

EUROPEAN GROUP OF
PROCESS TRACING STUDIES

40th Annual Meeting of the European Group of Process Tracing Studies
University of Amsterdam
June 29th – July 1st

Welcome

Dear fellow researchers,

Jointly with the University of Amsterdam, we are happy to welcome you to the 40th Annual Meeting of the European Group of Process Tracing Studies (EGPROC 2022). We are happy to be able to host the first on-location meeting since 2019.

The last two years have been difficult for everyone, for some more than others. We understand the current difficulties regarding travelling to a conference (e.g. safety, sustainability or just time availability). In order to make everyone feel welcome, even if you cannot make it, we will stream presentations, so the whole VIPROC (virtual process-tracing) community is able to attend the talks.

Despite all these difficulties, we have made an effort to make this meeting as engaging and interesting as possible. We have received a number of great presentation submissions that we cannot wait to see. Moreover, we are excited to present our three keynote speakers Giorgio Coricelli, Joanna Lahey and Vojtěch Bartoš.

Finally, as the community in process-tracing studies, we believe that we have valuable insights to contribute on relevant topics such as discrimination and sustainability. It is for this reason that we have organized a workshop on “the role of attention in sustainability and discrimination”, where we expect an insightful discussion regarding these topics. We have 4 local experts to start discussions: Katharina Block, Thomas Buser, Jantsje Mol, and Dianna Amasino.

We hope that you will have a fantastic time in the vibrant city of Amsterdam. See you soon!

Organizing Committee:



**Dianna
Amasino**



**Jan
Hausfeld**



**Alejandro
Hirmas**



**Carsten
de Dreu**



**Jan
Engelmann**

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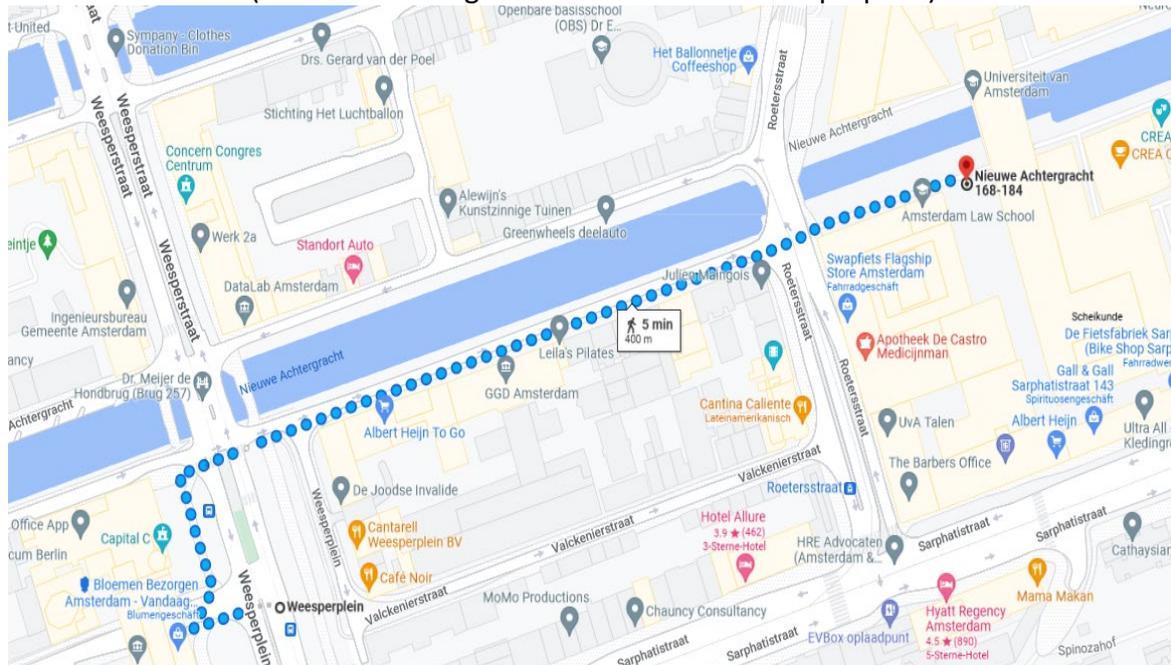
Program

Day	Time	Event	Location
EGPROC Main Conference Day 1 June 29, 2022 (Wednesday)	9:15 - 9:50	Registration (with coffee)	A2.08
	9:50 - 10:00	Welcome	A2.10
	10:00 - 11:30	Talk Series 1: Choice Process Models <i>O Grenke, C Häffner, JL Orquin</i>	A2.10
	11:30 - 12:00	Coffee Break	A2.08
	12:00 - 13:00	Talk Series 2: Social Decisions <i>N Sullivan, L Micheli</i>	A2.10
	13:00 - 14:00	Lunch	A2.08/outside
	14:00 - 15:30	Talk Series 3: Reasoning & Heuristics <i>E Speijer, S Mondal, JT Wang</i>	A2.10
	15:30 - 16:30	Poster Session (with coffee)	A2.08/balustrade
	16:30 - 17:30	Keynote: Giorgio Coricelli	A2.10
	17:30 - 18:45	Reception (Borrel)	CREA
EGPROC Main Conference Day 2 June 30, 2022 (Thursday)	9:30 - 11:00	Talk Series 4: Web-Based Methods <i>A Hirmas, A Krefeld, H Habibnia</i>	A2.10
	11:00 - 11:30	Coffee break	A2.08
	11:30 - 13:00	Talk Series 5: Risk <i>R van Holst, F Bolenz, M Garagnani</i>	A2.10
	13:00 - 14:00	Lunch	Pick-up A2.08
	14:00 - 15:30	Talk Series 6: Moral Wiggle Room <i>M Eyting, L Vu, CK Børsting</i>	A2.10
	15:30 - 16:00	Coffee Break	A2.08
	16:00 - 17:00	Keynote: Joanna Lahey	A2.10
	19:00 - 20:30	Conference Dinner	Ysbreeker
Workshop: The Role of Attention in Discrimination and Sustainability July 1, 2022 (Friday)	10:00 - 10:15	Welcome	A2.10
	10:15 - 11:15	Poster Session (with coffee)	balustrade
	11:15 - 12:30	Local Talks <i>K Block, T Buser</i>	A2.10
	12:30 - 13:30	Lunch	outside
	13:30 - 14:45	Local Talks <i>J Mol, D Amasino</i>	A2.10
	14:45 - 15:30	Break-Out Discussions (with coffee)	A2.10/outside
	15:30 - 16:45	Keynote: Vojtěch Bartoš	A2.10
	17:00 - 18:30	Reception (Borrel)	CREA

Locations

General information: **All the talks will be held at the A-Building room A2.10** at the Roeterseiland campus. Coffee-breaks will be either in the same room, room A2.08 or the balustrade (where the poster sessions will be held).

Campus Location – Roeterseiland Campus A-Building (5-7 mins walking from Metro station Weesperplein)

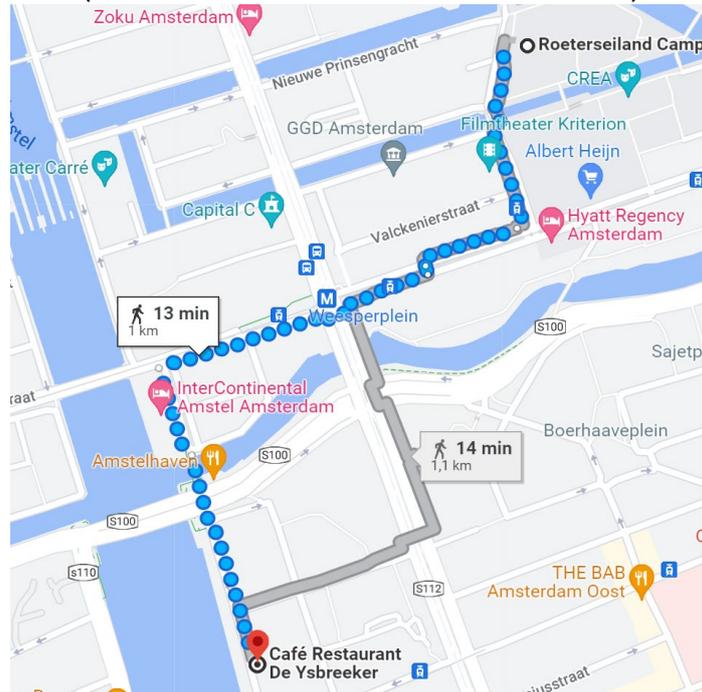


Conference Location (REC-A 2.10) Conference drinks/borrel - café CREA



Conference Dinner – Ysbreker

(13-15 min walk from conference location)



Talks:

Every presentation-slot is 30 minutes including questions and setting up.

We suggest that you plan for a **20-24 minutes presentation**. This way there should be sufficient time for clarifying questions during the talk and discussion after the talk.

Zoom link:

We will also stream the conference via zoom:

<https://uva-live.zoom.us/j/89516645882>

Meeting ID: 895 1664 5882

However, the focus/priority will be on the in-person event. This means that everyone online will be muted unless the organizers unmute them. **Please do not post the Zoom links online**, but you can share it with others.

Keynote Talks:

Strategizing and attention in games



Giorgio Coricelli

Using Eye-Tracking to Study Discrimination in the Hiring Process



Joanna Lahey

Attention, beliefs, and decision making



Vojtěch Bartoš

Abstracts

Talk Series 1: Choice process models (Wednesday 10:00-11:30)

From sequential sampling to mouse cursor tracking and back: An exploratory study

Oliver Grenke, Martin Schoemann, Stefan Scherbaum

If one is interested in the process underlying a decision, behavioral scientists can either reconstruct the process, for instance, by fitting sequential sampling models to the response time (RT) of a decision task, or by tracking the processes during the decision, for instance, by using mouse cursor tracking. By combining both sequential sampling theory (SST) and mouse cursor tracking, we explore how well these approaches can supplement each other: SST offers an accessible theoretical framework to conceptualize decision making and its dynamics. However, the applicability of model fitting is limited by its reliance on RT distributions which demand a minimum amount of comparable trials from within-subject task designs. For mouse cursor tracking, on the other hand, the development of a framework, which describes the amount of information we can harvest, is still in its infancy, while the method offers a large amount of data even at the level of individual trials. In this study, we explore how much information about a basic drift diffusion model can be extracted from mouse cursor trajectories. Participants completed a random dot motion task in which evidence accumulation is well accounted for by SST. We consider different approaches for extracting the most common diffusion model parameters (namely: non-decision time, starting bias, drift rate, and threshold separation) from mouse cursor data. To validate our measures, we fit a hierarchical drift diffusion model to the data and compare fitted with extracted parameters.

Testing a parallel coherence-based process of preference updating about options and information distortion when information is presented sequentially

Carolin Häffner, Marc Jekel, Daria Lisovoy

People distort information about options in the direction of their emerging preference when information about options is presented sequentially one at a time (Russo, 2015). The robust finding is that information about the preferred option is evaluated more positively whereas information about the non-preferred option is evaluated more negatively.

In the standard statistical analysis of information distortion (ID), researchers have typically related the extent of ID on currently presented information to the strength of participants' previously indicated preference for decision options. We argue that this analysis implies a serial cognitive process of ID. This, however, does not align well with the assumption of a parallel cognitive process that is at the heart of the coherence-based model that has been proposed for explaining ID (DeKay, 2014). The model implies that a change of preferences for options runs in parallel to the evaluation of current information, and that both processes affect each other. In a study with 210 participants, we tested the implications of such a parallel process on ID for decisions between two options in health and consumer-related domains. We find for the current round of information presentation that (1) a positive change in preferences leads to stronger ID (push effect), (2) a negative change in preferences leads to weaker ID (pull effect), (3) preference reversals change the direction of ID (reversal effect), (4) and information in accordance with the current preference is distorted more strongly and processed faster (coherence effects). Implications of the results for the literature are discussed such as the benefit of theory informing the statistical analysis for advancing our understanding of ID.

The Visual Environment and Attention in Decision Making

Jacob L. Orquin

Visual attention is a fundamental aspect of most everyday decisions, and governments and companies spend vast resources competing for the attention of decision makers. In natural environments, choice options differ on a variety of visual factors, such as salience, position, or surface size. However, most decision theories ignore such visual factors, focusing on cognitive factors such as preferences as determinants of attention. To provide a systematic review of how the visual environment guides attention we meta-analyze 122 effect sizes on eye movements in decision making. A psychometric meta-analysis and Top10 sensitivity analysis show that visual factors play a similar or larger role than cognitive factors in determining attention. The visual factors that most

influence attention are positioning information centrally, $r = .43$ (Top10 = .67), increasing the surface size, $r = .35$ (Top10 = .43), reducing the set size of competing information elements, $r = .24$ (Top10 = .24), and increasing visual salience, $r = .13$ (Top10 = .24). Cognitive factors include attending more to preferred choice options and attributes, $r = .36$ (Top10 = .31), effects of task instructions on attention, $r = .35$ (Top10 = .21), and attending more to the ultimately chosen option, $r = .59$ (Top10 = .26). Understanding real-world decision making will require the integration of both visual and cognitive factors in future theories of attention and decision making.

Talk Series 2: Social Decisions (Wednesday 12:00-13:00)

Contextual sensitivity of pro-social behavioral associated with neural response to giving

Nicolette J. Sullivan, Howard C. Nusbaum, John A. List, Steven Small, Ali Hortacsu

One pillar of behavioral economics is that context matters. The key support for this pillar revolves around hundreds of choice experiments, whereby individuals make choices over economically-identical sets that only vary the context. We move this literature in a new direction by exploring whether results from fMRI neuroimaging can predict which individuals are responsive to contextual changes. Our study revolves around the motivations for prosocial behavior. We find that neural responses in several cognitive control and valuation regions, estimated during a standard dictator game task, are predictive of the magnitude of shifts in altruistic giving in modified dictator game tasks. This finding demonstrates how neural data can identify individual differences in processes that underlie observed altruism related to specific theories of altruistic behavior. Importantly, we find that activation in the DLPFC, mPFC, striatum, ACC, and insula distinguish those who continue to give across multiple contexts that differ in demands on the giver, from those whose giving is sensitive to contextual modulation and may be driven by impure altruistic motivations.

Look at me: Face visibility, but not gaze direction, influence third-party punishment and compensation

Leticia Micheli, Anne Böckler

When fairness norms are violated, there are two ways in which individuals can restore equality and justice: Punishing the offender or compensating the victim. Recent research has shown that individuals have different preferences in terms of engaging on third-party punishment or compensation. But individual preferences can also be modulated by external contextual factors that increase the salience of specific information relevant for justice-restorative decision-making. Here we investigated whether subtle non-verbal cues in social interactions can influence preferences for punishment or compensation. Specifically, in a preregistered experiment, we explored the role of visibility of victims versus offenders as well as gaze direction in shaping justice-restorative decisions. In an economic game, 92 participants observed an interaction between two other individuals, one of which stole from the other. Participants then decided to use their own experimental endowment to punish the offender, compensate the victim, or do neither. We employed a within-subjects design in which participants were exposed to different experimental conditions where they saw either a picture of the offender or the victim looking at them (direct gaze) or looking away (averted gaze). Because eye contact has been shown to capture attention and influence social cognition and behaviour, we expected that compensation (punishment) would be greater when the victims (offenders) displayed direct versus averted gaze. Alternatively, and in line with the identifiable victim effect, it could be that the mere identification of the victim (offender) increased compensation (punishment). Results showed that preferences for compensation as well as compensation magnitude increased when participants saw a picture of the victim. Similarly, preferences for punishment as well as punishment magnitude increased when participants saw a picture of the offender. The gaze direction of victims and offenders had no influence on punishment and compensation decisions. Although being able to identify the victim or the offender clearly swayed preferences for compensation and punishment, this effect was not mediated by increased empathy, anger or reputation concerns. We conclude that some elements of social interactions can shape individuals' behaviour by presumably steering individuals' attentions towards the offender or the victim.

Talk Series 3: Reasoning & Heuristics (Wednesday 14:00-15:30)

The social and ecological foundations of irrational decision-making: a cross-species examination

E. Speijer, T. Ballauf, V. Céspedes, A. Westermann, E. Van Berlo, K. R. L. Janmaat, L. Molleman, J. B. Engelmann, and J. Hausfeld

Humans and other animals have to make many decisions every day. Interestingly, some of these decisions are irrational, such as decisions influenced by context effects. The most thoroughly studied context effect is the decoy effect, which occurs when a third dominating option (decoy) is added to two equally attractive options. This results in an increased tendency to choose the option that is a little better than the decoy. In this case, the economic rational choice theory is challenged because the assumption of context-independency is violated. Though the decoy effect has been thoroughly researched in psychological and economic fields, the cognitive, evolutionary, and ecological aspects is relatively understudied. It is likely that these irrational decision biases result from biological predispositions, as some studies have already shown that primates and other animals are sensitive to this bias. To further explore this, this study has focused on the decoy effect in an ecologically relevant environment which is understandable for children and chimpanzees. To create such an environment, we used novel VR technology which mimics a foraging garden with apple trees. In the garden, participants performed decision making tasks, through which the effect of the decoy was studied. The participants of this study were human adults and children, and currently chimpanzees in Artis are participating in a similar experiment. In this way, this study contributes to a better understanding of the roots of economic decision making, thereby illuminating why people and other animals make the choices they make.

Conditionality of adaptiveness: The not-so-simple relationship between payoff & adaptive behavior

Supratik Mondal, Jakub Traczyk

Recent studies have illustrated that people with higher statistical numeracy are more flexible in the face of changing task demands and are more likely to make adaptive choices than people with lower statistical numeracy. For instance, highly numerate individuals are more consistent in using an effortful Expected Value (EV) maximization strategy in meaningful choice problems (high-payoff condition) than less numerate individuals. However, highly numerate individuals can also adaptively calibrate their strategy in trivial problems (low-payoff condition) and make choices inconsistent with EV maximization. Yet, a few questions remain unanswered regarding highly numerate individuals' adaptiveness due to the extreme skewness present in choice problems used in earlier studies. It is unclear whether numerate individuals make more adaptive decisions following the relative difference in value provided by the two payoff conditions, or they tend to maximize EV irrespective of the relative difference in payoff. In two pre-registered studies, we tested numerate individuals' adaptiveness under high- and low-payoff conditions with more evenly distributed choice problems. Results from both studies revealed that the presence of two payoff conditions together does not necessarily initiate adaptive strategy selection, regardless of participants' numeracy. Instead, numerate individuals consistently made more EV consistent choices in both payoff conditions than less numerate individuals. We demonstrated that the change in EV consistency across payoff conditions was influenced more by the absolute difference than the related difference in expected reward. Lastly, we identified conditions (i.e., skewed choice problems, asymmetric trade-off, varied difficulty levels) that contributed to adaptive strategy selection.

Eye-Tracking Spatial Beauty Contest Games: Replication and Beyond

Yu-Hsiang Wang, Wei James Chen, Joseph Tao-yi Wang

We conduct laboratory experiments on spatial beauty contest games similar to Chen et al. (2018) ("CHW"). We observe subject's final choice, as well as their lookup pattern leading up to the decision captured by remote video-based eye-trackers, and analyze their entire reasoning process. Level-k and other types observed by CHW are also observed many of our subjects, but we find no "top-left" level-k types (which start their reasoning from the top-left corner). We instead identify several smaller classes of omitted types, including the "D-types" who play randomly but avoid dominated strategies (D0) or perform one round of deletion of dominated strategies and best response to the remaining strategies (D1). Interestingly, some of the D0 and D1 subjects have lookup patterns resemble level-k reasoning, but start from U 0 (or U 0') randomizing across one's (or opponent's)

undominated strategies. The newly discovered, hard-to-find dominance subjects allow us to explore the reasoning process of deleting dominated strategies through eye-tracking data.

Talk Series 4: Web-based methods (Thursday 9:30-11:00)

Learning the value of Eco-Labels: The role of information in sustainable decisions

Alejandro Hirmas, Jan Engelmann

In this study we analyse the behavior of consumers regarding purchasing decisions in the presence of eco-labels. Consumers currently face multiple comparative rating systems when making decisions (e.g. three-/five-star quality ratings). Our study compares the consumers' behaviour when facing both quality and sustainability ratings. We also explore the consumers' capacity to adapt to changes in such ratings. Recent evidence from the changes to the energy rating systems in the European union suggest that consumers have difficulties adapting to these changes in labelling systems (Faure et al., 2021). In an incentivized experiment, we ask participants to make multiple decisions between two products depending on their attributes (price, quality and sustainability). Quality and sustainability are presented as comparative ratings. In the middle of the experiment, we present the participants with additional information regarding the underlying values of the quality and sustainability ratings. In a between-subjects design, we modify the type of information received about sustainability. Namely, we decrease the relative value of one of the ratings for either Sustainability or Quality. We elicit beliefs about the values for each rating before providing this information and at the end of the experiment. Additionally, we use mouse-tracking to assess how long participants focus on the different attributes, which reflects the attention allocated to the different attributes. Our results, before the information treatment, show that participants believe both quality and sustainability ratings to have a linear representation. Participants show diminishing returns for both quality and sustainability ratings when deciding between items. We also find a strong correlation between attention to an attribute (measured as total time looking at said attribute on a trial) and the weight allocated to it in the decision. Finally, we find that participants adapt their behaviour differently depending on the additional information about the ratings. Namely, by lowering the values of mid-quality ratings, participants focus more on high-quality products. When we lower the value of mid-sustainability ratings, participants shift both towards low-quality and high-quality ratings. We provide an incentivized experimental setting to evaluate consumers' behaviour regarding sustainability ratings. We find that if a global sustainability label is implemented, policy makers need to account for the linear beliefs of consumers (and concavity in willingness to pay). Moreover, our results suggest that in case of changes to the ratings, consumers will adjust differently to new labelling systems.

Web eye Tracking for Studying Transitions in an Intertemporal Choice Task

Antonia Krefeld-Schwalb

Web eye tracking has emerged as a potential solution to reduce the cost of eye tracking studies and to expand the sample tested in eye tracking studies. Initial studies yielded promising results that would enable the application of web eye tracking in judgment and decision research. However, the focus of these studies was on measuring dwell time as an indicator of attention. It yet remained unanswered whether web eye tracking could also be used to study search patterns and, in particular, gaze transitions. In this project, we exemplified whether some established findings on search and decision making can be replicated in an intertemporal decision task with web eye tracking by using the open-source software Webgazer (Papoutsaki et al., 2016). The task was presented in 5 conditions, a control condition and 4 experimental conditions where attribute position was manipulated (large horizontal vs. large vertical distance) and where either amounts or delays were presented in different scales (cents vs. dollars or days vs. weeks) to facilitate or impede different search strategies in the conditions. 500 participants were recruited and tested online. The results shed new light on the possibilities and limitations of web eye tracking for JDM research.

Mental Representation of Dictator Game Giving and Its Link to Social Preferences (A Webcam-based Eye-tracking)

Hooman Habibnia, Susann Fiedler

This study aims to replicate and explore the previous findings regarding the underlying mechanisms of the relationship between social value orientation (SVO) and cooperative behaviors in social dilemmas with an online eye-tracking experiment. Most eye-tracking devices traditionally enforce the lab environment for experiments which requires close and prolonged contact between participants and researcher. COVID-19 pandemic pushed back many process-tracing studies that use eye-tracking as part of their methodological approach. Therefore, there is an urge to explore and devise alternative ways of recording gaze data. Having more powerful personal computers, and frameworks for online experiments makes conducting web-based eye-tracking possible. However, the strengths, limitations, and unique challenges of online eye-tracking experiments are still unclear (see the first study by Yang & Krajbich, 2021). We adopted a similar design to Fiedler et al. (2013) to investigate the research question and adjusted it to an incentivized web-based experiment. We measured individuals' SVO orientation with the Social Value Slider (Murphy et al., 2011). Next, we instructed participants to allocate money between themselves and another anonymous participant under three conditions while collecting gaze data. We asked them to allocate money I) based on their preferences, II) maximize their payoffs, and III) maximize their pair payoffs. We induced additional calibration and validation trials during the experiment to improve the data quality. Data from 200 participants were collected from the Prolific. Based on the previous studies, we expect longer decision times and more attention to the others' payoffs among those with more prosocial preferences. We will test the similarity of gaze patterns in instructed (maximizing own payoffs and maximizing other person's payoffs) and free social decisions by using the Needleman-Wunsch-Algorithm (Day, 2010). The current study not only helps us replicate the previous findings on the mechanism of the relation between the dictator game and social preferences but also sheds light on the challenges, strengths, and limitations of web-based eye-tracking experiments.

Talk Series 5: Risk (Thursday 11:30-13:00)

Keeping an eye on the prize: The role of attention in decision-making under risk in disordered gambling: an eye-tracking study.

Monja Hoven, Alejandro Hirmas, Jan Engelmann, Ruth van Holst

Gambling disorder (GD) is a behavioural addiction characterised by impairments in decision-making, favouring risk- and reward-prone choices. One important explanatory factor for this choice behaviour is a deviation in attentional processes, as increasing evidence indicates that GD patients show an attentional bias toward gambling stimuli. However, previous studies of attentional biases have not directly investigated attentional processes while making risky decisions. The current study included 25 GD patients and 27 healthy matched controls (HC) and investigated attentional biases for potential gains versus potential losses during decision-making under risk and its influence on choice behaviour, using a mixed gamble task and eye-tracking. Leveraging a new method to discern top-down and bottom-up attentional processes, we were able to test the hypothesis that GD patients relative to controls have increased (top-down) attentional bias for gains and an increased influence of this bias on gambling propensity. Results indicated that compared to controls, GD patients had a higher gambling propensity, were less loss averse, and valued gains more strongly in their choice to gamble. The analyses on the influence of attention on choice behaviour revealed that across groups, the longer someone focuses their top-down attention on gains, the more they choose to gamble. In contrast, the longer someone focuses their top-down attention on losses, the less they gamble. Moreover, there were fewer gambles in trials in which the bottom-up attention to losses was higher (i.e. focusing on losses longer than average attention time). There was no effect of bottom-up attention on gains. Compared to controls, GD patients did not show a direct attentional bias towards gains (dwell time to gains itself, or relative to losses), but their top-down attention did influence their gambling choices more so than in controls. GD patients who focused their attention more on gains needed less high gain values to start gambling. Moreover, GD patients who focused more on losses stopped gambling sooner when loss values increased. These results give more insight into how attentional processes in GD patients play a role in gambling behaviour, which could have implications for the development of future treatments focusing on attentional training.

Exploring the structure of predecisional information search in risky choice

Florian Bolenz

The cognitive processes underlying people's decisions are often described in terms of distinct strategies. Cognitive processes can be measured by analyzing predecisional information search. But to what extent do structures in predecisional search support the notion of distinct policies of information processing? Here we employ a bottom-up approach to examine the heterogeneity in people's search behavior during risky choice by reanalyzing two data sets in which search was recorded with the process-tracing tool Mouselab. We apply cluster analysis to a set of variables that represent both the distribution of attention across attributes (i.e., outcomes and probabilities) and transitions between attributes. In the first data set, participants chose freely between risky gambles. Our analysis yielded two qualitatively different clusters of search behavior: one cluster was characterized by balanced attention to all attributes and by transitions occurring mostly within the same option; the other cluster showed a focus on outcome information and frequent attribute-wise transitions. The separability between the clusters was low, however, indicating that predecisional information search varies gradually rather than in distinct ways. The two clusters were also associated with differences in people's choice behavior and the choices corresponded to the prediction of existing strategies that were consistent with the type of information considered in each cluster. The distribution of the clusters varied considerably across individuals, but it was rather invariant across choice problems. This suggests that information search is not necessarily guided by features of the choice problem. In the second data set, participants were instructed to apply one of two strategies that have distinct information search policies. We found similar clusters of information search as for the first data set, and again low separability between clusters. This indicates that differences in information search are gradual even when people explicitly applied distinct cognitive strategies. Overall, the results indicate that predecisional information search is structured around two distinct processing policies—one resembling rational principles of expectation computation, the other reflecting heuristic principles that neglect probabilities. Within each cluster, however, there was considerable variability and the differences between them were gradual. Predecisional information search thus seems to be differentiated along less clearly distinct information processing policies than is often assumed. Alternatively, data about predecisional information search may provide a rather noisy diagnostic signal for identifying the cognitive strategies underlying decision making.

The Neural Foundations of Preference Reversals

Carlos Alós-Ferrer, Michele Garagnani

Different methods can be used to elicit preferences over risky alternatives, such as pairwise choices and willingness-to-accept valuations. The problem is that these methods are frequently at odds, casting doubts on the very foundations of economic analysis. In an EEG experiment we investigate the neural correlates of these different elicitation methods using frequency analysis and ERPs. We find that a failure of cognitive control, in the form of lower frontal theta activity, is responsible for stated evaluations incompatible with participants' choices, while the latter seem mostly unbiased. This result speaks in favor of the existence of an overpricing process, which biases valuations of lotteries with large monetary amounts, as often speculated but never before directly tested by the literature.

Talk Series 6: Moral wiggle room (Thursday 14:00-15:30)

Why do we Discriminate? The Role of Motivated Reasoning

Markus Eytting

Understanding the drivers of disparate treatments and outcomes of individuals from different social groups has been a goal of economic research for many years. Economists typically categorize discrimination as either taste-based (Becker, 1957) or belief-based discrimination, based on either accurate (Phelps, 1972; Arrow, 1973) or inaccurate beliefs (Bohren et al., 2019). While any kind of discrimination can have fatal consequences for the discriminated, a precise identification of the cause of discrimination has important implications for policy, welfare analyses and discrimination dynamics. This study makes two contributions to the literature on discrimination: First, it adds to our understanding of its underlying causes by providing a link between taste and belief-based discrimination through the mechanism of motivated reasoning. Second, it provides first evidence

on how this insight can be utilized to design a specific policy intervention that effectively alleviates this form of discrimination. I build on the work of Bohren et al. (2019), who argue that providing credible information on relevant group-level distributions allows to separately identify inaccurate beliefs and animus as potential drivers of discrimination. In particular, they argue that those with inaccurate beliefs should adjust their behavior upon receipt of credible group-level information while those who hold inaccurate beliefs merely in order to mask an underlying animus are unlikely to change their behavior in response to information. I extend their argument by looking more closely at those who do not change their behavior in order to understand a potential channel through which animus drives discrimination. In particular, I provide evidence that after receiving credible group-level information, these individuals use the 'wobble room' that group-level information provides for the formation of beliefs about unobserved individual-level characteristics. In a series of pre-registered online hiring experiments, I show that these individuals apply motivated reasoning to form inaccurate beliefs about individual characteristics. I find that individuals selectively acquire and interpret information in line with their motives if they have the necessary 'wobble room' to do so. They systematically search for information signals, update their beliefs in direction of their motives and ultimately discriminate based on these beliefs. I also show to what extent limiting this 'wobble room' can be an effective measure to fight this form of discrimination. By varying the reliability of individual-level information, I show that carefully designed information interventions can still change behavior of these agents, which demonstrates that it is important to identify this particular channel of motivated reasoning.

Willful ignorance: a meta-analysis

Linh Vu, Ivan Soraperra, Margarita Leib, Joel van der Weele, Shaul Shalvi

People sometimes avoid information about the impact of their action as an excuse to be selfish. Such “willful ignorance” reduces prosocial behavior and has detrimental effects in many consumer and organizational contexts. We report the first meta-analysis on willful ignorance, testing the robustness of the phenomenon and quantifying its underlying motives. We analyze 33,603 decisions made by 6,531 participants in 56 different treatment effects all implying variations of an experimental paradigm assessing willful ignorance behaviorally. Meta-analytic results reveal the ability to avoid information about the impact of ones’ actions decreases prosocial behaviors by 28%, even if participants can easily find out this information. We estimate that about 40% of the observed ignorance is committed by reluctant altruists who use ignorance to excuse selfishness. We investigate the boundary conditions of willful ignorance and address the theoretical, methodological, and practical implications of our findings on who engages in willful ignorance, as well as when, and why.

Avoiding or just ignoring? How facilitation and suppression jointly drive selective information exposure

Caroline Kjær Børsting, Jacob Lund Orquin, Aleksandr Batuev, Shaul Shalvi

Selective information exposure often leads to biased decision-making. Examples include avoiding information on the effects of climate change, avoiding health information such as caloric content or endocrine-disruptive and environmentally-damaging substances in foods, and avoiding information on applicant attributes such as ethnicity, gender and age in hiring decisions. Previous research has shown that decision-makers sometimes attend more to self-serving information in consumption decisions (Ehrich & Irwin, 2005; Woolley & Risen, 2018) and moral decisions (Pittarello et al., 2015), but it remains unclear whether this happens as a result of facilitated attention to self-serving information, suppressed attention to self-hurting information, or a combination of both. We test this by means of eye-tracking in a lab experiment, where participants engage in a novel visual search task in which they search for and report target information either as accurately as possible or in a setting with a conflict between the correct and the incentivized response. Target information appears at semi-predictable locations, which enables participants to statistically learn where the self-serving and self-hurting information is most likely to appear. Our results show that individuals who behave self-servingly have greater fixation likelihood to spatial locations that are most likely to contain self-serving information and smaller fixation likelihood to spatial locations that are most likely to contain self-hurting information compared to neutral spatial locations. We interpret this as a combination of facilitated attention to self-serving information and suppression of self-hurting information in an environment where statistical learning is possible. In further support of this interpretation, we also find differences in time-to-first-fixation suggesting that self-serving individuals attend to

even irrelevant information before attending to self-hurting information, which speaks against the belief that blind spots might simply emerge because the information at these spots is not relevant for the decision-maker.

Workshop: *The role of attention in discrimination and sustainability*

Local Talk Series: Friday 1st July

A socio-cultural view of the gender gap in care-oriented careers

Katharina Block

Willingness to compete in the field

Thomas Buser

Risk communication & Virtual Reality

Jantsje Mol

Attention in decisions with ethical implications

Dianna Amasino

Poster Session: Wednesday 15.30-16.30

Good Practices for Eye-tracking Research Software

Ana Martinovici

Eye-tracking studies have multiple layers of complexity due to the use of proprietary software for data collection, the amount of data, and the lack of guidelines on data processing. enables researchers who use eye-tracking studies to develop automated solutions for working with eye-movement data. For example, an eye-tracker records the position of each eye 50-1000 times per second (e.g., typical marketing studies use a sampling rate of 50-100Hz, while psychology studies use 500-1000Hz). This leads to large datasets per participant, that need to go through complex processing steps before the researcher can test hypotheses. Eye-tracking software allows researchers to complete some of these steps manually. For example, researchers use the mouse to draw areas of interest (AOI) on an image and then use point-and-click menus to check the number of times that participants looked at that AOI. These processing steps are almost impossible to reproduce, as the eye-tracking software doesn't allow the use of scripts to document the specific options selected by the researcher. Processing of eye-tracking data using scripts is possible but requires experience with a variety of tools (e.g., R, Matlab, Bash, Make, Git). This poster raises awareness about practices that impact the numerical reproducibility of research results. The goal is to motivate researchers who use eye-tracking and other types of process tracing data to start using better computing practices.

Investigating the Impact of Transcranial Magnetic Stimulation on Investment Decisions for Deductible, Non-Deductible, and Non-Social Partners within the Trust Game.

Jan Engelman, Benjamin Davey

The effortless ability to determine the trustworthiness of another person represents a complex process of social cognition and may be partially responsible for the complexity of modern human societies. Through a combination of controlled trust games and advanced neuroimaging, scientists have implicated several brain regions in trust decisions. Notably, the temporoparietal junction has been suggested to be involved in inferring the beliefs and thoughts of another person (i.e., Theory of Mind).

This insight leads to an important research question: If the temporoparietal junction was disrupted, would the process of trust be impaired? Moreover, would this process be more affected under some conditions (e.g., when you were able to deduct monetary units from your partner) relative to others? To answer these questions, a basic trust game paradigm was utilised in which participants performed the role of the investor. The role of the trustee (i.e., the partner) alternated between deductible partners, non-deductible partners, and a control

condition (i.e., non-social) between blocks. Each participant (i.e., investor) was also randomly assigned to one of three stimulation conditions, in which they received right temporoparietal junction TMS, left temporoparietal junction TMS, or sham TMS, directly before completing the task.

There was strong evidence for a between-groups difference in investment amount, with participants investing significantly more in deductible partners, relative to their non-deductible counterparts or when playing against a computer. However, there was little evidence that TMS to the left or right TPJ influenced investment decisions, either overall or within each partner condition (i.e., an interaction effect). The implications of these findings are discussed with respect to their social and economic consequences.

Voluntary task switching: Evidence for self-structured behavior (using an applied paradigm)

Peggy Wehner, Judith Herbers, Sebastian Pannasch, Stefan Scherbaum, and Caroline Surrey

Everyday life requires humans to process countless relevant and also irrelevant stimuli and thus make a lot of perceptual decisions. The ability to handle this challenge is often investigated using task switching paradigms. A typical task switching paradigm requires participants to respond to a stimulus in each trial with the need to switch (occasionally) between at least two usually simple and instruction-based tasks. Due to the highly structured nature and the strong determinacy of the participants' behavior in such a paradigm, the free decision-making behavior and the various strategies participants use in the real environment to process the large mass of stimuli and their underlying processes can hardly be detected and analyzed. Our goals were: (i) to develop a paradigm that more closely reflects the requirements and the processes that occur in the real environment, (ii) to identify different strategies, (iii) and to check the occurrence of typical effects of voluntary task switching in an applied paradigm. We developed an applied voluntary task switching paradigm. In this paradigm, participants inspect images containing spring meadows in between of leaves, flowers and bugs. Participants have to mark the bugs with different symbols based on their characteristics: Bugs with three dots with a cross, bugs that crawl to the top right or left with a circle, and bugs that have eyes with a diamond. Bugs could either have all three characteristics, two of them, only one or none. Participants are instructed to search for all characteristics. According to real life situations, the order and strategy can be freely chosen by the participants. We used this paradigm to investigate participants' behavior under more natural conditions. Continuous recording of their marking behavior allowed us to identify different self-selected processing strategies. Interestingly, our results show that a high proportion of participants applied one of the identified strategies in a stable manner over the course of the experiment. Moreover, despite the possibility to use own strategies, typical effects of task switching are evident in our results. With this paradigm we obtained classical findings - such as switch costs - but also higher order effects, i.e., effects that are not only caused by the directly preceding stimulus, but also by trials further back in the trial sequence of the paradigm.

Mind and motion: How motoric perturbations affect the processing dynamics in task switching

Judith Herbers, Caroline Surrey, Stefan Scherbaum

The decision of maintaining or switching a task underlies cognitive control processes balancing cognitive stability and flexibility. This balance is assumed to be affected both by cognitive and environmental factors and classically studied with task switching paradigms. However, these paradigms usually solely analyze outcome-based measures as task choice and increased response time in switch trials, hence lacking dynamic measures which may lead to further insights on the ongoing processes of the underlying cognitive system. To fill this gap and investigate if and how environmental influences like disruptive perturbations affect the cognitive system during task choice more directly, we developed a novel voluntary task switching paradigm using a joystick with process tracing. In this task, participants are asked on each trial to first indicate their task choice (task choice phase) and then perform the chosen task (task execution phase). We apply brief motoric perturbations of the joystick during the task choice process either in favor of a task repetition or switch and continuously record motion data to see if and under which circumstances task choice can be influenced. In a pilot study, we found that switch costs were evident in both error rates and response times, replicating common task switching findings. But in contrast to typical voluntary task switching paradigms, we did not find a repetition bias. As expected, force-feedback perturbations in favor of a task repetition or a task switch resulted in an increase or decrease in task repetition rates, respectively. Furthermore, we explored the process-tracing data in various analyses. Based on these promising results, we performed a refined version of the task on a larger sample, for which we will present first results. Overall, this novel task switching paradigm combining motoric perturbations with process tracing indicates that external factors like motoric perturbations are incorporated in deciding whether to repeat or switch a task. Additionally, it offers new possibilities to study which environmental influences affect the cognitive system in what state and therefore add new insights on the function of our cognitive system.

Irrationally sustainable? The effect of eco-labels, visual attention, and emotions on producers' sustainable decision-making

Imke van der Loo, Jan Hausfeld

This study is one of the first to examine the potential of eco-labels and information layouts in promoting sustainable decision-making for producers. The experimental design, including a pilot lab-study ($N = 36$) and an online main study ($N = 200$), is based on a common-pool resource dilemma game in the context of deforestation. In this game, participants have to decide how many trees to cut down from a shared forest in return for individual profit. However, participants face the risk of cutting down too many trees which will deplete the forest and stop the game. The main study shows that participants who have the opportunity to earn a symbolic eco-label significantly cut down fewer trees in the first round compared to the control group.

With regards to information layout, presenting information regarding trees cut down instead of points earned on top of the decision screens resulted in fewer trees being cut down in the pilot study. However, this effect disappeared when the same study was conducted online. Furthermore, using MouselabWEB (i.e. a tool for mouse tracking), a concise version of the Multidimensional Emotions Questionnaire and the Sustainability Consciousness Questionnaire, we show that the effects of visual attention and emotions should not be neglected in future studies. Public resource dilemmas, especially deforestation, are a crucial societal challenge with also academic importance. Future studies and practices should keep examining the possible tools to increase sustainable producer decision-making.

Hiring for others: The role of social expectations on gender biases

Jan Hausfeld & Alejandro Hirmas

Many of the hiring decisions are made by third parties. Head hunters or HR personnel select CVs of potential candidates for a job that will be evaluated by others. When looking for candidates, one tries to predict the potential performance of such candidate if they were hired. Naturally, if one has information of the person that will evaluate the candidate's performance, this can be useful to make predictions of the candidate's performance. In this study, we explore how evaluators rate workers of which they have different pieces of information (including gender) and we study how social expectations about the evaluators affect the predictions of performance of job applicants. This study is run in the lab using the GazePopint3HD eye-trackers. Our results show that when participants evaluate for themselves, they do not discriminate towards women, but when evaluating for others, they present a negative biases towards them. This effect is driven by both male and female evaluators.

Redistribution beyond equality and status quo

David Grammling, Urs Fischbacher, Jan Hausfeld, Vojtěch Zíka

Politics is increasingly driven by identity cleavages. We investigate such situations in a laboratory experiment on redistribution in a heterogeneous society. We create heterogeneous groups in nationality, seat number, or political orientation and vary the source of inequality (earned, random, or unfair) and its structure. Further, we extend the redistribution mechanism beyond the usual limits of equality and status quo. We find several motives that drive redistribution decisions, but ingroup favoritism is the strongest motive for redistribution; extreme forms of redistribution are almost exclusively used to favor members of one's own social group. These forms of redistribution are not sparse as roughly 40% of all redistributions go beyond equality and status quo. Complementary eye-tracking data shows that attention to the group information and to poor outliers explains redistribution.

Poster Session: Friday 10.15-11.15

Information, attention and discrimination

Ayse Mermer, Dianna Amasino

Discrimination against minority groups in organizational environments is well documented in many contexts including hiring and promotion decisions, yet little is known about the mechanisms behind discrimination. In this study, we investigate one potential channel: biased information acquisition by employers. This could manifest in seeking luck information for the minority group when performance is high--potentially to undercut it--but seeking ability information for the dominant group when performance is high. In a laboratory experiment, we

measure how employers allocate attention, as a scarce resource, between different performance attributes of minority and majority workers to evaluate performance. Our results have potential policy implications on how institutions can be adapted and improved to cope with discrimination.

Affirmative Action: Inequality and efficiency

Ankush Asri, Urs Fischbacher, Jan Hausfeld, Yvette Lambi

In this study, we explored the effects that affirmative actions policies (policies that try to increase the representation of disadvantaged groups in society) and Quota policies (policies that are based on income relative to others in the group) have on investments made in a Tullock contest as compared to situations with no policies where two random winners were drawn. Moreover, we looked at how fair participants in the experiment perceived the policies to be, and what the effects the role that people had in this experiment were on this rating. Lastly, differences in- and out-group punishments were considered under the three institutions (simple winner, affirmative action, and quota). Even though this experiment uses minimal group identity (indicating that someone is part of a green or yellow group), results can be used as an indication of the effects that natural group identity (e.g. race, gender, caste, sexuality) may have when dealing with affirmative action.

On the Limits of Self-serving Behavior - Inequality, Attention, and the Self-serving Bias.

Rafaela Pinto, Dianna Amasino.

Income inequality between rich and poor has widened in recent decades. Privileged people tend to explain their success on merit, neglecting the role that luck can play in their lives, keeping more to themselves and giving more to their wealthy peers. To examine the dichotomy of merit and luck as a justification for the self-serving bias and its consequences for redistributive preferences, an experiment involving a dictator game with previous production is conducted. Dictators were randomly assigned a relatively advantaged or disadvantaged position by being paid more or less than their receivers and allowing luck to play a role in their contribution to the surplus. Explicit luck information on payment rates was provided to dictators, along with merit and outcome information, before they made division decisions. The extent to which people used their relative luck to justify self-serving divisions and inequality was investigated. As the level of inequality in payment rates widened, relative attention to merit and luck information tended to increase. Importantly, it was found that an increase in relative attention to merit and luck information led to a reduction of self-serving divisions. These findings suggest that attention is a viable channel to mitigate the self-serving bias, reduce the polarization of political ideologies and potentially tackle the rise of populisms.

Metanorms, Cooperation and Sustainability

Julian Kirschner

In the paper I explore the relation between endorsement of punishment forms as a reaction to norm violations and sustainability / cooperation. I leverage the data from a cross-country study by Eriksson et al., 2021 and mainly explore correlations with the countries Environmental performance index (EPI). Robustness is checked through various control variables, different dependent variables and interaction as well as mediation analyses. Reference is made to the punishment literature in psychology and economics. In addition, outlooks are given for the relevance in the field of Neuroeconomics.

Sex, Lies, and Punishment: Gender Differences in Being Punished for Lies

Rafael Teixeira, Pia Fischer & Yufang Sun

At work, with friends, and in relationships, men and women often lie. But does the liar's gender affect how we perceive the lie? More specifically, do we punish men and women differently? This article seeks to answer these questions with a lab experiment. In a sender-receiver game, senders may decide to lie to get more money while reducing the receivers' earnings. The receiver observes the decision and demographic information about the sender, including gender. The pilot study indicates that men are more likely to be punished and are expected to lie more often. However, we did not observe gender differences in the likelihood of lying.

Participants

Amasino	Dianna	University of Amsterdam
Bartos	Vojtech	University of Milan
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Bolenz	Florian	Max Planck Institute for Human Development
Børsting	Caroline Kjær	Aarhus University
Buser	Thomas	University of Amsterdam
Chang	Li-Ang	University of Amsterdam
Coricelli	Giorgio	University of Southern California
Davey	Benjamin	University of Amsterdam
de Dreu	Carsten	University of Amsterdam
Engelmann	Jan	University of Amsterdam
Eyting	Markus	JGU Mainz
Garagnani	Michele	University of Zurich
Grenke	Oliver	TU Dresden
Habibnia	Hooman	Vienna University of Economics and Business
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Hausfeld	Jan	University of Amsterdam
Herbers	Judith	TU Dresden
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Lahey	Joanna	Texas A&M University
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Micheli	Leticia	University of Würzburg
Mol	Jantsje	University of Amsterdam
Mondal	Supratik	SWPS University of Social Sciences and Humanities
Pace	Davide	University of Amsterdam
Pinto	Rafaela	University of Amsterdam
Shalvi	Shaul	University of Amsterdam
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