and negative affect systems. These results emphasize the valence-specific influence of incidental socioemotional cues on calibrating risky choice behavior and have important implications for risk-taking behavior in social situations

**What risks do people perceive in everyday life?
A perspective gained
from the experience sampling method (ESM)**

Robin M. Hogarth

ICREA & Universitat Pompeu Fabra, Barcelona

Mariona Portell

Universitat Autònoma de Barcelona

Anna Cuxart

Universitat Pompeu Fabra, Barcelona

MONDAY

The experiential sampling method (ESM) was used to collect data from 74 part-time students who described and assessed the risks involved in their current activities when interrupted at random moments by text messages. The major categories of perceived risk were short-term in nature and involved “loss of time or materials” related to work and “physical damage” (e.g., from transportation). Using techniques of multi-level analysis, we demonstrate effects of gender, emotional state, and types of risk on assessments of risk. Specifically, females do not differ from males in assessing the potential severity of risks but they see these as more likely to occur. Also, participants assessed risks to be lower when in more positive self-reported emotional states. We further demonstrate the potential of ESM by showing that risk assessments associated with current actions exceed those made retrospectively. We conclude by noting advantages and disadvantages of ESM for collecting data about risk perceptions.

Risk-as-feelings in a theory of planned behaviour perspective

Therese Kobbeltvedt & Katharina Wolff

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The theory of planned behaviour (Ajzen, 2001) is based on a utility framework whereas the risk-as-feelings hypothesis (Loewenstein, Weber, Hsee, & Welch, 2001), in contrast, is a feelings-based model. This study compares and contrasts the theory of planned behaviour and the risk-as-feelings model, by arguing that these models have certain core variables in common. There are also subsets of variables unique for each model. Two empirical studies will be presented.

Study I ($n = 94$) investigates how the shared variables, the unique theory of planned behaviour variables, and the unique risk-as-feelings variables contribute in predicting intentions to engage in unsafe sex. In Study II ($n = 357$) we manipulated hypothetical decision scenarios to examine whether intentions are driven by expected consequences of the behaviour (in accordance with theory of planned behaviour) or rather by feelings associated with it (in accordance with the risk-as-feelings model).

In general our study lends support to the theory of planned behaviour, by emphasising the role of outcome-expectations in intention construction. However, the influence of the affective subcomponents in attitudes gives indirect support to the risk-as-feelings perspective. We discuss the possibility that situations differ in the extent to which feelings carry information value.

Affect and risk, 10:30–12:30, room 341

Affective versus deliberative processes in risk taking: The role of cognitive control in risky decision making in younger and older adults

Bernd Figner, Ryan O. Murphy, and Elke U. Weber
Center for the Decision Sciences, Columbia University

MONDAY

Adolescents and young adults are known to often take high risks. Far less is known about the mechanisms giving rise to their risk-taking behavior. Two experiments examined the role of affective versus deliberative processes, and the mediation role of cognitive control in risk taking in younger (18-21 years) and older (30+ years) adults. Risk taking levels and information usage were assessed using two variants of the Columbia Card Task (CCT) which trigger differential involvement of affective versus deliberative processes. Emotional arousal was measured by electrodermal and cardiovascular activity. Decision strategies and need-for-arousal were assessed psychometrically. Cognitive control was assessed with a Go/No-Go task. Age and gender effects were observed in risk taking only in the affective condition, with lower cognitive control being correlated with increased risk taking in younger adults. In contrast, lower cognitive control was correlated with less risk taking in older adults. A more detailed analysis of effects of cognitive control suggests that the predominant affective impulse in younger adults was to take risks, whereas in older adults it was to avoid risks. Individual differences in risk taking in both task conditions and both age groups were further explained by physiological affect measures, need-for-arousal, and employed decision strategies.

Expected and non-expected utility, 13:30–15:30, room 308

Exaggerated risk: Taking precautions is not the same as choosing gambles

Petko Kusev

Department of Psychology, University College London

Peter Ayton

Department of Psychology, City University London

Paul van Schaik

School of Social Science and Law, University of Teesside

Nick Chater

Department of Psychology, University College London

This research investigates the extent to which theories of risky decision-making can predict protective decision-making. The leading normative (e.g. von Neumann & Morgenstern, 1947) and descriptive psychological theories (e.g. Tversky & Kahneman, 1992) of decision-making share a common representational assumption: people's risk preferences and decisions under risk and uncertainty are task-independent. Thus, these theories assume that all decisions under risk or uncertainty can be represented as hypothetical gambles. In four experiments we studied hypothetical and precautionary decisions where participants decided whether or not to adopt a specified action with a known cost in the face of a described risk. Applying Prospect theory we find that both the weighting function and the value function required to model these decisions exhibit different properties for precautionary decisions than those observed for choices between gambles: overweighting of probability is observed for moderate and high probabilities - a finding not anticipated by Prospect theory. Our results highlight a need for differentiation between models to account for choices between gambles and precautionary behaviour in the face of risk. We speculate that the accessibility of imagined events in memory (cf. Koriat, 2001) leads people to favour certain loss (insurance) rather than risk for hazards more than gambles.

Expected and non-expected utility, 13:30–15:30, room 308

Violations of dominance and transitivity in risky decisions: The role of cognitive effort and numeracy

Andrea Taylor and Rob Ranyard,
University of Bolton

MONDAY

Prospect theory predicts that if higher outcome probabilities are underweighted relative to lower ones then preferences for risky alternatives may be intransitive. C. Starmer (1999) tested this prediction using lotteries of the following structure: A, $.67x$ chance of winning $1.75y$; B, x chance of winning y ; C, $0.5x$ chance of winning y and a $0.5x$ chance of winning $y - z$ (where $z = 3.125\%$ the value of y). Around a quarter of Starmer's participants chose A over B, but chose C, which has two non-zero outcomes, over A. (despite the fact that B dominates C). In contrast, hardly any violations of dominance were observed. Two computer-controlled experiments, with $N = 72$ student participants, replicated and extended Starmer's study. In experiment 1, significant intransitive preferences were observed that partially corroborated Starmer's results. Unexpectedly, however, over 30% violations of dominance were also observed. One interpretation is that evaluation was consistent with prospect theory, including sub-additive probability weighting, but there was a failure of dominance testing at the pre-evaluation editing stage. Experiment 2 (in progress) will clarify whether failures of dominance detection are due to the cognitive effort involved or to the cognitive skill required to manipulate frequencies.

Expected and non-expected utility, 13:30–15:30, room 308

Not experience versus description, but sample versus population.

Tim Rakow, Kali Demes, Ben Newell

University of Essex

University of New South Wales

We investigated the discrepancy in choice between decisions from experience and decisions from description to determine whether biased sampling or a bias towards recent observations best explained the differences in choice. Our data (six experimental conditions, $N = 240$) indicates that biased sampling provides the more powerful explanation of the two. Using a yoked design, we showed the samples of outcomes that participants had experienced to subsequent participants. The same pattern of choices was seen in these yoked participants as for the original participants - irrespective of whether yoked participants experienced samples one at a time, or had the options described to them. A bias towards recent observations did occur when participants actively sampled outcomes, but not when they simply observed them. Working memory capacity was positively related to the amount of pre-decisional information acquired, but did not predict the presence or magnitude of recency effects. Our data suggest that the proposed discrepancy between description-based and experience-based choice is best understood as a discrepancy between knowledge of objective outcomes (the population of possible outcomes) and knowledge of samples of outcomes (which may be biased). Descriptions and experience of these (potentially biased) samples of outcomes yield the same pattern of choices.

Expected and non-expected utility, 13:30–15:30, room 308

Adaptive versus random sampling: Revisiting some common assumptions about sampling in cognitive theories

Mirta Galesic, Henrik Olsson, and Jörg Rieskamp

Center for Adaptive Behavior and Cognition

Max Planck Institute for Human Development, Berlin

MONDAY

Cognitive theories of judgment and decision making often assume that people make judgments on the basis of a random sample of information (e.g. Kareev, 2000). This assumption is sometimes modified by allowing for sampling conditional on some characteristic of the population (Fiedler, 2000). The goal of the present work is to revisit the widespread assumption of random sampling in cognitive theories. Making predictions about cognitive processes based on this assumption might be misleading because: first, people are not good in either producing or recognizing random samples; second, standard statistical inference requires not only chance selection, but also a known and nonzero probability of sampling of each of population elements; and third, it is unlikely that people take mutually independent sample draws. In this study we revisited the simulations described by Kareev (2000), assuming correlated instead of independent sample draws. If overestimating important correlations is more adaptive than missing them altogether (though see the critique by Juslin and Olsson, 2005), then the resulting samples produced even better results than simple random samples, because they overestimated the population correlation more often. However, contrary to the simple random samples, this property of correlated samples increased monotonically with the sample size.

The Development of Adaptive Strategy Selection

Rui Mata

University of Michigan, Ann Arbor

Bettina von Helversen, Jörg Rieskamp

Max Planck Institute for Human Development, Berlin

Adaptive strategy selection develops across the life span: While young adults are quite adaptive, children show difficulties selecting the most successful strategy. The developmental literature suggests that the development of cognitive abilities may be fundamentally associated with adaptive strategy selection. On the one hand, children's small memory and attention spans may lead them to rely on simpler, less cognitively demanding strategies. On the other hand, children's attention limitations may lead to difficulties in ignoring irrelevant information thus making it hard to rely on information-frugal strategies. We investigated these two predictions in the context of a probabilistic inference task and modeled children and adults' ability to select appropriate strategies as a function of performance feedback using the Strategy Selection Learning Theory (Rieskamp & Otto, 2006, JEP:G). Our results show that 11-12 year olds, similar to young adults, are adaptive when selecting a decision strategy. In comparison, 9-10 year olds show marked difficulties in using simple noncompensatory strategies and in adaptively selecting strategies as a function of performance feedback. The results suggest that adaptive decision making is the result of a developmental process in which children learn to select strategies adaptively depending on the environment.

Other heuristics, 13:30–15:30, room 307

The Fluency Heuristic: A Model Of How The Mind Exploits A By-Product of Memory Retrieval

Ralph Hertwig & Stefan Herzog
University of Basel

MONDAY

Boundedly rational heuristics for inference can be surprisingly accurate and frugal for several reasons. They can exploit environmental structures, co-opt complex capacities, and elude effortful information search by exploiting information that automatically arrives on the mental stage. The fluency heuristic is a prime example of a heuristic that makes the most of a piece of information that is an automatic by-product of retrieval from memory, namely, retrieval fluency. By drawing on this instantaneously available information — rather than searching for and retrieving knowledge in terms of probabilistic cues — the fluency heuristic epitomizes one-reason decision-making and ranks among the most frugal heuristics. In four experiments, we show that retrieval fluency can be a proxy for environmental quantities, that people can discriminate between two objects' retrieval fluency, that fast inferences are in line with the fluency heuristic, and that experts in a knowledge domain can exploit their sense of retrieval fluency to infer laypeople's partial ignorance.

Other heuristics, 13:30–15:30, room 307

The cognitive niche of the fluency heuristic

Julian N. Marewski & Lael J. Schooler

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The fluency heuristic (Schooler & Hertwig, 2005) is an inference strategy. In comparisons of two recognized objects, the heuristic predicts higher criterion values for the object that is retrieved faster from memory. Besides the fluency heuristic knowledge-based inference strategies are also applicable when two objects are recognized. The mechanism for strategy selection is unknown.

Based on the cognitive architecture ACT-R (Anderson et al., 2004) we propose an ecological mechanism for strategy selection. The mechanism exploits a mnemonic derivative of the statistical structure of information in the world. According to it, the fluency heuristic can and should be relied upon most when knowledge about objects is not retrievable from memory. When knowledge is retrievable, the heuristic is most likely not applicable.

In three experiments and analyses of real-world environments, we show (a) that the statistical structures of decision environments correspond with the contents of our participants' memory as well as (b) that the mechanism predicts the application of the fluency heuristic well.

In sum, our results suggest a hierarchy for strategy use in which knowledge-based strategies are prioritized over the fluency heuristic. The cognitive niche of the fluency heuristic is characterized by a person's inability to retrieve knowledge.

Other heuristics, 13:30–15:30, room 307

Adjusting the spanner: Testing an evidence accumulation model of decision making

Ben Newell, Patrick Collins

University of New South Wales

Michael Lee,

University of California at Irvine

MONDAY

An experiment examined two aspects of performance in a multi-attribute inference task: i) the effect of stimulus presentation format (image or text) on the adoption of decision strategies; and ii) the ability of an evidence accumulation model, which unifies take-the-best (TTB) and 'rational' (RAT) strategies, to explain participants' judgments. Presentation format had no significant effect on strategy adoption at a group level. Individual level analysis revealed large intra-participant consistency, including some participants who consistently changed the amount of evidence considered for a decision as a function of format, but wide inter-participant differences. A unified model captured these individual differences and was preferred to the TTB or RAT models on the basis of the minimum description length model selection criterion.

Excess entry: the roles of judgmental fallibility and overconfidence.

Natalia Karelaia

HEC Université de Lausanne

Robin M. Hogarth

ICREA & Universitat Pompeu Fabra, Barcelona

It is well established that many entrepreneurial ventures fail a short time after their creation. This is referred to as the phenomenon of excess entry for which economic explanations posit “hit and run” entrants and risk-seeking behavior. Psychological explanations center on bias in human judgment, namely that entrepreneurs are overconfident in their abilities. However, it is difficult to verify this hypothesis in empirical studies and the extant experimental evidence is open to different interpretations. This paper argues that excess entry can be explained by judgmental fallibility in that entrepreneurs’ estimates of their true ability are imperfect. However, they are not necessarily biased (e.g., overconfident). The phenomenon is further highlighted by the fact that although one can observe entrepreneurs who enter markets and fail, nothing can be observed when entrepreneurs decide not to enter markets (i.e., possible missed opportunities). We illustrate these points by exploiting a simple mathematical model. This shows that overconfidence may well have nothing to do with excess entry. At the same time, it emphasizes that entrepreneurs – and society in general – would be much better off if entrepreneurs learned to predict their abilities better as this would reduce both excess entries and missed opportunities.

Overconfidence of Professional Traders in Financial Markets

Thomas Oberlechner
Webster University
Carol Osler
Brandeis University

MONDAY

The existence of overconfidence in financial markets is assumed in recent behavioral finance discussions of excess trading, volatility, and market bubbles. However, so far there is only indirect evidence of its actual existence among professional participants in financial markets. Instead, the notion of overconfidence in financial markets is based on evidence from individuals in other settings. Moreover, traditional finance has explained away the influence of overconfidence in financial markets, arguing that few rational market participants suffice to balance out any irrationality introduced by overconfident investors. According to this view, unbiased and rational “marginal agents” should be found among the extremely well informed trading professionals working for leading market makers.

These supposedly non-overconfident market experts were targeted in a survey of 416 currency professionals at the leading banks in the North American foreign exchange market. Results document two separate forms of overconfidence among financial experts: a tendency to overestimate one’s professional success, and a tendency to overestimate forecast precision. The evidence suggests that overconfidence does not affect the traders’ profitability. However, we find that overconfidence promotes overall professional success, measured as individuals’ hierarchical rank and trading experience.

Are Additive Probability Estimators Likely to be Utility Maximizers?

Mandeep K. Dhami

University of Cambridge

David R. Mandel

University of Toronto

We studied coherence of judgment and choice in a real world task using a relevant population. We (1) measured judgment coherence by determining the degree to which prisoners' probability judgments of acquittal and conviction in a court system (Crown vs. magistrates) were additive; (2) measured coherence in choice by determining the proportion of prisoners who chose the court that maximized subjective expected utility (SEU); and (3) examined whether coherence in judgment was indicative of the coherence in choice. In a hypothetical scenario, 336 male and female English prisoners rated the probabilities of acquittal and conviction in each court system, and noted the length of the prison sentence they would likely get if convicted in each system. Finally, prisoners chose the court they would be tried and possibly sentenced. We found evidence for two types of coherence i.e., additivity of subjective probability judgments so that probability of acquittal and conviction in each court system summed to 1, and use of subjective expected utility calculations in choice so that prisoners chose the court that maximized their SEU. Finally, that prisoners' additivity was replicated across court type, but their coherence in judgments was unrelated to their coherence in choice.

Affect, 13:30–15:30, room 341

**The impact of distinct emotions
on multiattribute decision making:
A process tracing investigation
of the appraisal-tendency and valence-based
approaches**

Alexandre Bachkirov and John Maule
Leeds University

Recently it has been argued that the consequences of incidental affect on decision processes can be better explained from a cognitive-appraisal perspective (e.g. an Appraisal Tendency Framework) rather than a valence approach. Using a process-tracing methodology we investigated whether appraisal of certainty influences the depth of processing in a content-rich multiattribute judgment task. We induced people to feel happiness, hope, or anger, the emotions for which certainty has been reported to be a central appraisal theme, and had participants complete a Mouselab task. Contrary to ATF-based studies, hope and happiness did not differ on the cognitive-appraisal dimension of certainty and both resulted in comparably lower depth of processing than anger. However, there was an effect of valence on the depth of processing: people in the anger condition acquired significantly larger amount of information than those who were induced to feel happiness.

MONDAY

Fitting Decisions: Mood and Intuitive versus Deliberative Decision Strategies

Marieke de Vries, Rob W. Holland, & Cilia L. M. Witteman
Behavioural Science Institute, Radboud University Nijmegen

If you are about to make a decision, such as to which restaurant to go for dinner tonight, one thing you can do is rely on your intuition. That is, base your decision on the first affective reaction that comes to mind when considering different restaurants. You could also decide deliberately, i.e. analyze the pros and cons of various restaurants before making a decision. Such decision strategies may influence how much you value your decision outcome (e.g. Higgins, 2000). We aim to explore whether mood states affect the degree to which we subjectively value a decision outcome, based either on intuition or on deliberation. Specifically, we predict that this subjective value is enhanced when the decision maker's mood state is compatible with the decision strategy. After a mood manipulation, participants were instructed to decide either based on their first affective reaction or after deliberation. Results showed that happy individuals are more satisfied with their decision outcomes when they are instructed to base their decision on the first feeling that comes to mind. In contrast, we found that sad individuals were more satisfied with their decision outcome when they were instructed to deliberate on the decision problem. We will discuss implications.

Affect, 13:30–15:30, room 341

The influence of emotions on the decision making and performance of traders

Emma Soane

Kingston Business School

Mark Fenton-O'Creevy

Open University Business School

Nigel Nicholson

London Business School

Paul Willman

London School of Economics

MONDAY

The trading environment is a continuous cycle of emotional and financial highs and lows with high magnitude risks and benefits for individuals and organisations. Although trading lore reinforces the idea that emotions are detrimental to performance, our research with traders and their managers suggests that, under some circumstances, emotions can enhance decision making and performance.

One hundred and eighteen traders from four leading investment banks with offices in the City of London were interviewed. Qualitative and quantitative data were gathered concerning the effects of emotions on decision making, preferences for intuitive versus deliberative decision making strategies, the influence of both short-term and long-term losses and gains on decision making, performance and income.

Individual differences in approaches to decision making were considered in the context of managerial ratings of performance. The results showed that two-thirds of traders incorporate emotional information into their decision making, including senior managers and high earners. The use of emotions in decision making was not detrimental to performance and in some areas, such as skill in managing risk, the use of emotions could aid performance. Implications for the management of traders and the decision making process are discussed.

The role of affect in person evaluation as measured by pupil dilation

José H. Kerstholt

Behavioral Science Institute, Radboud University Nijmegen

An experiment was conducted in which three modes of thinking were compared: analytic (carefully weigh all pros and cons), intuitive (trust your gut feeling) and unconscious thinking. In this last condition an additional task was given after all information had been received in order to completely tax working memory and to prevent conscious thinking. Participants were asked to evaluate candidates for either a PhD position or for a date. They could base their judgment on a photograph of the candidates and his or her cv. Feelings were measured pupil dilation and normative values were assessed by an additional policy capturing task. Results show that participants were less accurate in the unconscious thinking condition when they had to evaluate persons for a date. Pupil dilation was greater when participants judged candidates for a date than when they judged a candidate for a PhD position. However, this was not the case in the unconscious thinking condition, where pupil dilation was large for the PhD task as well. In all, the results suggest that pupil dilation is a suitable method for measuring feelings. The main advantage of using a physiological reaction is that the measurement is unconfounded by cognitive evaluations.

Loss aversion/framing, 16:00–18:00, room 308

Framing Effects in Stock Market Forecasts: The Difference Between Asking for Prices and Asking for Returns

Markus Glaser

Lehrstuhl für Bankbetriebslehre, Business School, Universität Mannheim

Thomas Langer

Lehrstuhl für Finanzierung, Universität Münster

Jens Reynders

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Martin Weber

Lehrstuhl für Bankbetriebslehre, Business School, Universität Mannheim and
CEPR, London

MONDAY

We show that the results of surveys analyzing return expectations of financial market participants like fund managers, CFOs or individual investors are easily influenced by the elicitation mode. Surveys that ask for future stock price levels (like the Livingston Survey) are more likely to produce mean reverting expectations than surveys that directly ask for future returns (like the Michigan Surveys of Consumers or the Duke/CFO Business Outlook survey). In addition to a comprehensive reanalysis of the existing literature, we conduct a new study that explicitly analyzes whether the specific elicitation mode affects return expectations in the above direction. We observe a highly significant framing effect. For upward sloping time series, the return forecasts stated by investors in the return forecast mode are significantly higher than those derived for investors in the price forecast mode. For downward sloping time series, the return forecasts given by investors in the return forecast mode are significantly lower than those derived for investors in the price forecast mode. We argue that this finding is consistent with behavioral theories of investor expectation formation that are based on the representativeness heuristic.

Loss aversion/framing, 16:00–18:00, room 308

Loss Aversion is Comparative

A. Peter McGraw

University of Colorado, Boulder

Jeff T. Larsen

Texas Tech University

Daniel Kahneman

Princeton University

David Schkade

University of California, San Diego

Loss aversion in choices is commonly assumed to be due to the anticipation that losses will have a greater effect on feelings than equivalent gains. Evidence for loss aversion in feelings, however, is equivocal. Loss aversion can be disguised in judgments of feelings on bipolar scales because people rate opposite-valence outcomes separately on the positive and negative portions of the scale such that positive and negative outcomes are not compared directly. Yet when people compare their feelings, either implicitly or explicitly, about positive and negative outcomes, loss aversion emerges in judged feelings. Furthermore, the asymmetry in feelings predicts loss aversion in risky choices. The detection of loss aversion in comparative judgment tasks can be extended to non-monetary phenomenon such as anticipated and actual feelings about emotional stimuli.

Loss aversion/framing, 16:00–18:00, room 308

**Justifying the high price of medication:
How relational framing
reduces consumer distress**

Janet Schwartz,
Princeton University
A. Peter McGraw,
University of Colorado, Boulder

MONDAY

Building on previous relational framing research (McGraw & Tetlock, 2005), we present evidence that people are distressed when pharmaceutical companies use market-pricing justifications for pricing decisions. Consumers are reluctant to confront explicit trade-offs between health and money. Distress and perceptions of fairness, however, are mitigated when pharmaceutical companies use communal-sharing rationales to justify pricing. A common example, is that high prices compensate for the research and development failures of medicines designed to improve public health. For other utilitarian products, such as software, however, we show that communal-sharing justifications do not mitigate pricing criticisms and are perceived as less believable.

A Sampling Model of Stereotype Formation

Jing Qian

Max Planck Institute for Human Development, Berlin

Rocio Garcia-Retamero

Max Planck Institute for Human Development, Berlin

University of Granada

We propose a sampling model of stereotype formation, where stereotyping of minorities can be explained by an aversion to variability. In a previous simulation study (Qian & Garcia-Retamero, 2007), we showed that sampling with different base rates and sample sizes can produced different variability in impressions about gender groups. In the current study, we further tested the outcome of risk aversion on judgment of impressions. We simulated repeated choice behavior with the implementation of loss aversion and Luce's choice rule. Loss aversion is modeled by the difference between the attribute value and the decision maker's expectation. We found that the group with lower variance is generally chosen with higher probability than the group with higher variance due to loss aversion. Furthermore, this effect interacted with the recall information on previous group impressions and choices, when information at hand is scarce and recall of previous stereotypes is needed. The proposed model of stereotype formation is tested empirically. We modeled the effect of previously held stereotypes by changing the temporal window of recall. Small window size does not substantially affect the probability of choosing between either group. However, when the window is large, the difference of variability would affect choice probability substantially.

Other heuristics, 16:00–18:00, room 307

Under-diversification and the Role of Recency and Probability Matching

Uri Ben Zion

Department of Economics, Ben-Gurion University

Ido Erev

Faculty of Industrial Engineering and Management, Technion

Ernan Haruvy

School of Management, University of Texas at Dallas

Tal Shavit

Department of Management and Economics, The Open University of Israel

MONDAY

Three experiments are presented that compare alternative explanations to the coexistence of risk aversion and under-diversification in investment decisions. The participants were asked to select one of several assets under two feedback conditions. In each case, one asset was a weighted combination of the other assets, allowing for lower volatility. The frequency of choice of the composite asset was highly sensitive to feedback condition. It was the most popular asset when the feedback was limited to the obtained payoff, but the least popular asset when the feedback included information concerning forgone payoffs. This pattern supports the assertion that under-diversification can be a product of momentum trading and probability matching.

Other heuristics, 16:00–18:00, room 307

Partition Dependence in Prediction Markets

Thomas Langer, Ulrich Sonnemann

University of Muenster

Craig R. Fox

UCLA Anderson School of Management

Colin F. Camerer

California Institute of Technology

We demonstrate that experimental prediction markets similar to the Iowa Electronic Markets and tradesports.com are much more susceptible to traders' biases than has previously been supposed. Undergraduate finance majors ($N=192$) organized into groups of eight bought and sold state-contingent claims involving future close of the DAX index; future local temperatures, and the total number of goals scored on the first day of German "Bundesliga" using a double-auction procedure. Each state space was partitioned into a set of events one of two different ways. Equilibrium prices were strongly partition-dependent such that a given event was priced higher when represented by two of three state-contingent claims than when represented by one of three state-contingent claims.

Other heuristics, 16:00–18:00, room 307

The Similarity Heuristic

Daniel Read

Durham Business School

Yael Grushka-Cockayne

London Business School

MONDAY

You see a mushroom and must decide whether it is safe to eat. If you decide based on whether it looks more like a poisonous than non-poisonous mushroom, you are using the similarity heuristic, a subset of what Kahneman and Tversky (1972) called the representativeness heuristic. This paper is a theoretical and empirical investigation of the similarity heuristic. We provide a mathematical model of the heuristic which permits quantitative analyses of the validity of the heuristic (when it will be successful, and when it will not), and precise predictions of choice behavior. We test this model with an experiment, showing that, at least in the environment we investigate, similarity judgments are a reliable and valid basis for choice, and actual choices are made using the similarity heuristic. We also found that while people use prior probability information when making choices, they underweight that information and do not use it strategically. We conclude by comparing our work with the ‘fast and frugal’ heuristics program of Goldstein and Gigerenzer (2002).

What shall I do? – A simple causal heuristic to derive interventions from observations

York Hagmayer & Björn Meder
University of Göttingen, Germany

Causal Bayes net theories show how and under which conditions the consequences of interventions upon a causal system can be derived from observational data (e.g. Pearl, 2000). In order to do so, these theories take into account all causal models that may underlie a given situation, their uncertainties, and the evidence provided by the observations. However, people in everyday life may use a simple causal heuristic instead: (1) Identify the variables which are potential (direct or indirect) causes of the outcome (2) Intervene on the cause variable which has the highest observed conditional probability upon the outcome (i.e., the variable C_i for which $P(\text{outcome}=1|C_i=1) = \max.$). In contrast to a Bayesian strategy, this heuristic does not require sophisticated statistical inferences but a causal assessment of the problem. We present simulation studies demonstrating that this heuristic identifies the best choice over 90% of the time, even when the causes are correlated or interact or when generative as well as inhibiting causes affect the outcome. Moreover, resulting errors tend to be small. However, the heuristic fails grossly if (a) strongly correlated causes interact in producing the outcome, or (b) they are strongly correlated and one of them is a strong inhibitor.

Judgement, 16:00–18:00, room 340

More is better than maximum: Communicative implicatures of lower and upper limit estimates

Karl Halvor Teigen, Anne-Marie Halberg & Knut Ivar Karevold
University of Oslo, Norway

MONDAY

Imprecisely known quantities (e.g. predictions) are often described in approximate terms, as for instance “more than 200 participants will attend SPUDM-21”. Such phrases carry both quantitative and qualitative information. We offer a taxonomy of such phrases, along with examples of how these phrases influence estimates and reveal the speakers’ communicative intentions.

Phrases can denote lower or upper limits (“more than X” versus “less than Y”). Upper and lower bounds together delimit an uncertainty interval, but often only one limit is in focus, giving rise to framing effects. Phrases can also differ by being inclusive or exclusive (“at least” versus “more than”), affirmations or negations (“at least” versus “not less than”), and contrastive or assimilative (“not quite” versus “almost”).

A study of managerial decision making shows how these attributes suggest different recommendations, by directing the listener’s attention to positive or negative aspects of the quantities involved. A project manager who declares that “more than X% of the work is done”, reveals his willingness to continue investment in a failing project (sunk costs effect), whereas “less than Y% is done” suggests lack of commitment and readiness to switch to a more promising alternative, even when $Y > X$.

Judgement, 16:00–18:00, room 340

The Technique of Error Parsing as a Method of Judgment Analysis

Crystal C. Hall, Daniel Oppenheimer
Princeton University

In most situations, error in judgments is virtually inevitable. The examination of error in judgment has been widely studied by decision researchers, with the aims of both understanding human judgments, and designing interventions to improve these judgments. However, researchers have rarely attempted to study the distinct components that contribute to overall decision accuracy. We present a novel technique which describes three distinct components of overall error: error due to noise (resulting from imperfectly predictive cues), error due to inappropriate cue weighting and error due to inconsistent cue weighting. Our technique, error parsing, allows for the examination of how these components contribute uniquely to total error in judgments. In this paper, we describe error parsing and demonstrate its usefulness in examining error using real judgments in ecologically valid domains. The technique is described in detail, along with its relationship to previous research. This is followed by a demonstration of the method using real data sets, along with a discussion of its implications for designing judgment interventions and refining prominent theories of human judgment.

Judgement, 16:00–18:00, room 340

How feedback format affects performance in multiple-cue judgment

Pachur, Thorsten

University of Basel

Olsson, Henrik

Max Planck Institute for Human Development, Berlin

MONDAY

In many multiple-cue judgment paradigms participants learn about the relationship between cues and a criterion dimension by learning the criterion value for a sample of objects directly, which we call absolute feedback (e.g., A has a value of 0.7). Outside the laboratory, however, such direct criterion knowledge is only rarely available. Rather, one merely knows about an object's relative position on the criterion dimension and learns from comparative feedback (e.g., A is larger than B). We examined how the type of feedback affects judgment performance and the cognitive mechanisms responsible for the judgments. Surprisingly, with comparative feedback knowledge about the criterion was learned more quickly, and performance in a subsequent generalization task was more robust, both when the task format was changed and when generalizing to new objects. The superior performance after comparative feedback seemed to be due to a higher flexibility in strategy selection.

Judgement, 16:00–18:00, room 340

It matters how you pay: cost salience dependence on payment mechanisms

Mitja Pirc

Universitat Pompeu Fabra, Barcelona

Recent research suggests that the payment method used can influence behavioral intentions and consumption behavior. When forming evaluations, making decisions and behaving individuals use information inputs. One of most important information to the consumer is the information about the cost. Cost information can be split in total costs and average costs. They can be both relevant to the customer. Previous research has suggested that they can be used interchangeably.

It is argued that payment methods can also influence the salience of cost information used in the consumer evaluation and decision making process. The proposed mechanism is due to the difference in the payment coupling between various payment methods. When wealth gets depleted monthly then the total cost information is more salient. However when wealth gets depleted with each usage then the cost per usage information is more salient to customers.

Two studies are proposed to support this proposition: a real field study and an experiment. This research contributes to the research on mental accounting, the effects of payment mechanisms and antecedents of consumer behavior and decision making. Practical implications are discussed on how to manage customer relationships once they are using specific payment method.

Affect, 16:00–18:00, room 341

Poor theory of mind is associated with erratic choice behavior but not with IQ: Findings in Aspergers and healthy subjects.

Eldad Yechiam and Meir Druyan
Technion - Israel Institute of Technology

MONDAY

The present study sought to examine the association between a test of Theory Of Mind (TOM), the Reading the Mind in the Eye test (RMET: Barron-Cohen et al., 2003), and choice behavior in a “social-free” environment, using the Iowa Gambling Task (IGT: Bechara et al., 1994). Findings in adolescents with Asperger’s syndrome show that they display limited ability to read emotions from other people’s faces and also have a unique erratic choice style in the Iowa Gambling task, denoted by constant shifting from one choice alternative to the other. We examined the association between these two indices in a healthy adult population. In Study 1, seventy-eight students performed the RMET and IGT. The results showed that a group of 18 students (23%) who had poor RMET performance also displayed significantly shorter runs on the IGT. RMET and IGT scores were not associated with IQ or Digit Span. In Study 2 the results were replicated in a sample of 72 adults. Interestingly, in both studies the group exhibiting low TOM and erratic choice behavior consisted mostly of males (Study 1: 61%, Study 2: 69%). The findings are interpreted as indicative of the role of emotions in experience-based choice tasks.

Affect, 16:00–18:00, room 341

The role of the price comparative format and the numeracy ability on the acceptance of a commercial offer

Michele Graffeo, Nicolao Bonini

Department of Cognitive Science and Education -
Decision Research Lab, University of Trento

The aim of the study is to show how the comparative price format and the ability of the participants to answer arithmetic questions (numeracy skill) influence the choice between buying a product at full price or buying the same product at a reduced price at a later time. People with low numeracy ability should rely on their emotional reactions to decide whether to accept the commercial offer. Their emotional reaction, in turn, should be affected by comparative price format. Reported findings on preferences and emotional reactions support the research hypothesis.

Affect, 16:00–18:00, room 341

Delay, Doubt and Decision Making: How a Delay of a Choice Influences that Choice

Niels van de Ven, Marcel Zeelenberg
Tilburg University,
Thomas Gilovich
Cornell University

MONDAY

The current research finds that delaying a choice has a systematic influence on that choice. We base our work on the intuitive confidence hypothesis (Simmons & Nelson, 2006). This theory states that intuitions often drive preferences, and that lowering the confidence in these intuitions also lowers these preferences. This potentially explains effects such as the status quo bias and the preference for focal options, as these are normally intuitively preferred. We argue that a delay of a choice decreases intuitive confidence, as one becomes more aware of the difficulty associated with the choice. The current research supports this idea, and we indeed find that a delay of a choice eliminates the normal preference for a focal option (Experiment 1) and the status-quo bias (Experiment 2). Furthermore, participants for whom doubt was activated by means of a scrambled sentences prime show no status-quo bias in contrast with neutrally primed participants (Experiment 3). Furthermore, the same doubt prime also lowers a normal preference for a focal option (Experiment 4). Implications of this influence of delaying and doubting a choice on the choice itself are discussed.

When Ignorance is Not Bliss: How Feelings of Discomfort Promote the Search for Negative Information

Yaniv Shani

Ben-Gurion University and Tilburg University

Orit E. Tykocinski

Ben-Gurion University

Marcel Zeelenberg

Tilburg University

Recent decision-making research established that the experience of regret leads to post-decision information search (Shani & Zeelenberg, in press). It has been argued that people search information in hope to alleviate their negative feelings by excluding the possibility that unfavorable decision was made. Paradoxically, by seeking information people expose themselves to information that may confirm their negative feelings. The willingness to seek out potentially painful information was examined in three studies. Experiment 1 demonstrated that the tendency to seek definite knowledge about the attractiveness of a forgone opportunity is mediated by the emotional discomfort associated with remaining ignorant, and influenced by the probability that the search will uncover aversive information. This finding was replicated in Experiment 2 in a lab setting. Experiment 3 demonstrated that definite knowledge is less-aversive than uncertain ignorance, even when one finds out that one had missed a superior opportunity.

TUESDAY 13:30-15:30		PROBABILITY	CHOICE	SOCIAL CONTEXT	Affect/Political Behavior
		Probability <i>Chair:</i> Guy Hochman <i>Room 308</i> 1) Empirical links between logical consistency and accuracy of beliefs: Survey of AEA attendees; Nathan Berg Guido Biele Gerd Gigerenzer 2) Fixed Pie or Fixed Variable? Comparing Methods of Elicitation of Probability Distributions; David Budescu Ali Abbas Hsui-Ting Yu, Ryan Haggerty Ryan Mulligan, Rola Gu 3) Uniform Distributions, Uniform Assumptions, or None of the Above: What do Subjects Really Assume About Probability Distributions? Sari Carp 4) Partial Reinforcement Extinction Effect: Boundaries and limitations Guy Hochman Ido Erev	Choice <i>Chair:</i> Odilo W. Huber <i>Room 307</i> 1) An Examination of the Proportional Difference Model to Describe and Predict Health Decisions Claudia González-Vallejo Etienne Mullet, Maria T. Muñoz Sastre, Jason Harman 2) Probabilistic cognitive models of decision making under risk: Comparing the decision field theory with the proportional difference model Jörg Rieskamp Benjamin Scheibehenne Claudia González-Vallejo 3) Reaching for the ideal - The role of ideal alternatives in decision-making Neda Kerimi Henry Montgomery Dan Zakay 4) The advantages first principle: A strategy for the selection of alternatives based on positive consequences and the role of risk-defusing operators in the decision process Odilo W. Huber Arlette S. Bär, Oswald Huber	Social Context (I) <i>Chair:</i> Wibecke Brun <i>Room 340</i> 1) How to learn good cue orders: When social learning benefits fast and frugal heuristics Rocio García-Retamero Masanori Takezawa Gerd Gigerenzer 2) Forms of trust: Interrelations and dissociations Nigel Harvey Matt Twyman Clare Harries	Affect <i>Chair:</i> Michaela Huber <i>Room 341</i> 1) Multiple Options in the Past and the Present: The Impact on Inaction Inertia Marijke van Putten Marcel Zeelenberg Eric Van Dijk 2) Exogenous and Endogenous Emotions: Prosocial Effects of Shame Ilena E. de Hooge Seger M. Breugelmans Marcel Zeelenberg 3) The breakdown of compassion: Affect, images and donations to children in need Daniel Västfjäll Ellen Peters Paul Slovic 4) Moderating Scope Neglect and Affect in Humanitarian Aid Decisions Michaela Huber Leaf Van Boven

Probability <i>Chair:</i> Andrzej Piegat <i>Room 308</i> 1) Context effects in time series forecasting: A possible explanation of trend damping? Stian Reimers Nigel Harvey	Choice <i>Chair:</i> Martin Kocher <i>Room 307</i> 1) Reference points effects on tradeoffs between job attributes Zur Shapira 	Social Context <i>Chair:</i> Guido Biele <i>Room 340</i> 1) Strategies for Combining Opinions Jack Soll Rick Larrick Al Mannes	Political Behavior/Norms <i>Chair:</i> Rob Nelissen <i>Room 341</i> 1) Intentions, Plans, and the Subtle Psychology of Voter Turnout Daniel G Goldstein Kosuke Imai Anja Göritz 2) The effect of voting on political attitudes: evidence from German general elections Stefan T. Trautmann
2) Solving Complex Legal Cases Using the Intuitive System Andreas Gloeckner	2) More is most for experts: The influence of expertise and assortment size on satisfaction Yvette van Osch Mireille Jans Wouter Westerman Marcel Zeelenberg	2) Receiving Other Peoples' Advice on Matters of Taste: The Relevance of Similarity-based and Popularity-based Opinions to one's Choices Ilan Yaniv Maxim Milyavsky Shoham Choshen	3) Mistaken Identity: Social Identity as a Specious Cue for Decision Making Craig R. Fox Erica Carranza Michael W. Morris 
3) Percentage-based probability inferences: The role of computational difficulty and anaphoric references in eliciting Bayesian judgements. Gaëlle Villejoubert Jean-François Bonnefon	3) Trouble with the gamble as decision metaphor (or how an air purifier is not like \$300) A. Peter McGraw Eldar Shafir Alex Todorov	3) Why group decision making is robust Brighton, Henry Olsson, Henrik	4) Emotional Determinants of Altruistic Punishment Rob Nelissen Marcel Zeelenberg
4) Probabilistic Computing with Words in application to decision making; Andrzej Piegat	4) Time pressure, cues and risk-taking Martin Kocher Stefan Trautmann 	4) Combining Advice and Experience: How People Use Advice to Make Good Choices Guido Biele Jörg Rieskamp Richard Gonzalez	

Probability, 13:30–15:30, room 308

Empirical links between logical consistency and accuracy of beliefs: Survey of AEA attendees

Nathan Berg, Guido Biele, Gerd Gigerenzer
Max Planck Institute for Human Development, Berlin

We surveyed 133 attendees at the 2006 meeting of the American Economic Association (AEA) regarding prostate cancer screening using the Prostate Specific Antigen (PSA) test. The survey targeted male economists, aged 40 and up, and elicited beliefs about the incidence of prostate cancer, the mortality rate from prostate cancer, the sensitivity of the PSA test, and the posterior probability of cancer given a positive PSA test. Comparisons of elicited beliefs against point estimates published in the medical literature provided a measure of each individual's accuracy of beliefs. Irrespective of accuracy, beliefs were elicited in a way that also measured individual variation in logical consistency as measured by deviations from a restriction imposed by Bayes Rule. Respondents had the opportunity to be wildly inaccurate yet perfectly Bayesian. Contrary to the hypothesis that different normative measures of decision-making performance should be linked, these data revealed negative or no correlation. Logical consistency is also a very weak predictor of actual PSA decisions reported by survey respondents. This raises questions about whether deviations from Bayesian norms have meaningful economic consequences.

TUESDAY

Probability, 13:30–15:30, room 308

Fixed Pie or Fixed Variable? Comparing Methods of Elicitation of Probability Distributions

David V. Budescu, Ali Abbas, Hsiu-Ting Yu, Ryan Haggerty,
Ryan Mulligan, Rola Gu
University of Illinois

When encoding experts' subjective probabilities regarding continuous variables (e.g., the high temperature at a particular location next week), one can ask the experts to specify (cumulative) probabilities for a fixed set of values (e.g. what is the probability that the high temperature next week will not exceed 25, 27, 29, etc. degrees ?), or specify values that correspond to particular (cumulative) probabilities (e.g. what is the temperature such that it will exceed 50%, 70%, 80%, etc. of the high temperatures next week?). We report results of an online experiment designed to compare the probability distributions resulting from the two elicitation methods along on a variety of criteria. Subjects estimated probability distributions for future financial and weather events using the two methods. The vast majority of the distributions elicited by the two methods were sensible, reasonable and consistent with each other. However, a variety of results favor the method involving assessment of probabilities for pre-determined values: These judgments are more consistent, faster and are better fitted by Beta distributions. In addition a majority of the subjects considered them simpler and more natural and, consequently, prefer this method.

TUESDAY

Probability, 13:30–15:30, room 308

Uniform Distributions, Uniform Assumptions, or None of the Above: What do Subjects Really Assume About Probability Distributions?

Sari Carp

Norwegian Central Securities Depository

Christina Fang, Zur Shapira

New York University

TUESDAY

Much research in decision making demonstrates failures of rationality which are predicated on subjects' assumptions about underlying probability distributions. Often subjects are not specifically examined with respect to these assumptions, which researchers simply take for granted. However, if researchers' beliefs about subjects' probability distributions are incorrect, then the conclusions of this body of work may be drawn into question. What appears to be irrational behavior may actually be rational given distributional perceptions other than those which respondents are presumed to have.

For example, Samuelson and Bazerman (1985) document solutions to the "Acquiring a Company" problem. This puzzle challenges subjects to determine an offer price for a company, based on the uncertain outcome of an oil exploration project. The rational price is zero, but most respondents offer a positive sum. Although the wording of the problem instructs subjects to assume a uniform probability distribution ("outcomes are equally likely"), this piece of information is one among many items and the authors do not confirm that respondents have absorbed and applied it. Under different probability distributions, a positive offer price may turn out to be rational.

In this paper, we seek to verify subjects' assumptions about underlying probability distributions by testing a form of the "Acquiring a Company" problem in which we specifically ask respondents to identify their distributional beliefs. We employ two versions, one devoid of statements about the probability distribution, and the other containing the same wording used by Samuelson and Bazerman. We also investigate whether these assumptions, as well as subjects' assessments of the optimal offer to make on the company, change after respondents know whether their offers have been accepted. Preliminary results from the "uninformed" version indicate that only 33% of the respondents hypothesize a uniform distribution *a priori*. A further 42% envisage distributions which are symmetric but not uniform; 17%, distributions skewed to the left (low values); and 8%, distributions skewed to the right (high values). We obtain similar results even when we direct subjects to assume a uniform distribution, suggesting that they either ignore

or do not understand this instruction. Once told that their offers have been accepted, 71% of respondents modify their distributional assumptions, all but 6% skewing their distributions further to the left. They also revise downward their estimates of the correct offer price, in a manner roughly proportionate to the degree of increased leftward skew in the probability distributions.

We are currently extending our analysis of distributional assumptions to cases of differing degrees of complexity. The “Acquiring a Company” game is the most complex we examine, while a simple lottery is the least. We hypothesize that as problems become more ambiguous, subjects will make more complicated “ignorance prior” assumptions about probability distributions. The distribution assumed in the lottery case, for example, is more likely to be uniform than in the “Acquiring a Company” case.

Probability, 13:30–15:30, room 308

Partial Reinforcement Extinction Effect: Boundaries and limitations

Guy Hochman, Ido Erev

Technion – Israel Institute of Technology

The *partial reinforcement extinction effect* (PREE) is one of the best examples of a basic behavioral phenomenon, detected in the laboratory, with nontrivial practical implications. It implies that learning under partial reinforcements is more robust than learning under full reinforcements. Unfortunately, field studies fail to support this interesting prediction. The current research tries to offer a resolution for this apparent inconsistency between basic laboratory and field research. We believe it stems from an insufficient account of the *payoff variability effect*, a theoretically similar but practically contradicting effect. That is, outcome variability has two contradicting effects: payoff variability effect (a negative effect which slows training) and PREE (a positive effect, which slows extinction). Thus, a better understanding of the relative importance of these two contradicting effects would facilitate a better use of reinforcement schedules in order to maximize people's performances. Four experiments were designed to address this goal. The first experiment replicates the classical demonstration of the PREE. In addition, it demonstrates that the effect of reinforcement schedule is highly sensitive to the evaluation criteria. The remaining experiments compare alternative hypotheses concerning the conditions that determine the relative importance of the two effects. The results support a "conditional confusion" hypothesis: Subjects tend to prefer the behavior that led to the best outcome in similar conditions in the past. This finding implies that partial reinforcements are effective only when the advantage of the promoted behavior is large enough; that is when there is a distinct difference between the attractiveness of the promoted and the alternative behaviors, in favor of the promoted behavior. Thus, the conditional confusion hypothesis refines the proposed solution: it implies a cognitive mechanism that produces the two contradicting effects of outcome variability. These results can be captured with a simple learning model that assumes conditional probability matching. This model highlights the boundaries of the overall effect of the reinforcement schedule.

TUESDAY

Choice, 13:30–15:30, room 307

An Examination of the Proportional Difference Model to Describe and Predict Health Decisions

Claudia González-Vallejo

Ohio University, Athens

Etienne Mullet

École Pratique des Hautes Études, Toulouse

Maria T. Muñoz Sastre

University of Toulouse

Jason Harman

Ohio University, Athens

The Stochastic Difference Model (González-Vallejo, 2002) was proposed as a stochastic choice model that describes how individual make trade-offs between non-comparable attributes. The model has been successfully applied to decisions under risk, and more recently applied to decisions regarding consumer products (González-Vallejo & Reid, 2006). The proportional difference rule within this model (called PD) assumes that options are compared attribute-wise so that proportional advantages that favor an option in a given dimension move the decision maker towards that option, whereas proportional disadvantages have the opposite effect. The present study tested the validity of the PD rule to describe and predict choice patterns for choices dealing with treatments for two illnesses. The dimensions defining the treatments were probability of survival and probability of side-effects. Results showed strong support for the models' PD assumption and it is the first application of this model to health decisions.

Choice, 13:30–15:30, room 307

Probabilistic cognitive models of decision making under risk: Comparing the decision field theory with the proportional difference model

Jörg Rieskamp

Max Planck Institute for Human Development, Berlin

Benjamin Scheibehenne

Max Planck Institute for Human Development, Berlin

Claudia González-Vallejo

Ohio University, Athens

TUESDAY

Past research has developed a variety of probabilistic choice models to account for the probabilistic character of choice behavior that violates the standard economic view of expected utility maximization. The goal of the present work is to test two successful probabilistic choice models, namely the decision field theory (Busemeyer & Townsend, 1993) and the proportional difference model (Gonzalez-Vallejo, 2002) rigorously against each other. According to *decision field theory*, choices are the result of a dynamic process during which the decision maker compares options attribute-wise. The *proportional difference model* (Gonzalez-Vallejo 2002) also assumes an attribute-wise comparison process where proportional advantages and disadvantages are determined that are integrated to form an overall evaluation. In a first experiment 36 participants repeatedly chose between 180 pairs of gambles. This data was used to estimate the models' free parameters. In a second study predictions of the models were determined on the basis of the estimated parameters of the first study. When fitted to the data both models did equally well in describing the choice behavior. Yet in the crucial model generalization study decision field theory clearly outperformed the proportional difference model in predicting people's choices.

Choice, 13:30–15:30, room 307

Reaching for the ideal - The role of ideal alternatives in decision-making

Neda Kerimi, Henry Montgomery

Stockholm University,

Dan Zakay

Tel Aviv University

An experiment involving 45 psychology students as participants made it possible to identify strategies used for quickly finding a promising alternative. It was hypothesised that as the most promising alternative, the alternative that is most similar to participant's ideal alternative, would be chosen. For this purpose, participant's ideal alternatives were identified. Based on this ideal alternative a computer application generated and presented five alternatives to the participants. One alternative had the shortest Euclidean distance and another alternative had the shortest *weighted* Euclidean distance to participant's ideal alternative. Two alternatives each applied a non-compensatory rule. One alternative did not apply any rule. Additionally the alternatives were equal in terms of multi-attribute utility. It was found that choices as well as preference ratings often could be predicted from a pattern matching heuristic, which was based on the agreement between the rank-order of attribute values and the ranks of the importance weights of the attributes. It was also shown theoretically that this strategy coincides with finding an alternative that is closest to an ideal alternative in terms of shortest weighted Euclidean distance. Think aloud data gave additional support for our conclusions.

Choice, 13:30–15:30, room 307

The advantages first principle: A strategy for the selection of alternatives based on positive consequences and the role of risk-defusing operators in the decision process

Huber, O.W., Bär, A. S., & Huber, O.
Department of Psychology, University of Fribourg

An experiment (120 subjects) investigates the hypothesis that in decisions with multiple alternatives, DMs select risky alternatives based on desirable advantages, i.e. prospective positive consequences. We expect subjects first to inspect positive consequences and pre-select alternatives with superior ones. Only for those, we expect subjects to investigate risks and finally to invent and elaborate Risk-defusing operators (RDOs), measures actively invented by the DM additionally to an existing alternative in order to defuse the risk involved. This phased strategy allows effective risk control while reducing cognitive costs compared to complete information search. Subjects subsequently decide in two quasi-naturalistic scenarios. A short initial instruction depicts the decision scenario and labels of 8 risky alternatives. Then, subjects can ask questions and receive standardized matching answers. Answers regarding positive consequences are varied (4 alternatives with superior positive consequences, 4 with inferior ones). We manipulated type (positive vs. negative) and amount (one item of information displayed for no vs. 4 alternatives) displayed initially as to model asymmetric initial information conditions often prevalent in real decisions. Results confirmed the hypotheses: 84.6% of the subjects first inspected positive consequences, and 74.5% subsequently negative consequences, 38% finally RDOs. Only 10% eliminated alternatives based on negative consequences.

TUESDAY

Social Context, 13:30–15:30, room 340

How to Learn Good Cue Orders: When Social Learning Benefits Fast and Frugal Heuristics

Rocio Garcia-Retamero

University of Granada and Max Planck Institute for Human Development, Berlin

Masanori Takezawa

Tilburg University and Max Planck Institute for Human Development, Berlin

Gerd Gigerenzer

Max Planck Institute for Human Development, Berlin

In everyday life, there are myriad potential cues that can be used to make decisions. It is impossible to keep track of them all and how they relate to the criterion we want to predict. Furthermore, people have difficulties in learning good cue orderings even within the small range of cues available in the experiments (Dieckmann & Todd, 2004). We hypothesize that exchanging social information can help boundedly rational individuals to solve the problem of learning good cue orders without impairing speed and frugality in decision making. To test this hypothesis, we run two experiments. A two alternative-forced choice task was used in which participants could search for information about cues describing the alternatives and made inferences in blocks of trials. After each trial block, they ranked cues. The task was conducted in groups of 5 individuals. Results in the experiments showed that when participants exchange information about the relevant cues in the environment with other group members, they made faster and more accurate decisions than when participants just learn individually. Participants in social conditions were also more frugal, that is, they searched fewer of the available cues, but they search for the most valid ones. More important, when participants exchange information socially, they learn cue orderings that are highly correlated with the actual cue validities.

TUESDAY

Social Context, 13:30–15:30, room 340

Forms of trust: Interrelations and dissociations

Nigel Harvey, Matt Twyman and Clare Harries
University College London

According to Siegrist et al's (2003) two-route model of trust in risk communicators, people use history of the source's advice quality to assign their trust in its competence and use their estimate of the similarity between the source's values and their own to assign their trust in its motives. The latter form of trust dominates the former: thus people are likely to treat errors in advice charitably when they share values with a source. The two types of trust merge into a final common pathway to produce intention to cooperate with the source.

Our experiments supported the model in some ways: stated trust in a source correlated with degree to which values were judged to be shared with it; trust in motives dominated trust in competence. However, in other ways, they did not. Because of the final common pathway, the model predicts that cooperative behaviors (stated trust in the source, taking advice from the source) should vary together. However, we found a double dissociation between stated trust and trust revealed via advice-taking behavior: in one study, the former differed across source type but the latter did not whereas, in another study, the reverse pattern obtained.

TUESDAY

Social Context, 13:30–15:30, room 340

Effects of Consistency on Herding in a Simulated Financial Market

Maria Andersson, Ted Martin Hedeström, Tommy Gärling
Department of Psychology, Goteborg University

TUESDAY

Herding in financial markets refers to the phenomenon that investors follow each other. Previous research has demonstrated an influence of the majority. Another important factor that we investigate here is consistency among investors in a herd. In simulations of a financial market, participants predicted prices of a stock in 50 trials. Consistency was varied in two ways: across herd members and across trials. Participants received information about a current price that was randomly sampled from a normal distribution. In addition, they received information about randomly generated predictions ostensibly made by five other, fictitious participants. In three conditions, the fictitious participants' predictions were highly correlated; in three other conditions they were uncorrelated. The variance across trials of each fictitious participant's predictions was low, medium or high. Participants' predictions were significantly more influenced by the fictitious participants' predictions when these were correlated. This was the case regardless of whether the fictitious participants' predictions were more inaccurate (high variance across trials) or less inaccurate (low variance across trials).

Social Context, 13:30–15:30, room 340

Effects of terrorist attacks on tourists' risk perception

Wibecke Brun, Svein Larsen, Katharina Wolff
Faculty of Psychology, University of Bergen

Understanding human risk perception is increasingly important in the current political situation with massive media focus regarding new and scary hazards resulting from political instability & “the war against terror”. The aim of this study was to explore possible changes in perceived risk attributed to travel destinations as a function of various political events, such as salient terrorist attacks. In a quasi-experimental design, risk perception in relation to different aspects of being a tourist was measured. Two data collections were conducted during the summer of 2005, with tourists receiving basically the same questionnaire. Data collected after the terrorist attacks showed significantly higher risk perceptions regarding relevant (terror associated) travel destinations compared to ratings provided from tourists before the attacks. Tourists also worried significantly more about terrorist attacks after the terror bombings. Interestingly, when judging perceived risk of terrorism associated with subjects' *current holiday*, no differences were found between data collected before and after the terrorist attacks. Our findings are discussed with respect to a focussing bias. The results suggest a need for further studies of cognitive biases on both acute reactions as well as more long-term effects of war and political instability on travel desires and risk perceptions.

TUESDAY

Multiple Options in the Past and the Present: The Impact on Inaction Inertia

Marijke van Putten, Marcel Zeelenberg,
Tilburg University
Eric van Dijk
Leiden University

The likelihood of buying a sweater with a 10% discount drops substantially after a 50% discount on the sweater was previously missed. This influence of missed opportunities on current decisions is called inaction inertia. The more attractive the missed opportunity, the lower the likelihood to act on a current opportunity. We predicted less influence of the difference in attractiveness with a missed opportunity when multiple options are currently available. Three Experiments tested this prediction. First, the influence of multiple current opportunities was manipulated (Exp. 1 & 2). The results show an effect of difference in attractiveness when one opportunity is considered (=inaction inertia), but this effect disappeared when multiple options were considered. Second, the influence of multiple missed opportunities was manipulated (Exp. 3). The results again show an effect of difference in attractiveness when one opportunity is considered. This effect disappeared when multiple options were missed, because action likelihood was low even when the difference in attractiveness with the missed opportunities was small. These findings show the boundary conditions of the inaction inertia effect and support the reasoning that multiple options can enhance and reduce the influence of missed opportunities on current decision to act.

Exogenous and Endogenous Emotions: Prosocial Effects of Shame

Ilona E. de Hooge, Seger M. Breugelmans & Marcel Zeelenberg
Tilburg University

Emotions are important in decision making. Emotional influences on decisions that are unrelated to the current decision and external to the actual goal-striving process are called exogenous influences. Exogenous influences are often studied, but they do not reflect functional influences of emotions. Endogenous influences are related to the decision at hand and part of the goal striving process. To understand the function of emotions in decision-making, we claim that it is necessary to study endogenous and not exogenous influences of emotions. We studied the effects of exogenous and endogenous shame, a moral emotion assumed to work as a commitment device motivating prosocial behavior. Because these prosocial effects directly reflect the function of shame, we predicted that these effects can only be shown endogenously. We also expected these effects to be moderated by the Social Value Orientation of the decision maker, such that the effects are stronger for proselves than for prosocials. We conducted four experiments with three different emotion inductions and two different measures for prosocial behavior. In all experiments, endogenous shame motivated prosocial behavior but exogenous shame did not. Thus, emotions should be studied endogenously if we are to truly understand their impact on decision-making.

TUESDAY

The breakdown of compassion: Affect, images and donations to children in need

Daniel Västfjäll, Ellen Peters & Paul Slovic
Decision Research, Eugene, Oregon

TUESDAY

How do we value the saving of human life? In a logical world the value of saving N lives is N times the value of saving one life. Some recent research has shown that the value of life-saving may follow the same sort of psychophysical function that characterizes our diminishing sensitivity to a wide range of perceptual and cognitive entities (Fetherstonhaugh et al. 1997). Such functions suggests that the value of saving one life is enormous when it is the first, or only, life saved, but diminishes as the total number of lives saved increases. Thus, psychologically, the difference between saving 0 and saving 1 life is great, but we will likely not see a difference between the value of saving 87 lives and saving 88 lives if these prospects are presented to us separately (Bartels, 2006).

Numerical representations of human lives do not necessarily convey the importance of those lives. All too often the numbers represent “dry statistics” that lack feeling and fail to motivate action (Slovic & Slovic, 2004). People are much more willing to aid identified individuals than unidentified or statistical victims (Jenni & Loewenstein, 1997). Kogut and Ritov (2005) hypothesized that the processing of information related to a single victim might be fundamentally different from the processing of information concerning a group of victims. They found that people will tend to feel more distress and compassion when considering an identified single victim than when considering a group of victims, even if identified, resulting in a greater willingness to help the identified individual victim. Building on these findings we decided to test whether these disjunction effects would occur as well for donations to starving children.

Method. In the present studies we present participants with one of two scenarios in where they are asked to donate money to help save a child. In the single condition, participants read and learn about one child, Rokia, that their donations will go to. In the combined condition, participants learn that their donation will go to one of two children, Rokia or Moussa. We expect that affect and willingness-to donate will be higher in the single condition. Two different versions were tested; in first version the instructions was that the money either will go to one or the other child (disjunction condition), in the second version the instruction was that the money will go to both children (conjunction condition).

Affect, 13:30–15:30, room 341

Results. In both hypothetical ($n = 208$) and real donations ($n = 94$), we see that donations are higher for the single conditions. Affect was least positive in the combined condition. The affect ratings mediated the relationship between condition and donations.

Conclusions. These studies, together with the studies showing the disjunction effect, suggest that our capacity to feel is limited. To the extent that valuation of life-saving depends on feelings (the affect heuristic) it might follow a function where the emotion or affective feeling is greatest at $N = 1$ but begins to disintegrate at $N = 2$ and collapses at some higher value of N that becomes simply “a statistic.” These findings have important implications for public policy and relief efforts.

TUESDAY

Affect, 13:30–15:30, room 341

Moderating Scope Neglect and Affect in Humanitarian Aid Decisions

Michaela Huber & Leaf Van Boven
University of Colorado, Boulder

We demonstrate three factors that moderate scope neglect and the weight of affect in decisions about allocating humanitarian aid. In one study, participants neglected information about humanitarian crises' deadliness, choosing to write a letter calling attention to a crisis that aroused immediate affect—a tendency eliminated by postponing the decision. In two other studies, we demonstrate that analytical reasoning as well as thinking about the influence of deadliness estimates and affect on allocation decisions moderate scope neglect and affect. Encouraging analytical rather than affective processing by providing participants with factual summaries of two crises increased the weight of scope (as measured by participants' deadliness estimates for the crises) and decreased the weight of affect towards the crises in aid allocation decisions. Similarly, thinking about the influence that deadliness estimates and affective reactions *should* have on allocation decisions also increased the weight of deadliness estimates and decreased the weight of affect when predicting participants' allocation decisions. In sum, postponing decisions, analytical reasoning, and thinking about the influence that deadliness estimates and affect should have on allocation decisions increases the weighting of scope and decreases the weighting of affect when people make aid allocation decisions to mitigate humanitarian suffering.

TUESDAY

Context effects in time series forecasting: A possible explanation of trend damping?

Stian Reimers

University College London.

Nigel Harvey

University College London

In forecasting, people often make predictions of future performance based on a set of existing trends across time. When participants make predictions like this, they often show *trend damping*: they underestimate future values on increasing trends, and overestimate future values on decreasing trends. However, in most existing experiments, participants have made forecasts for a number of trend functions with different slopes. It is therefore possible that trend damping is a context effect where participants adjust their estimates towards some central tendency of the functions they have already seen. We test this by manipulating the context between subjects. In Experiment 1, we used positive power-law trends that varied in their acceleration (A1, smallest acceleration – A8, largest acceleration). In the Low Context condition, participants saw A1, A2, A3, A4, A6; in the High Context condition, participants saw A4, A5, A6, A7, A8. There were also two within-subjects noise conditions (Low/High). Although trend damping was found in both conditions, for A4 and A6 it was larger in the Low Context condition than in the High Context condition. Similar results were found using linear functions that varied in their gradient (Experiment 2). This suggests that trend damping has a context-sensitive component.

TUESDAY

Probability, 16:00–18:00, room 308

Solving Complex Legal Cases Using the Intuitive System

Andreas Glöckner

Max Planck Institute for Research on Collective Goods, Bonn

TUESDAY

Two major challenges in legal decision making arise from the usually high complexity of the cases and from the high level of uncertainty caused by incomplete or missing information. In most cases it is not possible to apply Bayesian probability calculus, and legal standards prohibit the application of fast-and-frugal heuristics. Based on a connectionist approach to decision making, Simon (2004) argued that decision making in complex decisions is governed by coherence-based reasoning. The underlying parallel constraint satisfaction processes, which belong to the intuitive system, are unconscious and enable individuals to quickly integrate huge amounts of information (Glöckner & Betsch, 2007). Elaborating on this approach, two studies were conducted in which individuals were presented with a complex legal case. In the first study, the standard of proof and the predictive power of evidence were manipulated, and in the second study, the standard of proof and the framing of the case (arbitration vs. criminal case) were. The data replicate and extend findings from Simon (2004), and support the parallel constraint satisfaction approach to decision making. Additionally, it could be shown that U.S. official jury instructions influence the conviction rate in the intended direction.

Probability, 16:00–18:00, room 308

**Percentage-based probability inferences:
The role of computational difficulty
and anaphoric references
in eliciting Bayesian judgements**

Gaëlle Villejoubert, Jean-François Bonnefon

Laboratoire CLLE-LTC – CNRS UMR 5263 – Université de Toulouse (UTM)

Recent studies have documented that accurate revision of probability judgments is facilitated by tasks fostering a nested representation of the different pieces of information required to compute a posterior probability. Authors generally agree, however, that facilitation cannot occur when all the information is presented in a percentage format, assuming that calculations involving percentages are both too complex and presented in a format that cannot be handled by our naturally-evolved cognitive algorithms. This research aimed to challenge these assumptions. We proposed that percentage-based tasks previously used required highly difficult computations and were too ambiguous to elicit nested representations. We examined the role of anaphoric references in facilitating nested representations and the role of computational difficulty on the production of accurate judgements in two experiments. Results confirmed that performance was significantly improved when the task presented unambiguous anaphoric references and required simple computations. Results also revealed impressive transfer effects on more difficult and ambiguous tasks. This research thus provides compelling evidence that the difficulties observed in solving percentage-based tasks reside in the tasks used rather than in general human cognitive limitations.

TUESDAY

Probabilistic Computing with Words in application to decision making

Andrzej Piegat

Faculty of Economic Sciences and Management, University of Szczecin
Faculty of Computer Sciences and Information Systems,
Szczecin University of Technology

TUESDAY

The optimal decision can be made if all knowledge about the problem is taken into account. This knowledge contains usually both numerical data (e.g.: $x_1=13.31$, $x_2=15.51$, ...) and linguistic data (e.g.: income is high, probability is low, etc.). Methods of classical mathematics are able to process only numerical data but can not process linguistic data. Therefore they lose a part of useful information and their results are usually not optimal. The paper presents a probabilistic method of Computing with Words that is based on centers of gravity of probabilistic models of words. The method was shown in action of solving the 2-business problem. The author did not meet the solution of this problem in the literature. Its essence is given below.

I have a certain sum of money. I can invest it either in business B1 or B2. I had investigated both businesses and came to following conclusions. Business B1 can give from 0 to 10 million zloty. Probability of the income near 10 m. is high. Business B2 can give from 0 to 20 m. and the probability of income near 20 m. is low. Which business should I choose?

Choice, 16:00–18:00, room 307

Reference Points Effects on Tradeoffs between Job Attributes

Zur Shapira

Stern School of Business
New York University

Making tradeoffs is needed when choosing among multi-attribute alternatives, but there are not many empirical studies that examined how people make tradeoffs. This paper reports how active job seekers made tradeoff judgments between attributes of hypothetical jobs. Four different job attributes were identified by interviewing MBA students who were seeking jobs in a pilot study. To examine the effects of different reference points on tradeoffs, subjects initially described, on graphical rating scales their ideal, realistic and worse jobs in terms of the above attributes. They then made bilateral tradeoffs between each of the above attributes from each of the three hypothetical reference jobs. The raw tradeoffs judgments were then used to derive a set of tradeoff coefficients for each reference job, for each subject. Attribute importance was determined from those tradeoff coefficients and was then tested against other measures of importance, such as ranking. In addition, those importance measures were then correlated with subjects' preferences among hypothetical (mixed) jobs that were "offered" to them. The results are discussed in terms of the sensitivity of the elicitation procedure to the effects of reference points and reference jobs, and the feasibility of measuring overall preference order among job attributes.

TUESDAY

Choice, 16:00–18:00, room 307

More is Most for Experts: The Influence of Expertise and Assortment Size on Satisfaction

Yvette M. J. van Osch, Mireille E. W. Jans,
Wouter Westerman & Marcel Zeelenberg
Tilburg University

Increasing the size of the assortment from which consumers can select a product has been shown to have a negative impact on the satisfaction with respect to both the outcome and process of choice (Iyengar & Lepper, 2000). We examined whether this assortment size effect also occurs for experts. One of the effects of expertise is that it influences the ease with which products are evaluated and classified (West, Brown & Hoch, 1996; Alba & Hutchinson, 1987). Hence, experts should have fewer problems with increasing assortments, and can be argued to even benefit from this. In five studies we investigated this hypothesized moderating influence of expertise on the effect of choice set size on outcome and process satisfaction. The design of our studies was always 2 (Choice set: large vs. small) $\times$ 2 (Expertise: high vs. low). Together, the results from our five studies suggest that, although many people prefer to choose a product from a large choice set, they are not necessarily more satisfied with the outcome of the choice process. We will discuss these results in light of recent developments in consumer choice and address possible underlying mechanisms for this effect.

TUESDAY

Trouble with the gamble as decision metaphor (or how an air purifier is not like \$300).

A. Peter McGraw

University of Colorado, Boulder

Eldar Shafir and Alexander Todorov

Princeton University

Most risky decisions that people face do not involve the prospects of winning or losing money, yet decision theorists frequently use monetary gambles to study judgment and choice. We call into question the propriety of using monetary gambles to study everyday choice because gambles with monetary outcomes are valued differently than gambles with non-monetary outcomes. When presented a monetary gamble, people perceive strictly numeric information (probability and dollar amount) that can be multiplied to arrive at a numeric notion of value. However, when presented a gamble with non-monetary outcomes, people perceive an outcome that is not numeric and cannot readily be multiplied by probability. We demonstrate that, as a result, valuation judgments for non-monetary gambles are less sensitive to probabilities than monetary gambles, which can result in preference reversals.

Time pressure, cues and risk-taking

Martin G. Kocher

University of Amsterdam and University of Innsbruck

Stefan Trautmann

University of Rotterdam

TUESDAY

Even though many decisions in economics and finance have to be made under severe time pressure, the effects of time pressure are largely unexplored territory in these fields. Our study addresses two sets of research questions: (1) is there an effect of time pressure on risk-taking and decision-making in a variety of binary lottery choices, and (2) how does the availability of information interact with the time variable?

We conduct fully incentivized laboratory experiments in a 2x2 factorial between-subjects design with 168 participants. The two factors are (1) the amount of time pressure (a very tight time limit of a few seconds versus a very loose time limit), and (2) the availability of the information on the expected value for each lottery on the decision screen.

Our results provide several interesting conclusions: (1) there does not seem to be any important difference in risky decisions between different levels of time pressure in the gain domain; (2) however, as soon as losses are possible, subjects become much more loss averse under time pressure than without time pressure; (3) the common ration effect and regret effects vanish under time pressure because there subjects avoid the gamble with the maximum loss.

Strategies for Combining Opinions

Jack Soll, Rick Larrick, Al Mannes
Duke University, Fuqua School of Business

We compare three basic strategies for combining quantitative opinions from n judges. These include choosing the opinion of a single judge, averaging all judges' opinions, and applying a hybrid choosing-averaging strategy. The hybrid strategy involves ranking judges, selecting the top k out of n , and averaging the opinions of the chosen k . The relative effectiveness of the three strategies depends on the environment, as described by the PAR Model (Soll & Larrick, 2007). The three components of the model refer to (1) the *probability* that more accurate judges can be successfully discriminated from less accurate ones; (2) the dispersion in *accuracy* across judges; and (3) the *redundancy* among judges in the sense of shared bias and error. We are especially interested in identifying robust strategies that perform well across environments. Although choosing and averaging are at times highly effective, they are not as robust as certain hybrid strategies (e.g., average top 2 out of 3). In addition to describing environments and assessing the performance of strategies, we also investigate which strategies people use and whether people effectively adapt their strategies effectively to the environment. In examining realistic strategies and behavior in tandem, we hope to develop prescriptions to help people better make use of knowledge that is distributed across individuals.

Receiving Other Peoples' Advice on Matters of Taste: The Relevance of Similarity-based and Popularity-based Opinions to one's Choices

Ilan Yaniv, Maxim Milyavsky Shoham Choshen
Department of Psychology
Hebrew University of Jerusalem

TUESDAY

We follow the theoretical distinction between beliefs and preferences (tastes) by suggesting a distinction between two kinds of advice. Advice on matters of belief concerns objective facts or external events whose truth can be assessed. In contrast, advice on matters of taste refers to private experiences and involves subjective estimates of the attractiveness of outcomes. We investigated the informational value of advice on matters of taste while considering both normative and descriptive issues. In three experiments participants listened to music pieces in a lab setting and stated their preferences about them. The experiments delineate the influence of advice on behavior and the benefits that could be obtained from it. We observed an overwhelming tendency to follow the opinion of a similar advisor when it is pitted against an aggregate opinion (the majority or average opinion). In addition, we conducted a simulation that assessed the normative accuracy of a variety of similarity-based and popularity-based forms of advice. It appears that people under-appreciate the value of the aggregate opinion. The theoretical framework and results suggest corrective procedures in decision making and sheds light on the relevance of other people's advice to one's decisions.

Why group decision making is robust

Henry Brighton and Henrik Olsson

Center for Adaptive Behavior and Cognition

Max Planck Institute for Human Development, Berlin

When making inferences, the performance of a group can often exceed the performance of an individual. For example, a majority vote among the members of the group will typically lead to more robust predictions than any one individual. Although the “wisdom of crowds” is largely uncontroversial, very little attention has been given to why this may be the case. We focus on the “why” question, and draw on a large body of theoretical work in machine learning and pattern recognition to answer this question. In both groups of humans and groups of learning algorithms the effectiveness of inferences can be measured in terms of predictive accuracy. Crucially, predictive accuracy is a statistical estimate which can be decomposed into two terms: bias and variance. The bias term is the mean difference between the inferences made and the truth. The variance term is the squared deviation about this mean. A group will tend to achieve higher predictive accuracy as a result of reducing variance. Our discussion will center on methods for group decision making, conditions under which they will be effective, and why this is the case. By examining the statistical basis for group decision making, we move beyond previous work.

TUESDAY

Combining Advice and Experience: How People Use Advice to Make Good Choices

Guido Biele, Jörg Rieskamp

Max Planck Institute for Human Development, Berlin

Richard Gonzalez

University of Michigan, Ann Arbor

TUESDAY

Decision making often takes place in social environments, where other actors influence individuals' decisions. We examine how advice taking interacts with individual learning when decision makers repeatedly choose from among uncertain options. One individual learning model and four models of advice–reinforcement combination (ARC) were proposed. The models were tested in two experiments where participants received advice before choosing in multi-armed-bandit tasks. We found that advice receivers adhered to advice, and that good advice could improve the performance of advice receivers, compared to independent decision makers. The learning process was better described by the ARC models than by individual learning. The best social learning model was ARC-Reinforcement, which assumes higher reinforcement for payoffs from recommended choice options. ARC-Reinforcement correctly predicted that advice receivers would first adhere to advice, then explore other options, and finally choose as advised again; the model also predicted that adherence would be higher after good advice than after bad.

Political Behavior, 16:00–18:00, room 341

Intentions, Plans, and the Subtle Psychology of Voter Turnout

Daniel G. Goldstein

London Business School

Kosuke Imai

Princeton University

Anja S. Göritz

University of Erlangen-Nuremberg

Randomized experiments conducted during the 2006 US midterm election and the 2005 German federal election were analyzed in order to estimate the voter turnout effects of two simple treatments: asking people if and how they intend to vote, that is, that is, of mere measurement and implementation intentions treatments. We estimate effects when treatments are administered immediately or months before an election.

TUESDAY

Political Behavior, 16:00–18:00, room 341

The effect of voting on political attitudes: evidence from German general elections

Stefan T. Trautmann,

Econometric Institute, Erasmus University Rotterdam

TUESDAY

This paper discusses two studies of the effect of voting on political attitudes using data from the German general election in 2005. Because of the possible endogeneity of the voting decision with respect to attitudes, voting has been instrumented by the eligibility of 12th grade high school students to vote. The studies find that supporters *lower* their attitudes toward the government after voting compared to non-voters and non-supporters. The result stands in contrast to recent evidence from the U.S that people's attitudes about a government they support become more positive after voting, which has been explained by cognitive dissonance. A *customer theory* of voting is proposed to account for both effects: voting reveals a person as a customer of a political program. In political systems that ensure that voters obtain a program close to what they have voted for, this leads to positive attitudes by the revealed supporters. In systems that lead to coalitions and consensus, the voter is less likely to obtain the political program she has voted for and will be less satisfied as a customer of a party's product. Non-voters did not commit to a program and will not feel particular satisfaction or dissatisfaction as costumers.

Political Behavior, 16:00–18:00, room 341

Mistaken Identity: Social Identity as a Specious Cue for Decision Making

Craig R. Fox

UCLA Anderson School

Erica Carranza & Michael Morris

Columbia Business School

Four studies demonstrate that social identity can influence decisions even when the salient identity is only superficially related to the available options and not at all diagnostic of preferences. In Study 1 Republicans who supported Bush were more likely to favor a “conservative” (less risky) gamble after they had been asked about their political identity, while there was no such effect among Democrats who supported Kerry. Study 2 replicated and extended this effect to investment choices. Study 3 found that the effect was significantly diminished in the absence of identity-congruent labels, suggesting that this phenomenon is not driven by inherent attributes made accessible by the identity. Finally, Study 4 shows that the attraction to identity-congruent labels persists when option labels are reversed (so that the more risky option is labeled “conservative”) and does not diminish when participants are asked to elaborate on ways in which the labeled option is “conservative.” We argue that these results are consistent with a top-down associative process in which social identity is used as an (often specious) cue to guide the construction of preference.

TUESDAY

Emotional Determinants of Altruistic Punishment

Rob Nelissen & Marcel Zeelenberg

University of Tilburg

People punish norm violations, even if punishment is costly and yields no benefits. This phenomenon has been labelled altruistic punishment. Feelings of anger towards the norm violator are assumed to motivate altruistic punishment. In three studies we investigated whether altruistic punishment can also be motivated by guilt. Participants witnessed an unfair division between two other individuals, and subsequently had the opportunity to punish the proposer. Study 1 indicated that norm violations are punished if participants feel either guilty (over not punishing), or angry (towards the proposer), or both. Punishment was low only in case neither emotion occurred. In Studies 2 and 3, the extent to which unfair offers evoked either feelings of anger and/or guilt were independently manipulated. Again, we found that norm-violations only remain unsanctioned if neither of both emotions was experienced. Taken together, the results show that anger over perceived norm-violations and anticipated guilt over not punishing these violations constitute independent determinants of altruistic sanctions. As such, these results corroborate (regarding the role of anger), modify (since anger was presumed necessary to evoke punishing), and extend (by identifying guilt as an additional determinant) previous findings on the causes of altruistic punishment.

WEDNESDAY 10:30-12:30		AMBIGUITY	DELAYED OUTCOMES	JUSTICE/GAME THEORY	Medical DM & VARIA
		Ambiguity <i>Chair:</i> Aurelien Baillon <i>Room 307</i> 1) Decisions With Imprecise Probabilities; David V. Budesu Stephen Broomell Robert Lempert Klaus Keller 2) Preference Reversal under Ambiguity; Stefan T. Trautmann, Ferdinand M. Vieider Peter P. Wakker 3) Using Prospect Theory to Analyze Ambiguity in an 'Ellsbergian' Context; Mohammed Abdellaoui Aurelien Baillon Laetitia Placido 4) Ellsberg-type problems are not necessarily equal to Ellsberg's problems; Cherng-Hong Lan Nigel Harvey	Delayed Outcomes <i>Chair:</i> Michal Krawczyk, <i>Room 308</i> 1) Time-Tradeoff Sequences for Quantifying and Visualising the Degree of Time Inconsistency, Using only Pencil and Paper; Arthur Attema, Han Bleichrodt Kirsten I.M. Rohde Peter P. Wakker 2) Intertemporal choice in apes and humans; Jeffrey Stevens Alexandra Rosati Brian Hare Marc Hauser 3) Rate Matters: The Effects of Inter-Consumption Intervals on Satiation and Variety Seeking Behavior; Jeff Galak Justin Kruger George Loewenstein 4) Subjective Evaluation of Delayed Risky Outcomes; Uri Ben Zion Jan Pieter Krahen Tal Shavit	Justice/ game theory (1) <i>Chair:</i> Ilan Fischer <i>Room 206</i> 1) On the rationality of irrational cooperation; Ilan Fischer 2) What kind of risk attracts entrepreneurs?; Artur Domurat Anna Macko 3) Behavior, Fairness, and Satisfaction in a Three-Person Ultimatum Game; Hans-Ruediger Pfister Gisela Böhm 4) Compliance with Rules and Sanctioning in Producer Groups in Poland; Ilona Banaszak Volker Beckmann	Medical DM/Varia <i>Chair:</i> Bethany Weber <i>Room 209</i> 1) Do doctors see what you see? Physicians' and lay people's perceptions of medical outcomes; Vered Rafaely Joachim Meyer Dina Fine-Kushnir Elinor Sabag 2) Does deliberation increase decision quality and the likelihood of informed decision making?; Danielle Timmermans, Matthijs van den Berg Theresa Marteau Elizabeth Dormandy 3) Improving fast and frugal in relation to regression analysis: Test of three models for medical decision making; Lars Backlund Johan Bring Ylva Skånér Lars-Erik Strender 4) The Development of the DASA: A Comprehensive Self-Report Measure of Decision-Making Ability and Style; Chris Dewberry Sunitha Narendran

16:00-18:00	Ambiguity <i>Chair:</i> Aurelien Baillon <i>Room 307</i> 1) A choice-based investigation of beliefs under ambiguity; Aurelien Baillon Laure Cabantous	Delayed Outcomes <i>Chair:</i> Michal Krawczyk <i>Room 308</i> 1) I can't wait! An experiment on preference for timing of risk resolution; Astrid Hopfensitz Michal Krawczyk Frans van Winden	Justice/ game theory <i>Chair:</i> Ilan Fischer <i>Room 206</i> 1) On the rationality of partially rational cooperation: Subjective Expected Relative Similarity as a determinant of cooperation in repeated PD interactions; Ilan Fischer 2) Is Homo Economicus five years old?; Yoella Bereby-Meyer Shelly Rotem	DM & Neural System <i>Chair:</i> Bethany Weber <i>Room 209</i> 1) The neural substrates of probabilistic and intertemporal decision making; Bethany Weber Scott Huettel 2) Different neural systems underlies multiple-cue judgment in humans; Linnea Karlsson Lars Nyberg Peter Juslin Henrik Olsson
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Ambiguity, 10:30–12:30, room 307

Decisions With Imprecise Probabilities: Confronting Models With Data

David V. Budescu, Stephen Broomell

Department of Psychology, University of Illinois

Robert Lempert

RAND Corporation

Klaus Keller

Department of Geoscience, Penn State

We study how Decision Makers (DMs) choose among various actions in the presence of irreducible vague probabilities. We consider an event with unknown (but with known bounds) probability. We manipulate the vagueness of the probability distribution (its lower and upper bounds), and the outcomes associated with the various actions. We compare the ability of several classes of models to predict the choices made by DMs in such instances.

We ran 3 experiments with over 150 subjects who were instructed to choose an action to maximize their payoffs. The DMs choices were compared with predictions from 11 decision models classified in 5 groups based on their assumptions. Their validity was assessed in terms of their Proportional Reduction in Error (beyond chance). Our analysis shows that DMs choices in such cases are systematic and predictable. Two of the best fitting models (Minimax, and its close relative, Maximax Rejoice) highlight the salience of worst case scenarios, and their relevance as “security” levels for many DMs. Another model that obtains good support suggests that DMs treat the visible balls as a random and representative sample of the unobservable ones.

WEDNESDAY

Ambiguity, 10:30–12:30, room 307

Preference Reversal under Ambiguity

Stefan T. Trautmann, Ferdinand M. Vieider, and Peter P. Wakker
Econometric Institute, Erasmus University Rotterdam

Preference reversals are found to occur between preferences for Ellsberg urns elicited through choice and through willingness to pay. Subjects choosing the ambiguous gamble are found to declare a higher valuation for the risky gamble. These reversals are systematic and not attributable to mistakes. No systematic inverse preference reversals occur. We also find a gender effect for ambiguity aversion, with females being more ambiguity averse than males. We propose a theory which explains the preference reversal through loss aversion relative to a reference point in evaluation tasks. The reference point is given by the easier-to-evaluate risky urn. Loss aversion relative to this reference point results in a downward adjustment of the valuation for the ambiguous gamble relative to the valuation for the risky gamble. We discuss conditions under which reversals of the type observed will occur. The findings support recent explanations of preference reversals under risk based on loss aversion. In ambiguity, they support theories of comparative ignorance. Methodological implications for experimental and empirical work on ambiguity aversion are discussed.

WEDNESDAY

Ambiguity, 10:30–12:30, room 307

Using Prospect Theory to Analyze Ambiguity in an ‘Ellsbergian’ Context An Experimental Study

Mohammed Abdellaoui, Aurélien Baillon, Laetitia Placido
GRID (CNRS, ENSAM & ESTP) Cachan

The recent developments of behavioral economics and decision theory are encouraging the introduction of more realistic and sophisticated models accounting for Allais’ and Ellsberg’s paradoxes. These models could be used to analyze situations like those in which decisions under uncertainty depend not only on the degree of uncertainty but also on its source, e.g., investors disliking foreign stocks relative to domestic stocks (Fox & Tversky, 1995). This paper presents experimental results showing how Tversky and Kahneman’s Prospect Theory and Chew and Sagi’s (2006) probabilistic sophistication based on exchangeability can be used to analyze ambiguity in an Ellsbergian context. More specifically, we investigate decision situations where the decision maker faces two sources of uncertainty: a known urn and an unknown urn. Each source of uncertainty represents a group of events generated by a common mechanism of uncertainty. For each urn, we elicit the probability weighting function using a certainty equivalent method with real incentives. Preliminary results show that the existence of subjective probabilities cannot be rejected in the Ellsberg context. Moreover they tend to confirm previous results on ambiguity, i.e. more subadditivity of the weighting function under ambiguity than under risk, which indicates less sensitive to ambiguity than to risk.

WEDNESDAY

Ambiguity, 15:00–16:00, room 307

Ellsberg-type problems are not necessarily equal to Ellsberg's problems

Cherng-Horng Lan and Nigel Harvey
Department of Psychology, University College London

Since Ellsberg (1961) demonstrated ambiguity aversion (or the violation of the sure-thing principle) with his two-colour and three-colour problems, a number of Ellsberg-type problems (i.e., choosing between an ambiguous prospect and an unambiguous prospect) have been developed to allow discussion of theoretical issues. Although not all of these hypothetical situations have been empirically tested, the occurrence of ambiguity aversion in these situations has been taken for granted. This report comprises a collection of tests of twelve Ellsberg-type situations, including Ellsberg's original problems. The thrust of this research is that not all of these Ellsberg-type problems necessarily lead to ambiguity aversion. Therefore, theoretical discussion based on these hypothetical situations should not take ambiguity aversion for granted.

WEDNESDAY

Ambiguity, 15:00–16:00, room 307

A choice-based investigation of beliefs under ambiguity

Aurélien Baillon

GRID-CNRS, Ecole Nationale Supérieure d'Arts et Métiers
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France

Laure Cabantous

University of Nottingham

This paper extends earlier work on the effect of uncertainty on probability weighting (Abdellaoui et al., 2005, Wakker 2004) and reports on the result of an experiment designed to study how different kinds of ambiguity, i.e. uncertain situations with no given probability distribution over outcomes (Ellsberg 1961), affect attitudes and beliefs. It first presents a framework based on the Cumulated Prospect Theory for studying decision weights and revealed beliefs under different ambiguous contexts, namely Imprecise Ambiguity (IA) - where two experts say the probability of the uncertain target event belongs to a range of probability and, Conflicting Ambiguity (CA) - where the decision-maker receives two different estimates of the likelihood of the uncertain event from two experts. It then presents the results of an experiment designed to estimate participants' certainty equivalents for risky, IA and CA two-outcome prospects. The data (61 participants) show that IA engenders significant pessimism and that there is less sensitivity to IA than to risk. The data also show that CA leads to over-sensitivity. The results thus support the ideas that ambiguity affects revealed beliefs and that the informational structure of ambiguity determines the strength and the direction of the impact.

WEDNESDAY

Risky Choices on Uncertain Future Events

Manuela Gussmack and Eduard Brandstätter

Johannes Kepler University of Linz

Decisions under uncertainty often require probability estimates for uncertain future events. In previous research (Tversky & Fox, 1995), the usual pattern of overweighting of small, and underweighting of large probabilities was found. In the present study, seventy-two university students estimated the probability of several uncertain future events (e.g., the probability of a woman becoming the next president of the United States of America) on a scale from 0 % (= this event will never occur) to 100 % (= this event will definitely occur). Subsequently, they could either bet on their probability judgment that offered the simple gamble (€40, p ; 0, $1 - p$), or choose a sure gain of equal expected value. The control group was presented with decisions from description, with probabilities and outcomes matched to those of the experimental group. Findings show that people underweight small, but overweight large probabilities. The more likely the participants judged a future uncertain event, the more often they bet on their answer; the less likely the participants judged a future event, the more often they chose the sure gain. The control group showed the opposite (usual) pattern. The findings are also inconsistent with the competence hypothesis (Heath & Tversky, 1991): People, who are confident that a certain future event will not happen, selected the sure gain rather the uncertain gamble. We discuss the implications of these findings.

Delayed outcomes, 10:30–12:30, room 308

Time-Tradeoff Sequences for Quantifying and Visualising the Degree of Time Inconsistency, Using only Pencil and Paper

Arthur Attema, Hans Bleichrodt, Kirsten I.M. Rohde,
and Peter P. Wakker
Erasmus University, Rotterdam

This paper introduces time-tradeoff (TTO) sequences as a new tool for analyzing intertemporal preferences. TTO sequences yield a new way to measure temporal discounting, while minimizing distortions due to violations of intertemporal separability. They make it particularly easy to observe and exactly quantify deviations from stationarity and the implied proneness to choice anomalies. TTO sequences can easily be administered and analyzed, using only pencil and paper, and do not need any assumption about utility, or estimation thereof. They allow for the empirical discrimination between several hyperbolic discounting models that have been proposed in the literature as alternatives to constant discounting, such as quasi-hyperbolic, proportional, and generalized hyperbolic discounting. We tested the feasibility of TTO sequences in an experiment. Our findings suggest some new directions for theories of intertemporal choice.

WEDNESDAY

Delayed outcomes, 10:30–12:30, room 308

Intertemporal choice in apes and humans

Jeffrey R. Stevens

Max Planck Institute for Human Development

Alexandra G. Rosati, Brian Hare

Max Planck Institute for Evolutionary Anthropology

Marc D. Hauser

Harvard University

Although humans account for both the immediate and future consequences of behavior when making inter-temporal decisions, animals often ignore rewards that are delayed even a few seconds. Current research thus suggests a phylogenetic gap between patient humans and impulsive, present-oriented animals. First, if patience is uniquely human, then both of our two closest phylogenetic relatives—bonobos (*Pan paniscus*) and common chimpanzees (*Pan troglodytes*)—should be impulsive like other animals. Second, humans should be patient across a variety of contexts, and should wait longer than animals even when making decisions about food rather than money, providing a more direct comparison to nonhuman discounting. Based on our experimental results, we reject the suggestion of a phylogenetic gap in intertemporal choice: bonobos and chimpanzees exhibit a degree of patience not seen in other animals, and humans are not only less patient for delayed food rewards than they are for money, but are also less patient for food than are chimpanzees. Therefore, a basic capacity for self-control and future-oriented decisions appears to be shared between humans and some nonhuman primates, suggesting that the extreme levels of patience seen in humans may be driven by fundamental differences between biological and abstract rewards.

WEDNESDAY

Delayed outcomes, 10:30–12:30, room 308

Rate Matters: The Effects of Inter-Consumption Intervals on Satiation and Variety Seeking Behavior

Jeff Galak

New York University

Justin Kruger

New York University

George Loewenstein

Carnegie Mellon University

The rate with which people satiate to hedonic stimuli affects both their evaluations and choices. The present research examines the effects of consumption intervals on satiation. When exposure to a novel song is spaced out, satiation is slowed and both in-experience and retrospective evaluations of the target are higher than when the exposures are massed together (study 1). Additionally, preference for variety is moderated by exposure rate such that when consumption is spaced, low-variety is preferred; however, when it is massed, high-variety is preferred (study 2). Finally, when choices about variety are made in prospect, consumers fail to incorporate rate into their considerations (diversification bias), but when they are in the experience, they choose a greater amount of variety for immediate consumption as compared to spaced consumption (study 3).

WEDNESDAY

Delayed outcomes, 15:00–16:00, room 308

Subjective Evaluation of Delayed Risky Outcomes: An experimental approach

Uri Benzion

Department of Economics, Ben-Gurion University

Jan Pieter Krahnen

Department of Finance, Goethe Universitaet Frankfurt

Tal Shavit

Department of Management and Economics, The Open University of Israel,

Several studies in the decision science literature have found that people in decision-making processes account for time and uncertainty in a way which is hard to reconcile with the standard discounting model. The widely accepted interpretation of the existing evidence claims a continuous (hyperbolic) run of the discount function. Using a controlled experiment with financial instruments that generate real payoffs, we estimate the pure time discount function for bonds, and use delayed lotteries to estimate individual pure risk discount rates. Around $t=0$, we find a significant jump in the time as well as in the risk domain, and for both buy and sell transactions. We then test for possible determinants of observed time discounts, and find that the jump, expressed at a rate, declines with asset size. We also found a lower time discount for lottery than for fixed amount. Our findings are consistent with the idea that subjects incur a fixed cost (or disutility) when evaluating future financial choices, while there is no such disutility for current financial choices. Such a behavior is reminiscent of the 'certainty effect', and also the three-stage 'principle of similarity'. In a concluding section we discuss implications of a fixed-cost model for economic behavior.

WEDNESDAY

Delayed outcomes, 15:00–16:00, room 308

I can't wait! An experiment on preference for timing of risk resolution

Michał Krawczyk (CREED).

Astrid Hopfensitz (CISA), and Frans van Winden (CREED)

In this study we experimentally investigate how the attractiveness of a risky project depend on the timing of the resolution of risk. Based on recent theoretical models in economics (Wu, 1999) and psychology (e.g. Liberman and Trope, 2003), we predicted that a delayed resolution of risk would lead to greater probability neglect due to an effect of anticipatory emotions, triggered by mere possibility of (unlikely) future gains or losses.

Participants in the experiment (N=128) were asked to split 20 euros (which was their own money) between a safe and a risky project, the latter being either a high-probability, low-return one (HP) or a low-probability, high-return one (LP). The outcome of this once-and-for-real decision was either resolved during the same session (Immediate) or two days later (Delayed).

In line with the predictions, investment in the risky project was significantly higher under HP-Immediate than under HP-Delayed. No significant difference was observed between the corresponding LP treatments. This might reflect counterbalancing of curiosity and planning considerations versus the effect of hope to enjoy the earnings (which, measured by self-reports, had a significant positive impact on investment). None of many other models considered predicts this behavioral pattern.

However, investigating the self reports of anticipated emotions, we find only limited support for the model, possibly due to subjects' inability to anticipate their future emotional state under the delayed resolution of risk.

WEDNESDAY

Delayed outcomes, 15:00–16:00, room 308

Time Preference and Its Relationship with Age, Health, and Longevity Expectations

Helena Szrek

Assistant Professor, Faculty of Management and Economics, University of Porto

Li-Wei Chao

Research Associate, Penn Population Studies Center, University of
Pennsylvania

Nuno Sousa Pereira

Assistant Professor, Faculty of Management and Economics, University of Porto

Mark V. Pauly

Professor, Health Care Systems Department, The Wharton School, University
of Pennsylvania

Although theories in both evolutionary biology and economics predict that an individual's health should be associated with the individual's time preference, no prior study has been done to empirically support or refute such predictions. By collecting detailed measures of health, time preference and expected longevity on a sample of individuals in townships around Durban, South Africa, this study breaks new ground by being the first to analyze in detail the relationship between time preference and health, in an area of the world with high mortality and morbidity. Interestingly, we find that both physical health and expectations of longevity have a U-shaped relationship with the discount rate. This suggests that those in very poor health have high discount rates, but those in very good health also have high discount rates. Similarly those with longevity expectations on the extremes have high discount rates. The research question addressed by this pilot project is policy relevant, as the study tries to determine the importance of health in economic development, not from the commonly asserted productivity-gain argument, but from a much broader investment-for-the-future argument.

WEDNESDAY

Justice/Game theory, 10:30–12:30, room 206

**On the rationality of irrational cooperation:
Subjective Expected Relative Similarity
as a determinant of cooperation
in single PD interactions**

Ilan Fischer,
University of Haifa

For over half a decade the Prisoner's Dilemma has been used as a primary model for the study of competitive behavior and the evolution of cooperation amongst individuals, firms, societies, and nations. While several solutions have been suggested, the paradoxical outcome of two rational players obtaining less than obtainable by non-rational players continues to puzzle scholars and generate one of the most fruitful lines of research. The current study presents a new theory of Subjective Expected Relative Similarity (SERS). SERS provides an alternative normative solution and a descriptive theory of behavior. SERS predicts that cooperation is directly related to opponent's expected similarity and inversely related to the games' critical similarity. SERS's predictions are experimentally tested in three experiments each using a different method to manipulate the perception of opponent's similarity prior to participation in a one shot Prisoner's Dilemma game. An additional computer simulation shows how SERS can be acquired by trial and error without having to perform formal computations.

WEDNESDAY

What kind of risk attracts entrepreneurs?

Artur Domurat

Psychology Department Warsaw University

Anna Maćko

Center for Economic Psychology and Decision Sciences, L. Kozminski

Academy of Management and Entrepreneurship, Warsaw

Risk taking is implicated in the very definition of an entrepreneur. Also, apart from theoretical assumptions, it is widely believed that entrepreneurs are more risk prone than the rest of the population. However, numerous studies do not provide conclusive support for the claim that entrepreneurs show higher willingness to take risks. The aim of the reported studies was to identify areas in which entrepreneurial willingness to take risks is higher than other people's.

Earlier research using different measures of risk preference (actual risk behaviour, declared behaviour in hypothetical risky situations, and self-reported attitudes towards risks taking) seems to indicate that risk-taking is a multidimensional concept. In particular, an individual can reveal different risk propensity across various domains, such as finance, health, etc.

The first study focused on risk propensity in various domains of risky behaviour: financial, consumer and gambling. Entrepreneurs ($n=167$) and wage-earning employees ($n=170$) served as subjects. Risk propensity was measured using a questionnaire containing questions, which asked how often risky behaviour was undertaken in three stated above domains. Results showed that entrepreneurs declared more risky behaviour than employees but only in the financial domain.

Following Knight's claim that situations faced by entrepreneurs are unique and that decision maker can not ascribe any probability to considered courses of action, in the second study we examined entrepreneurial risk propensity using naturalistic business scenarios. A group of entrepreneurs ($n=40$) and wage-earning employees ($n=40$) served as subjects. Results indicated that in business scenarios, in which a decision maker can control outcomes, entrepreneurs were more risk prone than employees. Thus, we conclude that entrepreneurs are willing to take risk in situations where uncertainty is not expressed in numerical values, and the decision maker can actively control (prevent) negative outcomes. Academy of Management and Entrepreneurship.

Justice/Game theory, 10:30–12:30, room 206

Behavior, Fairness, and Satisfaction in a Three-Person Ultimatum Game

Hans-Rüdiger Pfister

University of Lüneburg

Gisela Böhm

University of Bergen

In the traditional Ultimatum Game, responders usually reject an offer if they consider it unfair. What exactly motivates these rejections, is not yet entirely clear: It could be motivated by retaliation towards the proposer's malicious intentions, or by dissatisfaction with an unequal distribution of payoffs. Using a new three-player three-options ultimatum game, we try to disentangle these motives. Here, proposed shares among a proposer, the responder and a third party are varied to generate different forms of fairness violation. The responder can accept, or reject in two ways, thereby either punishing the proposer or punishing the third-party. Results indicate that the vast majority of rejections is targeted towards punishing the proposer. However, ratings of fairness and satisfaction indicate that comparisons with the third-party can lead to substantial decreases in feelings of fairness and satisfaction. In sum, our findings suggest that responders might experience anger towards the proposer as well as envy towards the third party; however, on the level of overt behavior, only anger-related responses punishing the proposer are implemented, whereas on the level of feelings, envy might be felt but is not behaviourally implemented.

WEDNESDAY

Compliance with Rules and Sanctioning in Producer Groups in Poland

Ilona Banaszak, Volker Beckmann

Division of Resource Economics, Humboldt University Berlin

Success of each type of cooperation depends heavily on compliance of the actors involved with the rules agreed upon. Game theory and experimental economics provide evidence that, compared to coordination games, groups playing a prisoner's dilemma game will be more likely to both experience a deviation from the group rules as well as exercise punishment against the deviators. In the laboratory world, however, game settings are usually defined in advance and the researcher controls them over the time of the experiment. In real life phenomena, game settings are not given in advance but usually they spontaneously evolve and neither the players involved nor other persons fully control the game. The central question posed in this article investigates how we can identify the type of game which is being played by authentic groups of players. The empirical evidence was collected from polish farmer cooperative organisations called producer groups. The main task performed by these groups was to organize joint sales of the output produced by individual farmers. Nonetheless, due to different factors members of some groups broke the group rules and sold their output outside the group. Also the group's response towards the deviators varied. Such factors as price premium, pre-play acquaintance, having a long term contract, but also heterogeneity of the players and the leader's decision-making power, had a significant impact on the game played by producer groups and thereby on the deviation and sanctioning level in the groups.

Key words: coordination game, prisoner's dilemma, compliance, sanctioning, producer groups

On the rationality of partially rational cooperation: Subjective Expected Relative Similarity as a determinant of cooperation in repeated PD interactions

Ilan Fischer
University of Haifa

For over half a decade the repeated form of the Prisoner's Dilemma has been used as a primary model for the study of competitive behaviors and the evolution of cooperation amongst individuals, firms, societies, and nations. While the single game has raised crucial questions regarding the scope of rationality (since non-rational players have the possibility to obtain higher payoffs than rational ones), the repeated form of the game generated a rich literature focusing on the search for best strategies, or algorithms that provide the highest payoffs while interacting with a variety of strangers or other strategies. The current work develops a new strategy that is based on Subjective Expected Relative Similarity (SERS). A series of analyses and computer simulations shows that the SERS strategy outperforms powerful strategies like Tit-For-Tat and Win-Stay, Lose-Shift. The SERS algorithm is cooperative, retaliatory and forgiving; but it is also patient and adjusting and has the capacity to learn. It is winning strategy from both theoretical and applied perspectives.

WEDNESDAY

Justice/Game theory, 15:00–16:00, room 206

Is Homo Economicus five years old?

Yoella Bereby-Meyer
Shelly Rotem
Ben-Gurion University

Standard economic models assume that people pursue only their own material self-interest. However, numerous studies show that considerations of fairness affect decision-making. Children in kindergarten, second grade and sixth grade played a mini-ultimatum game against a human proposer or a random machine. Children in kindergarten tended to accept low offers, regardless of who proposed them. They also tended to make lower offers. Older children tended to reject unfair offers from another child, but accepted unfair offers from a random machine. These results suggest that fairness considerations and the resulting deviation from standard economic models, evolve with age.

WEDNESDAY

Medical DM, 10:30–12:30, room 209

Do doctors see what you see? Physicians' and lay people's perceptions of medical outcomes

Vered Rafaely, Joachim Meyer, Dina Fine-Kushnir, and Elinor Sabag
Department of Industrial Engineering and Management
Ben-Gurion University of the Negev

Research has demonstrated disparities between physicians' and patients' views in various clinical situations. This study examines two biases in physicians' predictions of lay people's perceptions of medical outcomes' severity -- the false-consensus effect (i.e., the use of own views to predict those of others) and stereotyping. Sixty young participants (mean age 24.18), 60 older participants (mean age 79.0), and 30 advanced medical students and physicians (mean age 28.90) evaluated the severity of 12 medical outcomes. For each medical outcome, the young and the older participants were asked to rate their own perception of severity, as well as to estimate a physician's perception of severity. Physicians were asked to rate their own perception of severity, and to estimate the severity perception of a younger person (aged 20 to 30) and an older person (aged 65+). Overall, physicians underestimated younger and older people's perceived severity of outcomes. Physicians' own perceptions of outcome severity were very similar to those they attributed to older people, and very different from those they attributed to younger people. Physicians provided different predictions for younger and older people. These results collectively suggest that both own perceptions, as well as stereotypes, influence physicians' predictions of others' perception of severity.

WEDNESDAY

Medical DM, 10:30–12:30, room 209

Does deliberation increase decision quality and the likelihood of informed decision making?

DRM Timmermans, M van den Berg, TM Marteau, E Dormandy

Dept of Public and Occupational Health, EMGO-institute, VU University Medical Center, Netherlands; Health Psychology Department, King's College London, UK.

Rational decision theory implies that explicitly trading off pros and cons of alternatives (i.e. deliberation) leads to better decisions. Some studies, however, claim that this is not necessarily so and deliberation might even decrease decision quality. In a study with 1100 pregnant women about their decision making about prenatal screening for Down syndrome, we determined the relationship of deliberation with informed choice and decision quality. Results show that there was a modest positive correlation between deliberation and decision quality. There was no straightforward association of deliberation with informed choice: women who made an informed choice to accept prenatal screening deliberated less than women who made an uninformed choice and than women who made an informed choice to decline prenatal screening. Insufficient knowledge, however, was associated with less deliberation. Although women who made value-consistent decisions reported a better decision quality than women who made value-inconsistent decisions, there was no difference regarding deliberation. In conclusion, although not resulting in more value-consistent choices, deliberation seems to have a positive effect on having sufficient knowledge. As there seems to be a (modest) positive relationship between deliberation and decision quality, for real life decision making deliberated choices seem to be preferable over intuitive choices.

WEDNESDAY

Medical DM, 10:30–12:30, room 209

Improving fast and frugal in relation to regression analysis: Test of three models for medical decision making

Lars Backlund, Ylva Skånér, Lars-Erik Strender
Centre of Family Medicine, Karolinska Institutet,
Johan Bring,
Department of Statistics, Dalarna University
Henry Montgomery,
Department of Psychology, University of Stockholm

Our aim was to evaluate two “fast and frugal” models and a logistic regression (LR) model in medical decision making. As an alternative to regression models so called fast and frugal models have been suggested, e.g., the matching heuristic (MH) model, that has been evaluated previously in studies on medical decisions. We proposed an alternative matching heuristic model (Alt MH) that is insensitive to the distribution of cue values (base rates). Data from two previous studies were reanalysed, one concerning drug treatment and the other on diagnosis. AltMH gave a significantly better fit than MH in the drug treatment task. In the diagnostic task, the number of cues was lower in the matching heuristic models whereas, in the therapeutic task, LR could be less or more frugal depending on the significance level. For MH, but not for AltMH and LR, the most important cues in the drug prescription task were often used in a direction contrary to treatment guidelines. The alternative matching heuristic represents an improvement in that base rates of the cues are adequately taken into account, which in turn may result in better fit and in better agreement with medical practice in the evaluation of cues.

WEDNESDAY

Varia, 10:30–12:30, room 209

The Development of the DASA: A Comprehensive Self-Report Measure of Decision-Making Ability and Style

Dewberry, C.,
Birkbeck University of London
Narendran, S.
Kingston University

The aim of this research is to develop a comprehensive self-report measure of decision-making ability and style, and to provide evidence of its reliability and validity. The authors began by examining the extensive literature on decision-making straddling economics, cognitive psychology, social psychological, organizational studies, and career theory. Based on this analysis, 19 decision-relevant dimensions were identified.

An initial set of items were generated to measure these dimensions, and these were refined over several studies to yield a final version of the questionnaire (now referred to as the DASA). Four hundred and fifty respondents completed the DASA, 200 completed the DASA, the Melbourne Decision Making Questionnaire (MDSQ), and the General Decision Style Questionnaire (MDSQ); and 60 completed the DASA and the NEO Five Factor Inventory.

The results of this research indicate that the DASA decision-making facets have good internal reliability. The DASA shows convergent validity with the MDSQ and GDMS in several respects, but also demonstrates discriminant validity. Exploratory factor analysis of the DASA items indicate that they measure the distinct dimensions intended. Exploratory and confirmatory factor analysis of the DASA decision-making facets suggests that they may be satisfactorily represented as measuring three principal aspects of decision-making: quality, efficiency, and style. At this time 75 working adults completed the questionnaire whilst co-workers completed a measure of the Great Eight competencies so that the criterion-related validity of the DASA could be examined.

WEDNESDAY

The neural substrates of probabilistic and intertemporal decision making

Bethany J. Weber & Scott A. Huettel
Duke University

Based on similarities in decision preferences, models of decision making have postulated that the same psychological processes may underlie risky and intertemporal choice. To the extent that risky and intertemporal choice utilize the same psychological processes, they should be supported by the same brain regions. We used functional magnetic resonance imaging (fMRI) to examine brain activation in subjects making a series of choices between pairs of gambles with either risky or delayed outcomes. A separate psychophysical procedure provided independent estimates of subjects' risk and delay preferences. Comparison of brain activation during decision making revealed that many of the same regions were active during both types of choices – these included the posterior parietal cortex, the dorsolateral prefrontal cortex, and the anterior insula – with greater activation to risky than to intertemporal choice. Regression analyses indicated that these activation differences did not result from differences in task difficulty, as operationalized by response time. Also, activation differences in insular and lateral prefrontal cortices were correlated with subjects' economic preferences. Combined, our results indicate that there are qualitative differences in the patterns of brain activation evoked by risky and intertemporal choices, suggesting that the two domains utilize separate but overlapping sets of psychological processes.

WEDNESDAY

Different Neural Systems Underlies Multiple-Cue Judgment in Humans

Linnea Karlsson

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Lars Nyberg

Department of Radiation Sciences and
Integrative Medical Biology, Umeå University

Peter Juslin

Department of Psychology, Uppsala University

Henrik Olsson

Max Planck Institute for Human Development, Berlin

The *division-of-labor hypothesis* for the cognitive processes in multiple-cue judgment (Juslin, Karlsson & Olsson, in press) predicts that a task where cues combine additively should induce reliance on *cue-abstraction* (Einhorn et al., 1979) whereas a task with non-additive cue-combination should induce *exemplar-memory* (Medin & Shaffer, 1978). The present study tested whether this shift in the cognitive process as a function of the task structure can be verified also by a corresponding shift in the underlying neural circuits. A judgment task designed to capture behavioral aspects of the processes was administered (see Juslin, Olsson & Olsson, 2003). In a within-participant design, 12 participants learned two versions of the task; one additive and one multiplicative. An event-related fMRI-design with randomized presentation of exemplars from the two tasks demanding judgments without feedback, as well as a perceptual-motor baseline task, was used to collect imaging data. The results confirmed the hypothesis; there were different neural correlates to the two tasks. Areas more activated in the additive task were *middle frontal cortex*, *frontopolar cortex* and *putamen*. Areas more activated in the multiplicative task were *cerebellum* and the *tail of the caudate*. The results are discussed in relation to theories of judgment, categorization and memory research.

Symposia

Tuesday, August 21, 2007

Tuesday, August 21, 2007				
Parallel symposia 10:30-12:30	Judgment and Decision Making in Person Transportation	Assessing Clinical Thinking and decision Processes	Decisions about food and eating	On the Role of Loss Aversion
	Convenor: Ola Svenson Discussant: Henry Montgomery <i>Room 308</i> 1) Cognition and driving: estimated time savings, collisions speeds following too late braking and accident risks following an increase in speed; Ola Svenson 2) An experimental simulation of adaptations to increased car-use-costs; Tommy Gärling Oliver Horeni Peter Loukopoulos Satoshi Fujii 3) Travelers' perceptions of reliability and their travel information needs: an empirical analysis; Caspar Chorus Eric Molin Theo Arentze Bert van Wee Harry Timmermans	Convenors: Nick Sevdalis and Olga Kostopoulou Discussant: Nigel Harvey <i>Room 307</i> 1) Capturing surgical thinking: Self-report, judgement analysis, and observational approaches; Rosamond Jacklin , Nick Sevdalis , Shabnam Undre , Mary Koutantji , Ara Darzi , and Charles Vincent 2) Factors determining accurate diagnosis in the face of difficult diagnostic problems in general practice; Olga Kostopoulou , Brendan C. Delaney , Craig W. Munro , Jurriaan Oudhoff , Radhika Nath , Clare Harries 3) Nurses' decisions to intervene in acute care: A Signal Detection Theory analysis of the effects of time pressure and experience; Len Dalglish and Carl Thompson 4) Medicine in words and numbers: A cross-sectional survey comparing probability assessment scales; Cilia L.M. Witteman , Silja Renooij , and Pieter Koele	Convenor: Jie W. Weiss Discussant: Peter Ayton <i>Room 340</i> 1) Chocolate and sports: judgments of energy intake and energy consumption; Stephanie Kurzenhäuser Ralph Hertwig 2) Deciding weight-loss: How complex eating rules prevent diet success; Jutta Mata Peter M. Todd Sonia Lippke 3) Consumer evaluations of food risk management practices in Europe; Ellen van Kleef Heleen van Dijk 4) Mothers' Decisions about Food Choices for Their Preschoolers; Jie Weiss and Jessica Gornel	Convenor: Ido Erev Discussant: Ido Erev <i>Room 341</i> 1) Loss Aversion: A Behavioral Phenomenon or an Interesting Hypothesis?; Eyal Ert and Ido Erev 2) Excess entry, ambiguity seeking, and competence: An experimental investigation; Robin M. Hogarth 3) Loss Aversion in the Field; Eric Johnson 4) Loss Aversion: A Survey on Its Strong but non-Robust Empirical Status, and Its Subtle Theoretical Status; Peter Wakker

Symposium 1, 10:30–12:30, room 308

Judgment and decision making in person transportation

Convenor: Ola Svenson
Stockholm University

Discussant: Henry Montgomery

TUESDAY

When a person travels from one location to another, different kinds of decisions are relevant. They are made at different levels with different time perspectives. This workshop will show how judgments and decision theory apply to transportation decision problems including driving.

The workshop will be introduced by Svenson in a brief introduction, followed by the participants presentations and finally the discussion will be initiated by the discussant.

The first contribution by Ola Svenson, "*Cognition and driving: estimated time savings, collisions speeds following too late braking and accident risks following an increase in speed.*" investigates relations between subjective and objective variables in driving.

The second contribution by Tommy Gärling et al. "*An experimental simulation of adaptations to increased car-use-costs*" reports an experimental simulation of daily travel to investigate how travel cost affect choices to use the car.

The third contribution by Caspar Chorus et al. "*Travelers' perceptions of reliability and their travel information needs: an empirical analysis*" investigates how travelers perceive the reliability of their own judgments of travel times and how much travel time information they believe is needed for making choices between different traveling alternatives.

In perspective, the first contribution addresses biases in *subjective estimates* of objective parameters, the second contribution focuses on multistage decisions based on the *attractiveness of subjective estimates* of car use, and the third contribution treats the judged *reliability of subjective estimates* of objective parameters in traveling and decision making.

(1) Svenson, O. *Cognition and driving: estimated time savings, collisions speeds following unfinished braking and accident risks following an increase in speed.*

Presenter: Svenson, Stockholm University, Sweden.

(2) Gärling, T., Horeni, O., Loukopoulos, P. & Fujii, S. *An experimental simulation of adaptation to increased car-use costs.*

Presenter: Gärling, Göteborg University, Sweden.

Symposium 1, 10:30–12:30, room 308

(3) Chorus, C.G., Molin, J.E., Arentze, T.A. & Timmermans, H.J.P.
Travelers' perceptions of reliability and their travel information needs: an empirical analysis.

Presenter: Chorus/Timmermans, Eindhoven University of Technology,
the Netherlands.

TUESDAY

Judgments and decisions and the three worlds of driving: The cognitive, the perceptual-motor and the physical world

Ola Svenson

Department of Psychology, Stockholm University

Problem:

The main factors contributing to car accidents are associated with the driver and with speed of driving. Therefore, the purpose was to explore drivers' mental representations of the effects of speed changes on time savings, risk increases, braking and other traffic safety related parameters.

Method: Questionnaires containing judgment and decision problems. Regular analyses of numerical data.

Results and conclusions:

The *cognitive/affective world* of driving consists of mental models of driving and the *perceptual-motor world* of interactions of a driver with the car. The *physical world* consists of physical laws. Relationships in the cognitive world between speed and other variables were investigated and compared to corresponding physical relationships showing that (1) decisions between alternatives to maximize time saving by increasing speed were systematically biased, (2) matching of two speeds to give equal time savings corroborated this finding, (3) judged increase of risk of a personal injury after a speed increase was systematically underestimated, (4) judged increase of risk of a fatal accident after a speed increase was underestimated to an even greater extent than personal injury accident risk. Finally, (5) Participants judged the speed of a car braking from a higher speed when it passed the place where it would have stopped if the braking had started from a lower speed. The speed of the faster car when passing the stopping place was systematically underestimated. The results show that drivers do not have a correct understanding of the physical laws governing driving. Most of the subjectively estimated effects of speed increases could be related to the ratio between the increased speed and the original speed.

In conclusion, the incentive of saving time for increasing speed was relatively overestimated for fast speeds and underestimated for slow speeds. The incentives for *not* increasing speed of (a) increase in accident risk and (b) deteriorating braking capacity with increased speed were underestimated. This is unfortunate because it may lead to attitudes of overconfidence of the public, politicians and drivers in general towards driving speed in relation to regulation, road constructions and traffic safety and speed.

Symposium 1, 10:30–12:30, room 308

An experimental simulation of adaptations to increased car-use-costs

Tommy Gärling

Göteborg University

Oliver Horeni,

Dresden Technical University

Peter Loukopoulos

Swiss Federal Institute of Technology, Zurich

Satoshi Fujii

Tokyo Institute of Technology

A paper-and-pencil experimental simulation was devised to study car users' decisions when adapting their driving to increased cost including more efficient car use, suppression of travel, or changes to other modes. A map of a fictitious town were presented to participants who made repeated travel choices of departure time, destination, and travel mode on each of several working days. In Study 1 2 groups of 12 undergraduates were randomly assigned to a low and a high car-use cost condition. In Study 2 another 4 groups of 12 undergraduates were assigned to conditions in which the car use cost either changed from low to high, from high to low, or remained low or high. The reduction of car use when cost increased was observed as a tradeoff between minimizing travel cost and travel time, thus suggesting that these factors are significant determinants and that participants were able to adjust to the increased car-use cost. When the car-use cost changed, asymmetrical carryover effects were observed indicating a higher responsiveness to changes from low to high costs than from high to low.

Travelers' perceptions of reliability and their travel information needs: an empirical analysis

Caspar Chorus, Theo Arentze, Harry Timmermans

Eindhoven University of Technology

Eric Molin, Bert van Wee

Delft University of Technology

Transport networks are characterized by unreliability. The most obvious type of unreliability concerns travel times: before embarking on a trip (as well as during a trip), travelers cannot be sure about the exact (remaining) travel time. Due to rapidly increasing levels of congestion on urban road and transit networks, travel time unreliability has lately become a very important issue in the eyes of travelers and transport-policy makers alike. Around the world, the provision of travel information is increasingly considered the most appropriate action to be taken in order to reduce transport network unreliability, and its impact on travel. However, travel information can by definition never be fully reliable as well! In light of the increasing importance of reliability in the context of transportation, this paper provides an empirical study of the determinants of travelers' perceptions of the reliability of travel times and travel information. We also analyze the relation between perceived unreliability of travel times and information on the one hand, and travelers' need for and use of available information services on the other hand. The empirical analyses are based on a web-survey, filled out by 488 individuals. A number of new empirical findings are presented.

TUESDAY

Assessing clinical thinking and decision processes: Overview and comparative assessment across disciplines

Nick Sevdalis,

Department of Bio-Surgery and Surgical Technology Imperial College
London

Olga Kostopoulou

Department of Primary Care & General Practice, University of Birmingham

In recent years, the psychology of clinical decision making has been expanding to new domains of clinical application and new approaches to capturing clinical thinking and decision making processes. Increasingly, research on clinical thinking is being conducted with practitioners as participants rather than students. This development has practical implications in terms of participant recruitment and conducting the studies, as well as theoretical ones in terms of how consistent the obtained findings are with existing models of expertise and decision making.

The symposium brings together researchers who have been investigating clinical thinking and decision-making processes (i) in experienced and trainee clinicians, (ii) in a variety of clinical domains (general practice, surgery, intensive care), (iii) on a variety of judgement and decision making tasks, and (iv) using a variety of methods and techniques.

This symposium aims:

- (I) Firstly, to offer an overview of a number of distinctly different methods that are being used to assess clinical thinking and decision making (including self-report, observational approaches, experimentation, judgement analysis, and signal detection theory);
- (II) Secondly, to discuss the applicability and usefulness of these methods across clinical domains, tasks, and levels of expertise.

Symposium presentations/participants:

1. Capturing surgical thinking: Self-report, judgement analysis, and observational approaches

Rosamond Jacklin, Nick Sevdalis, Shabnam Undre, Mary Koutantji, Ara Darzi, and Charles Vincent

2. Factors determining accurate diagnosis in the face of difficult diagnostic

Symposium 2, 10:30–12:30, room 307

problems in general practice

Olga Kostopoulou, Brendan C. Delaney, Craig W. Munro, Jurriaan Oudhoff, Radhika Nath, Clare Harries

3. Nurses' decisions to intervene in acute care: A Signal Detection Theory analysis of the effects of time pressure and experience

Len Dalglish and Carl Thompson

4. Medicine in words and numbers: A cross-sectional survey comparing probability assessment scales

Cilia L.M. Witteman, Silja Renooij, and Pieter Koele

Symposium discussants: Nigel Harvey (University College London) & **Nick Sevdalis** (Imperial College London)

TUESDAY

Capturing surgical thinking: Self-report, judgement analysis, and observational approaches

Rosamond Jacklin, Nick Sevdalis, Shabnam Undre,
Mary Koutantji, Ara Darzi, and Charles Vincent

Imperial College London, UK

TUESDAY

Introduction: In the context of surgery, judgement (weighing up diagnostic or treatment options) and decision-making (selecting between options) are inter-related aspects of surgical expertise. Both of them contribute to the safe and efficient delivery of care to the surgical patient. However, despite the importance of surgical judgement and decision-making, both of these aspects of surgical thinking remain largely unexplored.

In the present paper, we report findings from a number of studies that we undertook on surgical judgement and surgeons' decision processes. Our aim is to demonstrate the applicability and usefulness of three different methodologies – namely, structured interviewing of expert surgeons, judgement analysis, and observational assessment of surgical decision-making via simulation.

Methods & Results:

(i) **Structured interviews:** We conducted a structured interview study with 10 experienced surgeons, designed to identify all the decisions in the pathway of care for patients with symptomatic gallstones. Transcripts were coded by a surgeon and a psychologist reviewer with satisfactory reliability. The decisions identified were used to construct a “decision map” of the process of care and two main decision strategies were identified.

(ii) **Judgement analysis:** Judgement analysis relates a judgement or decision (output) based in hypothetical case information to the information or “cues” (input), commonly using linear regression analysis. We present a study in which 60 trainee surgeons (30 newly qualified, 30 surgical Senior House Officers) predicted the likelihood of conversion of laparoscopic (i.e., key-hole method) cholecystectomy to the open operation on 84 hypothetical preoperative cases. For each participant, we measured test-retest reliability and cue weighting. We present findings regarding cue utilisation and consistency in cue selection across participants and levels of expertise.

(iii) Observational assessment in a simulated environment: We used the Non-TEchnical Skills (NOTECHS) observational tool. The NOTECHS has been designed for use in the aviation industry to assess what is termed “non-technical skills” in cockpit crews. These skills include decision-making in crisis, leadership skills, team-working skills, and situation awareness. We revised the scale for use in surgical teams and we used it to assess trainee surgeons’ decision-making when faced with a crisis (e.g., unexpected bleeding) in two series of simulations (30 simulations in total). Surgical trainees were assessed by expert trainers. We obtained satisfactory reliability (inter-item consistency) in the revised decision-making sub-scale of the NOTECHS. Moreover, we found that decision-making (together with leadership skills) was rated lower in the observed trainees and training scenarios than the other skills assessed by NOTECHS.

Discussion: Surgical decision-making is an important but under-researched field. The studies that we present here suggest that a number of different methodologies can be used to capture surgical mental processes when faced with a diagnostic task or treatment decision. We discuss the strengths and weaknesses of each method as well as the implications of these findings for surgical training.

Factors determining accurate diagnosis in the face of difficult diagnostic problems in general practice

Olga Kostopoulou, Brendan C. Delaney, Craig W. Munro,
Jurriaan Oudhoff, Radhika Nath

Department of Primary Care & General Practice, University of Birmingham
Clare Harries

Department of Psychology, UCL

Aim:

Diagnostic error is a common cause of litigation and patient harm in general practice. This study aimed to identify what factors determine success with difficult diagnostic problems.

Methods:

7 difficult, computerised scenarios were constructed, containing diagnostic and non-diagnostic cues. 84 GPs were presented with a detailed and realistic patient description and complaint. Following the Active Information Search paradigm, participants could request further information in order to diagnose and manage the patient. Logistic regression was performed on accuracy and ordinal regression on management.

Results:

Average rates of misdiagnosis per scenario ranged from 43% to 90.5%. The significant factors in the final regression model were scenario, scenario order, GP experience, diagnostic cues, and the interaction between diagnostic cues and scenario. Fully qualified GPs were 11% more likely to diagnose accurately than GPs in training (adjusted odds ratio 2.33, 95% CI 1.31–4.14). Requesting an additional diagnostic cue in a scenario with 10 diagnostic cues increased the odds of diagnosing correctly by 2.54 (95% CI 1.71–3.76). Diagnostic accuracy was the only determinant of appropriateness of management.

Conclusions:

Building on evidence from studies that used abstract diagnostic tasks (Gruppen et al. 1991), asking diagnostic questions was a strong determinant of accuracy and a process that needs to be supported.

Symposium 2, 10:30–12:30, room 307

**Nurses decisions to intervene in acute care:
A Signal detection Theory Analysis of the effects
of time pressure and experience.**

Len Dalglish

Department of Nursing and Midwifery, University of Stirling, Scotland.

Carl Thompson

Department of Health Sciences, University of York, England.

Nurses make decisions to intervene in acute care based on patients' vital signs. Nurses report that lack of time is one of the major influences on their decision making. 241 nurses with varying experience levels made decisions to intervene on 50 actual case profiles under time pressure or with no time limit. Since a validated scoring system for whether to intervene or not was available, a SDT analysis yielded measures of ability (d') and response bias (β). Nurses had lower d' and were less likely to intervene under time pressure. Any effects of experience were negated under time pressure.

TUESDAY

Medicine in words and numbers: A cross-sectional survey comparing probability assessment scales

Cilia Witteman

Radboud University

Silja Renooij

Utrecht University

Pieter Koele

University of Amsterdam

In the complex domain of medical decision making, reasoning under uncertainty can benefit from supporting tools. Automated tools such as decision support systems often build upon mathematical models, such as Bayesian networks. These networks require probabilities which often have to be assessed by experts in the domain of application. Probability response scales can be used to support the assessment process. We compare assessments obtained with different types of response scale.

General practitioners (GPs) gave assessments on and preferences for three different probability response scales: a numerical scale, a scale with only verbal labels, and a combined verbal-numerical scale we had designed ourselves. Standard analyses of variance were performed.

No differences in assessments over the three response scales were found. Preferences for type of scale differed: the young and less experienced GPs preferred the verbal scale, the senior and most experienced preferred the numerical scale, with the groups in between having a preference for the combined verbal-numerical scale.

We conclude that any of the three response scales is equally suitable for supporting probability assessment. We advise that the combined verbal-numerical scale is a good choice for aiding the process, since it offers numerical labels for those who prefer numbers, while also offering verbal labels to those who prefer words.

Symposium 3, 10:30–12:30, room 340

Decisions about food and eating: new perspectives

Jie W. Weiss

California State University, Fullerton

Authors: Stephanie Kurzenhäuser, Jutta Mata,
Ellen van Kleef, Jie Weiss

Discussant: Peter Ayton, City University, London (England)

The substances that people voluntarily ingest can bring both pleasure and health risks. In contrast to smoking, drinking and drug use, people cannot choose to forego eating. People do, however, have options with respect to what they will eat and how much they will consume. Their choices are driven by what they think will be the consequences of eating particular foods. In this symposium, the speakers will discuss judgments that relate to the primary risks associated with food: obesity and food-borne illness.

Kurzenhäuser's presentation explores the information base underlying the anticipated consequences, linking knowledge about the caloric content of foods to knowledge about the caloric expenditure generated by various physical activities. **Mata** finds that the subjective complexity of the rules required by a weight-reduction program is related to how likely the dieter is to stick with it. **Van Kleef** presents a cross-national examination of consumer's views of food safety, modeling confidence in food risk management practices. **Weiss** investigates the utilities that mothers of preschool children attach to the meals they might offer to their kids, asking whether an MAU model can predict their choices and the resulting physiological outcomes.

TUESDAY

Chocolate and sports: judgments of energy intake and energy consumption

Stephanie Kurzenhäuser and Ralph Hertwig
University of Basel

TUESDAY

The obesity epidemic raises questions about how people actually assess the balance between energy intake and energy consumption. People often underestimate the calorie content of foods, but little is known about judgments of calorie consumption by physical activities. It is also unclear whether people are better able to estimate the energy content of food with calorie or fat information. Seventy university students received statements about the amount of calories and fat in 32 foods (per 100 grams), and the amount of calories consumed by 24 physical activities (per hour). Participants were asked to indicate whether the stated amount was correct, and to correct false statements with their own estimates. The proportion of correctly categorized statements was the same for energy intake and consumption (60%). However, more knowledge about calories in food did not predict more knowledge about the calories consumed by physical activities. Participants were somewhat more knowledgeable about fat than about calorie intake. Calorie intake and consumption were generally underestimated, while fat intake was both over- and underestimated. Although the summary knowledge scores were comparable, people had qualitatively different representations of calorie intake, fat intake and calorie consumption. These results have practical implications for nutrition education and food labeling.

Symposium 3, 10:30–12:30, room 340

Deciding weight-loss: How complex eating rules prevent diet success

Jutta Mata

Max Planck Institute for Human Development and Freie Universitaet Berlin

Peter M. Todd

Indiana University, Bloomington

Sonia Lippke

Freie Universitaet Berlin

We investigated the impact that the cognitive complexity of diet rules has on adherence to weight loss diets. The underlying assumption guiding this research was that popular weight loss diets can fail at the individual level if they are too complicated from a cognitive point of view, meaning that dieters are not able to recall or properly process all required information. The impact of excessive cognitive demands on diet compliance and dieters' perception of diet rule complexity were investigated 1) from an environmental perspective, by analyzing diet environments (i.e., diet rules in diet books), and 2) from the perspective of the dieter in an online-questionnaire. First results suggest that diets with more complex diet rules correlate with lower adherence rates from clinical trials examining popular weight loss diets. In our longitudinal study with more than 1,200 participants who are trying to lose weight we show that perceived complexity reported at the first measurement point predicts quitting the diet prematurely (i.e., before reaching goal weight or planned time to be on the diet).

TUESDAY

Symposium 3, 10:30–12:30, room 340

Consumer evaluations of food risk management practices in Europe

Ellen van Kleef and Heleen van Dijk
Wageningen University

Although a considerable amount of research has examined consumer perceptions of risk associated with different food hazards, there is less information about how consumers perceive effective food risk management. SAFE FOODS, a multi-disciplinary cross-European research programme, aims to increase confidence in the safety of food. To enable this, a systematic understanding of what consumers perceive to be best practice in risk management is crucial. Initial studies used qualitative approaches to identify key factors in the evaluation of food risk management practices according to consumers. The results were then used to inform the development of a quantitative survey instrument to model the key determinants of consumer evaluations of food risk management quality. To validate these findings, an empirical study was designed to provide 'proof of principles' against historic and emerging food safety incidents. Results from these two studies provide a useful first glance at the range of important societal concerns that need to be accounted for in food risk management. This presentation will explore differences and similarities in evaluations across countries and cases in order to provide insights into the viability of a pan-European communication strategy on risk management. The implications of the results and future research requirements will be discussed.

TUESDAY

Symposium 3, 10:30–12:30, room 340

Mothers' Decisions about Food Choices for Their Preschoolers

Jie Weiss and Jessica Gomel
California State University, Fullerton

Parents, mothers in particular, make most of the decisions regarding dietary choices for their preschool children. These choices may have lasting effects on the child's future eating patterns. The goal of this study is to investigate mothers' decision-making processes regarding feeding choices. In particular, we examine the anticipated consequences associated with particular choices in a given feeding scenario. We also explore how these processes may be affected by individual differences (health beliefs, parenting style, and cultural traditions).

In the first phase of the study, interviews with 15 mothers of preschool children from each of three cultural groups (Spanish-speaking Latina, English-speaking Latina, and non-Latina White) were conducted in order to generate a list of anticipated consequences. In the second phase, 80 mothers from each of the three cultural groups were asked to rate three aspects of each consequence of two different meal options. These aspects were value, likelihood, and momentary salience, the three parameters of the MAU model we proposed to account for the food choices. Participants were also asked to respond to questions about their parenting style. MAU for the meal options will be used to predict obesity in the mother and the child.

TUESDAY

Symposium 4, 10:30–12:30, room 341

On the role of Loss Aversion

Ido Erev

Participants: Eyal Ert, Robin Hogarth, Eric Johnson, Peter Wakker

Discussant: Ido Erev

TUESDAY

According to prospect theory (Kahneman and Tversky, 1979) losses loom larger than gains. This “loss aversion” assertion was shown to provide an elegant explanation to a wide set of important behavioral phenomena. Famous examples are the endowment effect (Kahneman, Knetsch and Thaler, 1990), the status quo bias (Samuelson and Zeckhauser, 1988), and the equity premium puzzle (Benartzi and Thaler, 1995). However, direct empirical evidence for loss aversion are surprisingly hard to find. The current symposium presents four papers that try to clarify the role of loss aversion.

The first paper (Peter Wakker) focuses on the formal definition of loss aversion under prospect theory and explains how loss aversion can be tested. The second paper (Eric Johnson) reviews recent research of the default and status quo effects and discusses the relationship of this research to the loss aversion assertion. The third paper (Robin Hogarth) examines the relationship of the loss aversion assertion to the observed “overconfidence” of entrepreneurs entering markets. The fourth paper (Eyal Ert) reviews recent research that questions the importance of the loss aversion assertion.

During the discussion we will try to understand the apparent inconsistency between the different studies.

Symposium 4, 10:30–12:30, room 341

Loss Aversion: A Behavioral Phenomenon or an Interesting Hypothesis?

Eyal Ert and Ido Erev
Technion, Haifa

Three studies are presented that examine alternative interpretations of the loss aversion assertion (Kahneman and Tversky, 1979). The first study rejects a “strong” interpretation: In violations of this interpretation, the possibility of mixed outcomes (gains and losses) can increase the tendency to select the risky prospect. The second study rejects a “moderate” interpretation of loss aversion: It shows that the elimination of the loss aversion assumption from prospect theory increases the theory’s predictive value. The results demonstrate the value of a simplified 3-parameter version of prospect theory that assumes a symmetric value function (with diminishing sensitivity relative to the reference point), a symmetric probability weighting function (that implies a certainty/possibility effect) and a stochastic response rule. The third study clarifies the apparent inconsistency between the present results and the observation that people tend to reject attractive gambles.

TUESDAY

Symposium 4, 10:30–12:30, room 341

Excess entry, ambiguity seeking, and competence: An experimental investigation

Robin M. Hogarth

ICREA & Universitat Pompeu Fabra, Barcelona

Excess entry refers to the high failure rate of entrepreneurial ventures. Economic explanations suggest “hit and run” entrants and risk-seeking behavior. A psychological explanation is that entrepreneurs are overconfident [Camerer & Lovallo, 1999]. Characterizing entry decisions as ambiguous lotteries, we alternatively suggest that people seek ambiguity when the source of uncertainty is related to their self-assessed competence [Heath & Tversky, 1991]. Overconfidence, as such, plays no role. We verify this hypothesis in an experimental study but also identify limiting conditions involving levels of probabilities and numbers of alternatives. Our results emphasize the importance of feelings of competence in economic activity.

TUESDAY

Symposium 4, 10:30–12:30, room 341

Loss Aversion in the Field

Eric Johnson
Columbia University

This paper presents two studies that examine the real world implications of loss aversion. The first examines how loss aversion differs across people and attributes, in order to provide evidence about the nature of loss aversion. The second looks at the connection between loss aversion and choices made in constructing an auto using an on-line car configurator.

In the first study, respondents produced selling and choosing prices for 4 auto attributes, made a hypothetical choice among lotteries, and actually purchased or sold a small model car. Our basic result is that there are large and systematic differences that are predicted by some theories of loss aversion, and not others. For example, attribute knowledge decreases loss aversion, but loss aversion increases with age.

In the second study, we examine the influence of loss aversion upon the choices made by decision-makers when some attributes are chosen by default. Using a field experiment we examine whether or not the degree of loss aversion can be connected to the tendency to choose defaults.

TUESDAY

Loss Aversion: A Survey on Its Strong but non-Robust Empirical Status, and Its Subtle Theoretical Status

Peter P. Wakker
Erasmus University, Rotterdam

Loss aversion is a major component for explaining the risk aversion that is empirically observed, but it is more volatile than the other components advanced by prospect theory (utility curvature and probability weighting), depends more on small details of framing, and will disappear under proper learning and incentives (Plott & Zeiler 2005, American Economic Review). As clear and well-established as loss aversion is empirically, so subtle and unclear is its theoretical status. A careful reading of Tversky & Kahneman's (1992, Journal of Risk and Uncertainty) prospect theory reveals that they implicitly assume that the loss aversion parameter is the absolute value of the utility (or value) ratio

$$U(-1)/U(1).$$

Why this choice? Why the special role of the outcomes 1 and -1? There is a more fundamental question: If we can only infer utility/value U as a whole, then how can we at all justify any decomposition $U(x) = \lambda \text{ times } u(x)$ ($x < 0$) for a loss aversion parameter λ ? Is loss aversion at all empirically meaningful in the measure-theoretical sense of Luce and others? This lecture clarifies the meaning of loss aversion, reviews the various definitions given in the literature, and reviews the empirical findings.

Thursday August 23, 2007

Parallel symposia 11:00-13:00	Experience-based Decisions	Aspirations and Reference Points in Risky Decisions and Judgment	Judgment of Duration and Frequency	What Could Have Been, What Would Have Been, and What Never Will Be
	Convenor: Liat Hadar Discussant: Dan Goldstein <i>Room 307</i> 1) The role of sampling in under- and over-weighting of small probabilities; Liat Hadar and Craig Fox 2) Simple Strategies in Decisions from Experience; Robin Hau Timothy J. Pleskac Ralph Hertwig 3) Experience-based decisions, Cumulative Prospect Theory and the two stage choice model; Greg Barron and Giovanni Ursino 4) Decisions from Experience without Sampling Error; Christoph Ungemach Nick Chater, Neil Stewart	Convenors: Enrico Diecidue and Elke U. Weber Discussant: John W. Payne <i>Room 308</i> 1) Aspiration Level, Probability of Success and Failure, and Expected Utility: theory and empirical evidence; Enrico Diecidue and Jeroen van de Ven 2) On the two reference point effects in decisions from experience; Ido Erev Eyal Ert Eldad Yechiam 3) Evaluation of Risk for Political Parties in a Multi-Party Parliamentary Election; Joanna Sokolowska 4) Individual differences in risk and time preference among Argentine farmers; Elke Weber Ryan Murphy, Guillermo Podestà, Fernando Ruiz Toranzo	Convenor: Tilman Betsch Discussant: Arndt Bröder <i>Room 206</i> 1) The asymmetry in estimating frequency and duration; Tilmann Betsch 2) How long and how long ago? The impact of two aspects of time on judgments of frequency and duration; Peter Sedlmeier 3) The impact of valence on time and frequency processing; Madlen Glauer 4) How many times and for how long did I see red? Judgments of frequency and duration in traffic simulations; Isabell Winkler	Convenors: Jochen Reb and Marcel Zeelenberg Discussant: Peter Ayton <i>Room 209</i> 1) Counterfactual Thinking and the Amplification of Regret; Marcel Zeelenberg Jacqueline A.L. Tanghe 2) Spontaneous unrealistic counterfactual thinking and decision-related affect; Nick Sevdalis Flora Kokkinaki Georgina Koutsavousti 3) How Regret Aversion Can Hinder and Help Learning in Repeated Decision Tasks; Jochen Reb and Terry Connolly 4) Regret across the life-span; Daniel Västfjäll Ellen Peters Boo Johansson

Symposium 5, 11:00–13:00, room 307

Experience-based decisions

Convener: Liat Hadar (UCLA Anderson)

Presenters:

Liat Hadar and Craig Fox (UCLA Anderson)

Robin Hau (University of Basel)

Greg Barron (Harvard Business School)

Christoph Ungemach (University of Warwick Coventry)

Discussant: Dan Goldstein (London Business School)

Choices between described monetary gambles have been the drosophila of decision making research for more than half a century. Nevertheless, many decisions outside the psychological laboratory do not present us with summary descriptions of our options but we rather have to rely on past experience with similar situations to make a choice. Studies of decisions from experience have been devised to capture this aspect of many naturalistic decisions. Rather than being supplied with complete statistical information, participants gather information through sampling from their options. Several studies indicate diverging choices in experience- and description-based choices. Specifically, rare events seem to have less impact on choices in decisions from experience than in decisions from description. Two explanations have been put forth to account for this description-experience gap. The first is sampling error - people are likely to sample rare events less often than objective probability implies, especially if their samples are small. The second is the use of different cognitive strategies in choices based on experience compared to those used in decisions from description. In this workshop, we investigate the relative contribution of these two factors and how experience-based information is processed in comparison to objective descriptions.

THURSDAY

The role of sampling in under- and over-weighting of small probabilities

Liat Hadar & Craig Fox
UCLA

Rare events are given more weight when choices are based on description of the outcome distributions than when choices are based on the experience of sampling from these distributions. In description-based choices, lotteries offering sure gains are mostly preferred over small probability (higher) gains whereas lotteries offering small probability losses are mostly preferred over (lower) sure losses. The reverse pattern emerges when the same choices are based on experience.

Two explanations have been offered to account for this inconsistency: (1) A statistical account: Due to the nature of the binomial distribution, rare events are under-represented in sampling from experience, especially as the sample is smaller. It has been shown that sampling error is an important driver of the description-experience gap. When choices are measured against the experienced outcome distribution, instead of the theoretical one, the description-experience gap disappears (Fox & Hadar, 2006). (2) A psychological phenomenon: the experience of the outcome distribution leads to the utilization of different decision strategies.

The current paper focuses on the psychological account. Controlling for sampling error, we examine to what extent the process of sampling from the outcome distributions, as opposed to being given the outcome distributions, contributes to this description-experience gap.

Simple Strategies in Decisions from Experience.

Robin Hau
University of Basel
Timothy J. Pleskac
Indiana University
Ralph Hertwig
University of Basel

When people make real-life decisions, more often than not, they base their choices on experience with similar situations. In studies of decisions from experience, participants are therefore allowed to gather experience with their options prior to making their choice. This experience substitutes the summary information that is given to respondents in decisions from description. We investigate the gap between the two modes of decision making by analyzing what cognitive strategies people employ in both situations. We predict choices based on individual experience, employing a variety of cognitive models, including prospect theory, two associative learning models and a variety of simple decision rules. We find that remarkably simple strategies that embody risk-neutral or even risk-seeking behaviour are best able to account for decisions from experience.

THURSDAY

Experience-based decisions, Cumulative Prospect Theory and the two stage choice model

Greg Barron, Giovanni Ursino
Harvard Business School

Recent research has focused on the difference between description and experience based decisions and on their treatment of rare events. While rare events are overweighted in description based decisions people tend to behave as if they underweight rare events in decisions based on experience. Fox and Hadar (2006) suggest that the discrepancy is due to sampling error: people are likely to sample rare events less often than objective probability implies, especially if their samples are small. Experiment 1 of this paper examines the robustness of the description-experience gap to contexts without sampling error. Experiment 2 goes one step further and elicits participants probability estimates of a rare event while they are making an experience based decision. The results of the two experiments suggest that people underweight rare events even when they have error free samples and even when they are overweighting the rare event in their subjective probability estimates. The usefulness of Prospect Theory, Cumulative Prospect Theory (CPT) and the two stage choice model as descriptive models of experience based decisions is discussed.

Decisions from Experience without Sampling Error

Christoph Ungemach

University of Warwick

Nick Chater

University College London

Neil Stewart

University of Warwick

A current topic in the decision making literature is the question of whether people show a different choice behaviour when prior knowledge of options' outcomes and probabilities is not available but has to be inferred from past experiences. Fox and Hadar (2006) ascribe the occurrence of such preference reversals to rare events often being underrepresented in small samples. They claim consistency with prospect theory when judged probabilities are used as input for the model. We investigated if biases in the experienced sample are a necessary condition for preference reversals in two variations of the decision from experience paradigm. The first design consisted of a comprehensive sampling task. The second included sampling sequences that matched the option's objective probabilities. Underweighting of small probabilities was replicated under both conditions. The rate of correctly predicted choices using a prospect theory model based on actual and judged probabilities in the matched sampling condition did not exceed that of random choice. Even though participants experienced the actual probabilities, we found performance consistent with underweighting of small probabilities. Sampling error causing rare events to be underrepresented therefore cannot be the whole explanation for choices consistent with underweighting of small probabilities in decision from experience.

THURSDAY

Symposium 6, 11:00–13:00, room 308

Aspirations and reference points in risky decisions and judgment: theory, empirical evidence, and applications.

Conveners: Enrico Diecidue

INSEAD

Elke Weber

Columbia University

Abstract: Since the seminal works by Kahneman & Tversky (1979) and Lola Lopes (1987), reference points and aspiration levels have received a great deal of attention by decision theorists, economists, and psychologists. They are considered among the most psychologically plausible and descriptively natural deviations from the normative paradigm of expected utility. The empirical and field research body is growing and new applications building on aspirations and reference points are proposed and investigated.

This workshop presents four papers that provide empirical evidence on the impact of reference points in political decisions, elicit the reference point in applied settings, analyze the conditions under which people exhibit diminishing sensitivity relative to status quo, and study the relative importance of performance above or below aspirations. The experimental evidence, collected in diverse areas, is provided with the goal of better calibrating models and increasing the descriptive power of theories that rely on aspirations and reference points.

Objective of workshop: provide a theoretical framework to investigate and measure the impact of aspirations, targets, and reference points on risky decisions and judgment. Stimulate discussion on the empirical evidence and its relevance. This workshop covers real life applications as risky judgments in political elections and agricultural decision making. New directions are also discussed.

Presenters: Elke Weber, Joanna Sokolowska, Ido Erev, Enrico Diecidue.

Discussant: John Payne.

Aspiration Level, Probability of Success and Failure, and Expected Utility: theory and empirical evidence

Enrico Diecidue

INSEAD

Jeroen van de Ven

University of Amsterdam

Aspiration levels and their impact on decision making under risk have long been discussed (Lopes 1987, 1996). Once an aspiration level is observed, the probabilities of success (probability that the aspiration will be reached) and failure (probability that the aspiration will fall short of) are naturally identified. Payne (2005) showed that aspiration levels and the probability of success and failure are a relevant aspect of decision making. We develop a model that takes these aspects into account.

We give a behavioral foundation to the proposed model and provide conditions to determine the relative weights of the overall probabilities of success and failure. These weights contribute to reinforce loss aversion, can account for simultaneous risk-averse and risk-seeking behavior, and can explain choices violating the mean-variance approach.

Based on this theoretical framework we discuss a simple experimental design that allows detecting and measuring the impact of the probability of success and failure in decision under risk. This experiment also tests for the reflection effect of prospect theory value function.

THURSDAY

Symposium 6, 11:00–13:00, room 308

On the two reference point effects in decisions from experience

Ido Erev, Eyal Ert, Eldad Yechiam
Technion

Two experiments are presented that explore the assertion that loss aversion and diminishing sensitivity drive the effect of experience on choice behavior. The first experiment shows that behavioral tendencies that were previously interpreted as indications of loss aversion are better described as products of diminishing sensitivity to absolute payoffs. The second experiment highlights a nominal magnitude effect: A decrease in the magnitude of the nominal payoffs eliminates the evidence for diminishing sensitivity. These and related previous results can be captured with a model that approximates a joint generalization of prospect theory (Kahneman and Tversky (1979)) and probability matching.

THURSDAY

Evaluation of Risk for Political Parties in a Multi-Party Parliamentary Election

Joanna Sokolowska

Warsaw School of Social Psychology

The study discussed here is aimed at determining how reference points, such as status quo and targets, affect salience of different aspects of a situation in the evaluation of its riskiness. Examples of such aspects are probabilities and amounts of loss and win. The upcoming election to the Polish Parliament was used to investigate this issue. Sixty seven participants - students of psychology and young adults graduated in computer sciences –evaluated risk related to the upcoming parliamentary election for six political parties represented in the Parliament. Since these six parties had different status quos and political targets, one might expect that the relative input of negative (e.g. the probability to loose seats) and positive (e.g. the probability to win the absolute majority) aspects of the situation to risk judgment would differ between parties. The results are discussed in terms of the extent to which risk judgment depends on the status quo and accepted targets.

Key words: inputs of negative and positive aspects into risk judgments, risk and reference points.

Individual differences in risk and time preference among Argentine farmers

Elke Weber, Ryan Murphy, Guillermo Podesta, Fernando Ruiz Toranzo
Columbia University

This study examines how individual differences in expectations and preferences, shaped by past personal experience, needs, and cognitive and motivational traits, influence choices in uncertain environments. Data were collected in a real world context from experienced agricultural decision makers—farmers with extensive experience in making risky production and pricing decisions and with using probabilistic information in arriving at judgments and decision in high stakes environments. The study is part of a larger research effort to understand and model decision-making in agricultural production systems in the Argentine Pampas in the face of seasonal climate variability and other risk factors. The Pampas region of central-eastern Argentina is one of the most productive and lucrative agricultural areas in the world, but is highly dependent on rain rather than irrigation and, as such, can profit from newly available probabilistic climate forecasts. A large sample of farmers made a series of judgments and choices that were designed to allow for the estimation of individual-level parameters of the reference point, risk aversion, loss aversion, and probability weighting of Prospect Theory (Tversky & Kahneman, 1992) and of temporal discounting. Additionally some psychometric scales assessed cognitive impulsivity, domain-specific risk taking, some motivational variables, and some cognitive style variables.

Subjective Judgments of Duration and Frequency

Convenor: Tilmann Betsch
University of Erfurt

Contributors

Tilmann Betsch (University of Erfurt): The asymmetry in estimating frequency and duration

Peter Sedlmeier (Technical University of Chemnitz): How long and how long ago? The impact of two aspects of time on judgments of frequency and duration

Madlen Glauer (University of Erfurt): The impact of valence on time and frequency processing

Isabell Winkler (Technical University of Chemnitz): How many times and for how long did I see red? Judgments of frequency and duration in traffic simulations

Discussant: Arndt Bröder (University of Bonn)

Event frequency and duration are key units of the empirical world. They are of fundamental importance in behavioral adaptation. Predators, for instance, increase their chances of surviving if they approach areas where the prey stays more frequently and for longer periods. Conversely, prey should strive to avoid areas where predators roam frequently. Both variables influence probabilistic reasoning and, hence, influence decision making. The workshop presents research using a common experimental paradigm: Frequency and duration of stimuli are always varied simultaneously within subjects. Comparing subsequent judgments allows us to detect differences and commonalities in estimating frequency and duration and to draw inferences about underlying cognitive processes. The contributions by Betsch and Sedlmeier show that judgments of frequency and duration behave asymmetrically with regard to accuracy and susceptibility to biases. Glauer shows that this asymmetry is moderated by the valence of the stimuli. Winkler explores whether prior findings are replicated in applied settings (traffic domain). The objective of the workshop is to get a deeper understanding of the memory and judgment mechanisms underlying estimates of quantity. We compare the predictive power of theories hosted in different domains of psychology, such as neuropsychology, memory research and the heuristics approach in JDM.

The Asymmetry in Estimating Frequency and Duration

Tilman Betsch
University of Erfurt

The existence of a common mechanism for storage of frequency and duration was assessed by comparing judgments of remembered frequency and duration. Human adults watched presentations of events or category exemplars and subsequently estimated for how long and how often they were presented. The results from four experiments provide converging evidence for an asymmetry in estimating frequency and duration. Frequency judgments generally reveal a remarkable sensitivity to differences in actual frequencies, are immune to focus manipulations during encoding, and are robust against possible influences of duration. Conversely, participants were mostly insensitive to differences in durations in their judgments. Duration estimates were systematically biased by frequency and were heavily influenced by focus manipulations. The results challenge models claiming that memory processes for frequency and duration are driven by the same mechanism. Frequency information seems to be stored automatically, whereas storage of durations seems to require explicit control.

Symposium 7, 11:00–13:00, room 206

How long and how long ago? The impact of two aspects of time on judgments of frequency and duration

Peter Sedlmeier

Chemnitz University of Technology, Germany

The order in which events and stimuli are encoded has a strong impact on judgments of contingency and relative frequency. If stimuli occur at the beginning of a presentation list, participants usually underestimate the respective contingencies and relative frequencies, whereas if stimuli are presented toward the end of the list, contingencies and relative frequencies tend to be overestimated (e.g., Chapman, 1991; Lopez et al., 1998; Sedlmeier, 1999). The present studies explored whether similar effects of presentation order (“how long ago”) also occur in judgments of absolute frequencies and in judgments of duration. In addition, they examined how the duration for which single stimuli were presented (“how long”) interacted with order of presentation. The results in three studies were mixed: Whereas with set-size material the results for judgments of both frequency and duration corresponded well with the earlier results on contingencies and relative frequencies, the results for frequency-of-occurrence judgments seemed to have been influenced by the spacing of stimuli (the average distance apart on the list). Duration of single stimuli had basically no effect whatsoever.

THURSDAY

Impact of valence on time and frequency processing

Madlen Glauer

Department of Psychology, University of Erfurt

The key question to be addressed by the present research is whether and how valence influences frequency and duration processing.

Participants are presented with positive, negative and neutral pictures on a computer screen. The pictures differ with regard to repetition frequency (2, 4, 8 times) and the total amount of time they appear on the screen (8, 16, 24 sec). The resulting 3 (valence) x 3 (frequency) x 3 (duration) factorial design is implemented within subjects. After the presentation, participants estimate frequency of occurrence and total duration of each picture.

Results provide evidence showing that valence influences both frequency judgments and duration judgments. Negative stimuli in particular received higher frequency and duration estimates than neutral stimuli.

Response latencies for frequency judgments were not influenced by valence. By contrast, response latencies for duration judgments were affected by valence of the pictures -- negative stimuli had higher response latencies compared to neutral stimuli. Both frequency judgments and duration judgments were biased by valence but response latencies invite the interpretation that these effects were conveyed by different mental processes. The results challenge models claiming that processing of frequency and duration are driven by the same mechanism.

How many times and for how long do I see red? Judgements of frequency and duration in traffic simulations

Isabelle Winkler

Technical University of Chemnitz

In former studies on the mutual interdependence of judgements of frequency and duration, an asymmetrical relationship between stimulus frequency and stimulus duration has been obtained (e.g. Hintzman, 1970; Betsch, 2006): While frequency judgements were quite accurate and independent of stimulus duration, time estimations, in contrast, turned out to be highly dependent upon stimulus frequency. That is, the durations of more frequent stimuli are perceived as being longer, while long-lasting stimuli are not regarded as being more frequent. Within two studies ($N=120$), we examined the relationship between judgements of stimulus frequency and duration in realistic situations. Via video presentations, participants were instructed to imagine driving a car along a road where they were exposed to various waiting situations (e.g., traffic lights and pedestrian crossings) with specific frequencies and durations. Participants then provided judgements about frequency and duration of these stimuli (the different waiting situations). Results indicate that estimations of stimulus duration increase with more frequent stimuli. Moreover, and contrary to former findings, frequency judgements are also influenced by stimulus duration: Significantly higher frequency judgments are obtained for situations involving longer presentation durations. Results are discussed with respect to practical implications for the design of waiting and traffic situations.

THURSDAY

Symposium 8, 11:00–13:00, room 209

What Could Have Been, What Would Have Been, and What Never Will Be: Exploring New Directions in Regret Research

Conveners: Jochen Reb

Singapore Management University

Marcel Zeelenberg

Tilburg University

Discussant: Peter Ayton, City University, London

Presenters:

Marcel Zeelenberg, Tilburg University

Nick Sevdalis, Imperial College London

Jochen Reb, Singapore Management University

Daniel Västfjäll, Göteborg University

Counterfactual emotions such as regret are omnipresent and influence our decisions and well-being. The presentations in this symposium document how cognitive and motivational processes are involved in the attenuating and augmentation of regret and attempts or opportunities to regulate regret. A common thread to all presentations is an emphasis on the comparative and counterfactual nature of decision regret. Marcel Zeelenberg will present three experiments that examine the process through which counterfactual thinking amplifies regret, comparing an ease of retrieval with a frequency of counterfactual thoughts explanation. Nick Sevdalis will report on two experiments that examine the influence of different goals on the construction of unrealistic counterfactual thoughts after poor decision outcomes. Moving from “what could have been” to “what would have been,” Jochen Reb will report on three experiments that examine how regret aversion can affect feedback seeking on foregone alternatives and subsequent learning and performance in a repeated decision making task. Finally, moving from “what would have been” to “what never will be,” Daniel Västfjäll will present data from two surveys on Swedish adults (age 18-85) showing that older adults reported less intense regret for everyday regrets (e.g., not buying a good on sale), but more intense regret for life regrets that often can not be changed anymore (e.g., not having children).

THURSDAY

Symposium 8, 11:00–13:00, room 209

Counterfactual Thinking and the Amplification of Regret

Marcel Zeelenberg and Jacqueline A.L. Tanghe
Tilburg University, Free University of Amsterdam

When people generate counterfactuals for negative decision outcomes, emotional reactions to these outcomes are amplified. We examined whether this amplification is a function of the amount of counterfactuals generated or a function of the ease with which these counterfactuals were generated. Three experiments, in which participants were instructed to generate few or many counterfactuals, revealed that generating many counterfactuals was considered difficult and resulted in attenuated regret. These results suggest that judgments of regret are based on the experiential information about the ease of generation. Experiment 3 showed, in addition, that when the informational value of the experienced ease of generation was discredited, the effect disappeared. The results are discussed in relation to experiential psychology and the assessment of counterfactuals and emotions in real life.

THURSDAY

Spontaneous unrealistic counterfactual thinking and decision-related affect

Nick Sevdalis

Imperial College London

Flora Kokkinaki

Athens University of Economics and Business

Georgina Koutsavgousti

University of Athens

Counterfactual thinking (i.e., the mental comparison of obtained decision outcomes with outcomes that could have been obtained had a different decision been made) affect post-decisional emotions, including regret. Virtually no research, however, has examined unrealistic counterfactuals (i.e., counterfactuals that focus on secondary determinants of decision outcomes). Here we report research that addresses this lacuna. In two experiments, participants faced a real or scenario-presented decision that resulted in poor outcomes and that was their own responsibility. Subsequently, some of them generated counterfactuals that would help them learn a lesson ("learning" group), whereas others generated counterfactuals that would make them feel better about what happened ("self-enhancement" group). We found that "self-enhancement" participants generated less realistic counterfactuals than "learning" participants (as judged by raters; Exps. 1 & 2). In addition, "self-enhancement" participants reported less post-decisional negative affect (as assessed by a short scale consisting of a number of affective items, including regret and disappointment) and less perceived control over the decision than "learning" participants (Exp. 2). These findings suggest that people do generate unrealistic counterfactuals spontaneously (depending on their motivation when they assess their decisions). They also carry implications for the functional view of regret and for a theory of post-decisional affect regulation.

Symposium 8, 11:00–13:00, room 209

How Regret Aversion Can Hinder and Help Learning in Repeated Decision Tasks

Jochen Reb

Singapore Management University

Terry Connolly

University of Arizona

Regret can sometimes be avoided by shielding oneself from feedback on foregone outcomes. However, in repeated decisions, such feedback may help in task learning and thus in making better (less regrettable) decisions in the future. This raises the possibility that decision makers may become trapped by myopic regret aversion in which rejecting feedback to avoid short-term outcome regret leads to reduced learning and greater long-term regret over continuing poor decisions. We demonstrate this effect in two laboratory experiments, in which priming outcome regret led to less feedback-seeking and fewer choices of the expected value maximizing option. In a third experiment we reverse the effect by priming self-blame, not outcome, regret. Priming self-blame regret led to more feedback seeking and more expected value maximizing choices. Implications are discussed.

THURSDAY

Symposium 8, 11:00–13:00, room 209

Regret across the life span

Daniel Västfjäll

Decision Research, Eugene Oregon

Department of Psychology, Göteborg University

Ellen Peters

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Department of Psychology, Göteborg University

Self-reported regret for everyday omissions and commissions as well as life regrets was obtained from 718 Swedish adults (18-85). Older adults (compared to younger adults) reported less intense regret for everyday regrets (not buying a good on sale), but more intense regret for life regrets (not having children). A second study (N = 526, ages 18-89) showed that elderly participants experienced stronger and more long-lasting regrets for events associated with omissions of qualitative events (missing the opportunity to spend time with family), while younger participants experienced stronger regret for quantitative events (missing out on the opportunity to invest money in a stock). These findings are consistent with both decision and life-span theories suggesting that 1) the decreasing possibility of undoing regrets with age is an important factor modulating affective experience, and 2) an increased focus on positive affect with increasing age can ameliorate the psychological impact of consequences of minor negative events, 3) with age an increased focus on qualitative over quantitative experience may change what events we regret.

Posters

Poster Presentations

Presenting author	Poster title	Authors
Andersson Patric	Forecasting national elections: Performance, confidence, and the effects of expertise, information, and political preferences	Patric Andersson, Thomas Gschwend, Michael F. Meffert, Carsten Schmidt
Andersson Patric	Predicting with one reason: The effectiveness and use of simple subjectively based heuristics	Patric Andersson, Tim Rakow
Bär Arlette S	Emotional And Cognitive Facial Expressions In Risky Situations	Arlette S. Bär
Bischof Matthias	Expected value of perfect information: an application to a decision analytic cost-utility model for a novel therapy in cardiology	Matthias Bischof
Boehm Gisela	Explaining Choice Blindness: On the Reliability and Recollection of Attractiveness Judgments	Gisela Boehm, Hans-Ruediger Pfister, Rainer Hoeger
Bogler Fergus	Effects of general mood and specific emotion on the realism of confidence in the accuracy of ones own judgment	Bolger Fergus
Buczek Katarzyna	When to Trust Yourself, When to Trust the Others? Ecological Determinants of Overconfidence in Sequential Decision Making	Katarzyna Buczek, Shenghua Luan, Rocio Garcia-Retamero
D'Addario Marco	The influence of rarity and expertise on pseudodiagnosticity	Marco D'Addario, Laura Macchi, Maria Bagassi, Gabriella Passerini e Valentina Sala
Elwin Ebba	Learning from ambiguous feedback	Ebba Elwin, Peter Juslin
Erner Carsten	Predicting the willingness to pay for investment products - An experimental study	Carsten Erner, Alexander Klos, Thomas Langer
Funke Joachim	Cognitive modelling of planning processes within 'Plan-A-Day'	Joachim Funke, Sven Bruessow, Daniel Holt
Gaissmaier Wolfgang	An Ecological Approach to Ordering Information in Memory-Based Decision Making	Gaissmaier Wolfgang
Gamble Amelie	Choice Inertia in a Fictitious Electricity Market	Amelie Gamble, Tommy Gärling, Ásgeir Juliusson
Giorgetta Cinzia	Functional role of regret on choosing among Safer and Riskier Options	Cinzia Giorgetta, Francesca D'Olimpiob, Fabio Ferlazzo, Marcel Zeelenberg
Hausmann Daniel	Probability Matching and Rational Choice	Daniel Hausmann, Andreas Schlatter, Stefan Ryf, Wolfgang Marx
Hoelzl Erik	Effects of payment mode on prediction and experience of car owners	Erik Hoelzl, Herbert Kastner, Gernot Kampl, Erich Kirchler
Honda Hidehito	The directionality of verbal probability phrases: What communicative function does it perform?	Hidehito Honda, Kimihiko Yamagishi

Poster Presentations

Juanchich Marie	Outcomes perceived propensity and p-value affect speakers' choice of probability phrases	Juanchich Marie, Gaëlle Villejoubert
Kamleitner Bernadette	The impact of cost-benefit-associations during the post-decision period: Why thinking of the loan when driving a loan-financed car matters	Bernadette Kamleitner, Erik Hölzl, Erich Kirchler
Kaufmann Esther	A meta-analysis of judgment achievement in the Lens Model Equation across applied subject areas	Esther Kaufmann, James A Athanasou
Kurzenhäuser Stephanie	Bayesian reasoning: a comparison of the natural frequency and chances format	Stephanie Kurzenhäuser, Barbara Fasolo and Raffaella Misuraca
Kuśmierczyk Paweł	An experimental study of the impact of different forms of incentives on accuracy of complex economic choices (using decisions based on application of Bayesian updating)	Rafał Jakubowski, Paweł Kuśmierczyk
Kuśmierczyk Paweł	Measuring the impact of real financial losses using experimental methods	Paweł Kuśmierczyk
Lejarraga Tomás	Decisions from experience: Just part of the picture	Lejarraga, Tomás
Liu Shuang	Detecting Anchoring Effects in a Dynamic Decision Making Environment: An Empirical Study in the HK Horserace Betting Market	Shuang Liu, Adi Schnytzer, Johnnie Johnson
Lo Hui-Yi	Insight into compulsive buying: a new exploration into purchase judgments and decision making in addictive buying behaviour	Lo, Hui-Yi; Chater, Nick; Harvey, Nigel
Maras Marta	Disposition Effect in the Venture Capital Decision-Making Process: An Experimental Approach	Marta Maras
Maule John	Metaphor in communicating about background terrorist risk	A. J. Maule, L. Cameron, Z. Todd, P. Stratton, R. Maslen, T. Sandberg, N. Stanley
Marucci Francesco S.	Attribute framing and perceptive complexity in gambling	Oddi D., Meo M., Marucci Francesco S.
Newell Ben	The role of experience in decisions from description	Ben Newell, Tim Rakow
Ni Melody Zf	Applying Bayesian Belief Network to model the uncertainties in tube-feeding severely ill patients	Melody Zf Ni, Larry Phillips, George Hanna
Nilsson Håkan	On the topic of feminist bank-tellers: The conjunction fallacy within a category learning framework	Nilsson Håkan
Ophir Dan	Creating Visualized Decision Support Tools	Ophir Dan
Pingenot Alleene	Information Format in Immunization Decision-Making	Alleene Pingenot, James Shanteau
Rakow Tim	Examining partition dependence and reliability for the trial roulette method of eliciting a subjective probability distribution	Tim Rakow, Tony O'Hagan, Caitlin Buck, Ali Daneshkhan

Poster Presentations

Renkewitz Frank	Is the Famous-Names Effect Caused by Differences in the Pre-Experimental Frequencies of the Names? - A Test of a Hypothesis of MINERVA-DM	Frank Renkewitz
Reutskaja Elena	Choice overload and fMRI	Elena Reutskaja, Johannes Pulst-Korenberg, Colin Camerer, Rosemarie Nagel, Joseph Wang, Antonio Rangel
Sala Valentina	Sunk Cost Effect in Children	Valentina Sala, Gabriella Passerini, Laura Macchi, Maria Bagassi, Marco D'Addario
Samson Andrea C.	Empathizing and systemizing in risky decision behaviour	Samson Andrea C.
Seifert Matthias	A dual process model of hit prediction in the music industry	Matthias Seifert
Stiggelbout Anne	Health-State Utilities: a Framework for Studying the Gap between the Imagined and the Real	Anne Stiggelbout
Straubinger Nils	Information representation in Bayesian problems: The influence of statistical format and normalization on Bayesian reasoning	Nils Straubinger
Timmermans Danielle	Presenting health risk information in different formats: the effects on participants' cognitive and emotional evaluation	Danielle Timmermans, Karen Vermey, Lidewij Henneman
Twyman Matt	Online detection of change in a time series	Matt Twyman, Nigel Harvey, David Lagnado.
Vaillant Nicolas	Infanticide, rational use of violence and deterrence: evidence 19th century Brittany	Nicolas Vaillant
Vibla Natalia	Professional Judgment: Clinical decision making in General Practitioners referrals for counseling	Natalia Vibla, Dr. Mandeep K. Dhami, Dr. Peter Ayton, Chris Moore
von Helvesen Bettina	The mapping model: A cognitive theory for estimation from multiple cues	Bettina von Helversen, Jörg Rieskamp
Walsh Emma	What is it Like to be You? Perceived and Actual Impact of Health Conditions on Happiness	Emma Walsh, Peter Ayton
Zurbriggen Seraphina	Time is money - is it? A comparison of two resources in the field of active information search	Zurbriggen, S., Christen, S., Hausmann, D., Läge, D.

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SPUDM 21

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