BEACON

Conference of the Faculty of Psychology

BEACON 2022 – Boost & Exchange Academic Conference
16th September 2022
Faculty of Psychology, University of Basel

Like a guiding light, the Boost and Exchange Academic Conference (BEACON) supports early career researchers at the Faculty of Psychology in finding new opportunities for scientific exchange, shared learning, and professional development.

Program at a glance

Time	Topic	Place
08:30-09:00	Welcome & Registration	Foyer
09:00-11:00	Workshop **Argumentation in Science** Prof. Dr. Dr. Claus Beisbart	00.009
	Workshop **Create Your Personal Website** Prof. Dr. Rui Mata	00.011
	Workshop **Take the Academic Digitour** Maura Hannon	00.002
11:00-11:15	Coffee Break	Foyer
11:15-12:30	**Networking**	Kannenfeldpark
12:00-13:30	Lunch Break (Late Registration)	Foyer
13:30-14:30	**Poster Session**	Foyer
14:30-15:30	**Think Tanks**	Seminar rooms
15:30-16:00	Coffee Break (Coffee Cart)	Foyer
16:00-17:00	Keynote **Communicating Sleep Science - A Personal Account** Dr. Christine Blume	00.006
17:00-17:30	Farewell & Poster Awards	00.006
From 17:30	Apéro	Foyer

Argumentation in Science

Prof. Dr. Dr. Claus Beisbart

Professor extraordinarius with focus on philosophy of science at the Institute of Philosophy, University of Bern

Argumentation is a key element of scientific method and crucial for the communication of scientific findings. This workshop aims at training your skills to analyze, assess, and (re-)construct arguments. To this purpose, key terms and results from logic and argumentation theory will be introduced. We will then apply them to concrete examples. For instance, we will explore how to handle incomplete arguments and how to discuss objections against arguments.

Create Your Personal Website

Prof. Dr. Rui Mata

Professor at the Center for Cognitive and Decision Sciences at the Department of Psychology, University of Basel

Having your own website is like having a digital scientific 'business card.' Perhaps you do not know where to start, or perhaps you started but then got stuck? In this workshop, you will create your very own professional website using R Markdown and Distill. No previous programming skills are required; you will start with a template, and then, step-by-step, add to this website template to represent you, your science, your teaching, your outreach activities, etc. You will also learn how and where to host your website.

Take the Academic Digitour

Maura Hannon

Expert on social media communication, community management and strategy development at Karnarn GmbH, Biel

Have you been told you should have an online presence as a researcher? Building a strong digital identity can enhance your visibility as a professional but, from the dozens of online platforms on offer, where is the best place to start? If you want to understand more about the digital academic landscape, then take the Academic Digitour to find out:

- what's actually out there
- what each platform does
- what are advantages and disadvantages
- which platforms are the most important for researchers

Networking

Networking is crucial for success, whether for our research goals or careers. However, many early-career researchers often find this tricky or even distressing. It takes skill and practice to enjoy and benefit from networking. Therefore, this part of BEACON 2022 is **dedicated to providing a low-barrier opportunity to make new contacts in the informal ambiance of a relaxed promenade before lunch.**

In matched pairs of two, **you will be strolling through the beautiful Kannenfeldpark and get the chance to leisurely chat and exchange with fellow researchers.** Over the course of 30 minutes, you will have several short speed dates with researchers from other divisions. Your task will be to exchange on your personal scientific identity, goals, and visions.

Poster Session

The poster session will **offer a platform for early-career researchers to present their past, current, or planned research to their peers**, paving the way for subsequent peer mentoring and collaborations. This part of the conference is a core element to boost exchange and networking between all members of the faculty and, as a result, garner potential support and collaborations among peers.

The poster session will be split into two parts: **for the first 30 minutes, half of all presenters will be at their poster, and the other half of presenters will have a chance to go around and learn about the presenters' works.** Then we will switch: for the next 30 minutes, presenters become visitors, and visitors become presenters.

Think Tanks

A think tank gathers a group of (interdisciplinary) experts to tackle particular issues or ideas, often with a view to solving particular political, societal, or economic problems. **Think thanks conduct scholarly research, create a space for debate, generate ideas, and provide intellectual resources to the public.**

During the afternoon of BEACON 2022, **you will participate in a 1-hour think tank session to collaborate on current topics relevant to early-career researchers** at the Faculty of Psychology. For this purpose, you will be assigned to a think tank group. Each group will select one particular think tank problem from a range of predetermined topics. Each group will then explore their chosen topic and propose specific solutions or approaches. The sessions will be mentored and supported by members of the BEACON team. The think tank groups' products will be curated and made available.

Poster Awards

All posters will be peer-rated during the conference. However, this year, the poster awards will take a slightly different format. Instead of giving out prizes for the best, second best and third best poster, we will have three categories of non-traditional poster awards and cool prizes.

- **Most visually appealing poster**
- **Best data visualization**
- **Best open science practice**

Your poster will be rated by your colleagues at the conference. Voting will be open from 13:30 until 16:00 in the form (accessible through the link or QR code) here: https://forms.gle/nsivJbLNnUrTtuLZA

Communicating Sleep Science - A Personal Account

Dr. Christine Blume

Sleep Scientist at the Centre for Chronobiology, University of Basel and University Psychiatric Hospital

Dr. Christine Blume is a sleep scientist at the University of Basel and the University's Psychiatric Hospital (UPK). She is an avid science communicator, actively and passionately informing many different audiences via public lectures, podcasts, radio, blogs, and television about the science of sleep and human biological rhythms. As a freelance trainer at the German National Institute for Science Communication (NaWik gGmbH), she also seeks to support others in communicating their scientific topics. This keynote invites you to join Christine on her science communication journey, from a life-changing phone call in 2018 right up to today, including many peeks "behind the scenes". Have you ever wondered about whether and/or how to communicate your science, how to prepare such an engagement, and what the potential costs and benefits are? To get started on answering these questions, join us for this exciting keynote with Dr. Christine Blume!

Abstracts

1. Measuring individual-level semantic representations
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4. Measurement invariance of IDS-2 as a function of cognitive and cultural complexity among groups with and without migration background
5. Testing the family stress model in sojourning families: How parent's transition stress impact child's well-being and sociocultural adjustment?
6. Semantic accounts of risk perception
7. Life-course trajectories of risk-taking propensity: A coordinated analysis of longitudinal studies
8. Beneficial effects of daytime light exposure and physical activity on the human circadian clock and sleep – A study protocol
9. Prospective machine learning based prediction of major depressive disorder onset in adults during a large-scale cohort study
10. Compassion fade on gofundme.com
11. Animal-assisted interventions and depressive symptoms
12. Effects of sleep duration and light on mental effort

1 Measuring individual-level semantic representations

Samuel Aeschbach, Rui Mata, Dirk Wulff

Semantic representations are the basis of numerous cognitive functions, including language production, reasoning, and creativity. Efforts to account for semantic representations in cognitive models typically use aggregate representations derived from either pre-trained language embeddings or large-scale databases of semantic behavior (e.g., Small World of Words). Yet, fundamental theories of human learning and a growing body of empirical work suggest that semantic representations should differ between individuals. Few studies in recent years have taken on the challenge to measure individual differences in semantic representations, but have so far not succeeded in discerning the magnitude of individual differences and their possible impact on downstream cognitive processes.

In this project, we use simulation analysis to rigorously assess the conditions necessary to accurately infer individual-level semantic representations when using free associations as the behavioral basis. Our simulation leverages a popular pre-trained language embedding as its ground truth representation and stipulates a process by which free associations are generated on the basis of semantic similarity and word frequency. Varying the properties of the ground truth representation and the features of the empirical design (number of cues, number of cue repetitions, cue set), we evaluate how well microscopic (word centrality, word similarity) and macroscopic properties (connectivity, average clustering, average path length) of the ground-truth representation can be recovered using different free association designs.

Our work shows that affordable study designs, as used in past work, are able to accurately infer some properties of individual-level representations. In contrast, others appear to require designs that are orders of magnitude more laborious and costly. We close by discussing implications and future directions for accurately measuring and accounting for individual-level semantic representations in cognitive modeling.

Keywords: semantic networks, free associations, individual differences

2 The curious case of the disappearing age effects on preference

Alexandra Bagaïni, Yunrui Liu, Loreen Tisdall, Arzie Bajrami, Gayoung Son, Rui Mata

Theories on psychological aging abound, some have emerged as dominant in the field of aging research. But how did we come to rely on some theories for understanding age-related differences while disregarding others? Evidence, of course. We use empirical evidence to update our beliefs, our theories, but also our beliefs in theories.

Meta-analyses are key to summarizing the gathered (mostly published) evidence on a certain effect, which ultimately can further support certain theories. Yet, most meta-analyses conducted on age differences ignore the dynamic aspect of evidence accumulation. Ofttimes, the discussion of previous results is selective and partitioned rather than cumulative. Thinking of evidence cumulatively can give insights into the history of a field, stages in the investigation of a topic, and more importantly, the sufficiency and stability of knowledge acquired on an effect. Cumulative meta-analyses (CMA) are a powerful tool to achieve this.

Here, we conducted separate CMAs to investigate age effects on three economic preferences: risk, time and altruistic. These preferences influence many everyday life decisions in various domains, therefore quantifying how such preferences may change with age can inform how the decision-making of different age groups could be made more sound.

We analyzed data from risk, time and altruistic preferences elicited using (monetary) tasks, and find little to no support for theories indicating age differences.

With this study we hope to challenge the view that age effects in economic preferences are robust, consistent and stable. We discuss how we should question more extensively our approaches to defining and measuring such constructs as well as our statistical methods, such as to more accurately and transparently quantify age differences and give meaning to null age effects.

Keywords: aging, economics preferences, cumulative meta-analysis

3 Narcissists' perceptions and behavior drive ostracism

Christiane Büttner, Selma Rudert, Rainer Greifeneder

Being excluded (ostracized) represents an intensely stressful experience that threatens fundamental human needs and has severe, negative consequences for individual well-being, such as fostering depression and suicidal ideation (e.g., Chen et al., 2020; Rudert et al., 2020). Considerably less research has been devoted to the question why some individuals become targets of ostracism in the first place.

In the present contribution (6 studies, 5 pre-registered, one panel data set, N = 3397) we examine the relationship between target narcissism and frequency of getting ostracized in daily life. We hypothesize that narcissists experience everyday ostracism more frequently than non-narcissists. This hypothesis is grounded in three distinct conceptual pathways: First, increased ostracism reports may be rooted in narcissists' altered, more hostile, perception of social cues that results in higher likelihood of narcissists feeling excluded (i.e., negative perception mechanism; e.g. Cascio et al., 2015; Denissen & Penke, 2008). Second, narcissists may display group-disturbing behaviors that motivate others to factually exclude them more often (i.e., target behavior mechanism; e.g. Brunell et al., 2011; Leckelt et al., 2015). Third, there might be a reverse causality relationship of target narcissism and ostracism experiences where narcissism is not only an antecedent but also an outcome of being excluded (i.e., reverse causality mechanism; Nielsen & Knardahl, 2015).

In Study 1, using longitudinal data from a nationally representative sample, we establish a strong link between grandiose narcissism and reported frequency of experiencing ostracism (German Socio-Economic Panel Innovation Sample, N = 1592). In Study 2, we replicate this link in both vulnerable and grandiose narcissists using experience sampling methodology (N = 113, 21 days, 695 exclusion experiences). Studies 3 and 4 focus on the negative perception mechanism. Studies 3 (N = 362) and 4 (N = 258) examine if the link between ostracism and narcissism can be explained by an increased sensitivity of narcissists to exclusion cues: We find that narcissist' sensitivity to exclusion cues is stronger in ambiguous exclusion situations (Study 4) than in unambiguous exclusion situations (Study 3). Study 5 (N = 321) shows that others factually exclude narcissists more often because of their narcissistic traits (behavior mechanism). Study 6 (NT1 = 487, NT2 = 264, six months apart) tests whether narcissism is an antecedent and outcome of frequent exclusion (reverse causality): We find that vulnerable, but not grandiose narcissism at T1 predicts more frequent ostracism at T2. More frequent ostracism at T1 does not predict higher narcissism at T2. We discuss implications for the study of risk factors for ostracism experiences as well as implications for narcissists' social experiences.

Keywords: social exclusion, ostracism, personality processes, narcissism, everyday experiences

4 Measurement invariance of IDS-2 as a function of cognitive and cultural complexity among groups with and without migration background

Lily Gantscheva, Martin Steppan, Alexander Grob

Introduction:
In this contribution the intelligence scale of the test Intelligence and Development Scales 2 (IDS-2) has been analysed for children and adolescents with and without migration background. The aim is to prove measurement invariance of the IDS-2 intelligence scale as expressed by comparison of the factor structures in both migrant and non-migrant groups. In addition to test bias, item bias for both groups and all subtest items has been assessed. Finally, performance differences between the migrant and non-migrant groups of children have been analysed in relation to cultural and cognitive complexity of IDS-2 subtests.

Methods:
IDS-2 standardisation and validation data for Switzerland, Germany and Austria comprising of 2,030 participants has been analysed with factor analyses separately for both groups with and without migration background. For the assessment of item bias correlation of the rankings of item difficulties in both groups has been ascertained. Cultural complexity measures of the IDS-2 subtests have been operationalised with the ratings by 26 psychology masters' students. Verbal complexity has been measured as the number of words in a subtest.

Results:
The results are expected to demonstrate an equivalent factor structure in both groups. Item bias is presumed to exist for the items in the IDS-2 subtests which are highly language- and/or culture dependent. Performance differences between the migrant and non-migrant groups are expected to be better predicted by the cultural than by the cognitive complexity.

Discussion:
In conclusion, IDS-2 measures the same cognitive abilities in different groups of children and adolescents. When using IDS-2 for assessment of children and adolescents with migration background results need to be considered carefully in light of the cultural and verbal complexity of some of the subtests.

Keywords: social exclusion, ostracism, personality processes, narcissism, everyday experiences

5 Testing the family stress model in sojourning families: How parent's transition stress impact child's well-being and sociocultural adjustment?

Katja Herrmann Aegerter, Yoon Phaik Ooi, Jens Gaab, Andrea Meyer

Background:
Families relocate internationally for many reasons. In more than half of the cases these families include children, commonly known as Third Culture Kids (TCKs). Changing circumstances can cause stress in all family members in the short-term with a potential long-term impact on their mental health. It can also not be ignored that through crossover and spillover effects, the entire expat family can have an impact on the success of an expatriate assignment.

Objective:
Adapting an existing Family Stress Model – which originally provided a framework for understanding how family stress caused by economic hardship impact children's adjustment problems indirectly through various processes such as parent's psychological distress, family relationships and parenting – the present cross-sectional quantitative study examines how parent's transition stress relates to child well-being and sociocultural adjustment through multiple processes.

Methods:
Participants have been recruited anonymously through social media, foreign ministries, associations of partners and spouses of foreign ministries with an advertisement flyer and a direct link to the online survey. Participants are asked to complete an online questionnaire that lasts for about 15 minutes at one sitting. This can be completed from a location at their own time and convenience. To be eligible participants must have at least one child between 7-17 years old and a predicted international relocation rhythm of every 2-6 years due to her/his own career or the career of her/his spouse/partner and understand English.

The questionnaire contains sections on the following psychological constructs: stress, support perception, isolation, perceived cultural distance, family functioning, couple satisfaction, parent psychological distress, parent-child relationship, parenting efficacy, parent resilient coping styles, parent personality, parental self-care, child emotional and psychological well-being and child sociocultural adjustment. Participants are able to download a pdf document that provide them with tips and information on "Managing International Relocations for Sojourning Families" as a form of reimbursement for their time upon completion of the online survey. The most suitable approach to analyse such model will be Structural Equation Modelling (SEM).

Results:
As of 12th August 2022, and after 6 months of active recruitment, 183 international participants fully completed the online questionnaire. Data analysis will start gradually once satisfying participation rates have been reached.

Conclusions:
The findings from this study would enable us to better understand the complex psychological processes in regularly relocating families with children. This could ultimately lead to the design of targeted interventions and a well-rounded support supply for expatriate families.

Keywords: animal-assisted intervention, pain, expectation, treatment rationale, placebo analgesia

6 Semantic Accounts of Risk Perception.

Zakir Hussain, Rui Mata, Dirk Wulff

Individuals face an increasingly large number of social and technological risks. How these risks are perceived is of critical interest for researchers and policymakers alike. In recent years, researchers have demonstrated that high-dimensional word embeddings derived from vast online text corpora can improve our understanding of, and ability to predict risk perception. Most notably, Bhatia (2019) has recently found machine learning models such as Word2Vec to be on par with more traditional, psychometric approaches to risk perception. However, text may not present the best available source of information to capture people's semantic representations. Research has found representations derived from free associations to be a promising alternative when predicting human judgments and behaviour than those derived from text. We begin by presenting a reanalysis of Bhatia (2019) but with two main differences. Firstly, to ensure a representative, up-to-date evaluation of text-based accounts, we employ more recent text-based models, which benefit from architectural improvements and a larger training set. Secondly, we add our own free association-based representations to the model comparison, trained on data from the Small World of Words study in English dataset. To train this model, we apply singular value decomposition to the positive pointwise mutual information-transformed cue-associate matrix. We then use cross-validation to evaluate the different representations' ability to predict risk perception, and find that the free association-based representations are on par with the best performing text-based models, despite being trained on orders of magnitudes less data. We also find that an ensemble of the psychometric and semantic models can explain over 85% of the risk perception variance.

Furthermore, analyses of how the semantic models' predictive accuracy scale with the amount of training data indicates that higher performance can be achieved with participant ratings for a larger training set of risk sources than the 306 sources available in Bhatia's data. As such, in our main study, we collect risk judgements for a set of 1006 risk sources, and evaluate model performance on this larger set of sources. Finally, we demonstrate the applicability of these newly fitted representations by employing them to analyse the riskiness of the language used in online articles – namely, UK parliament speeches – identifying patterns of changing risk perception over time that correspond to real-world events.

Keywords: risk perception, free association, semantic representation

7 Life-course trajectories of risk-taking propensity: A coordinated analysis of longitudinal studies

Yunrui Liu, Alexandra Bagaïni, Gayoung Son, Madlaina Kapoor, Rui Mata

Objectives:
How does risk preference change across the life span? We address this question by conducting a coordinated analysis to obtain the first meta-analytic estimates of adult longitudinal age differences in risk-taking propensity in different domains.

Methods:
We report results from 26 longitudinal samples (12 panels; 187,733 unique respondents; 19 countries) covering general and domain-specific risk-taking propensity (financial, driving, recreational, occupational, health) across three or more waves.

Results:
Results revealed a negative relation between age and both general and domain-specific risk-taking propensity. Furthermore, females consistently reported lower levels of risk taking across the life span than males in all domains but there is little support for the idea of an age by gender interaction. Although we found evidence of systematic and universal age differences, we also detected considerable heterogeneity across domains and samples.

Discussion:
Our work suggests a need to understand the nature of heterogeneity of age differences in risk-taking propensity and recommends the use of domain-specific and population estimates for applications interested in modeling heterogeneity in risk preference for economic and policy-making purposes.

Keywords: age differences, risk taking, domain specificity, coordinated analysis, life span development

8 Beneficial effects of daytime light exposure and physical activity on the human circadian clock and sleep – A study protocol

Ann-Sophie Loock, Christine Blume

In modern societies, we usually spend most of the waking day indoors in relatively low light levels, whereas we expose ourselves to relatively high levels of artificial light in the evening. It has been shown that specifically "blue" or short-wavelength light in the evening delays the biological clock and can impair sleep. Exposure to natural daylight is associated with beneficial consequences for sleep and circadian rhythms. Yet, daylight exposure is often confounded with physical activity, which likewise is beneficial for sleep and can act as a zeitgeber. In this project, we thus aim at delineating the effects of (i) natural daylight and (ii) physical activity on the biological clock and sleep in a sample of max. 48 healthy volunteers using a Sequential Bayes Factor approach. We will vary the characteristics of daytime light exposure (LE) in a within-subject manner in three LE protocols. In protocol 1 (P1), participants will spend 7 hours in a well-controlled laboratory setting mimicking usual office lighting. Protocols 2 and 3 (P2/3) include exposure to natural daylight, however, in P3 the "blue light" proportions will be decreased. The precise light characteristics will continuously be monitored at eye level during wakefulness. Physical activity will be varied between subjects in two subgroups (i.e., a 'hiking' and a 'resting' group). The latter will hike (P2/3) or walk on a treadmill (P1) for 4 hours during LE. We will assess the expected phase-advancing effects of natural daylight and physical activity through shifts in dim-light melatonin onset (DLMO). Sleep effects will be investigated regarding subjective sleep quality, objective sleep indicators derived from polysomnographic measurements, and delta power during sleep.

During wakefulness, subjective sleepiness, mood, physical wellbeing, visual comfort, and objective alertness will be assessed. We expect the strongest effects of light for P2 (natural daylight), weakest for P1 (laboratory light), and intermediate effects for P3 (natural daylight with reduced “blue light”). Physical activity is expected to amplify the effects of daylight exposure. The gained knowledge will help to appreciate the relative importance of daylight as well as physical activity. It will thus inform about a healthy environment for circadian rhythms and sleep.

Keywords: sleep, circadian rhythms, daylight, physical activity

9 Prospective machine learning based prediction of major depressive disorder onset in adults during a large-scale cohort study

Johannes Massell, Martin Preisig, Marcel Miché, Marie-Pierre Strippoli, Giorgio Pistis, Roselind Lieb

Summary:
We aim to use a new methodology, specialized in accurate and reliable predictions, to classify between people who later develop a depression and those who do not. Preliminary results will be presented and discussed. The early identification of people at risk for developing a depression would be very useful as it may allow us to intervene early and help patients before this serious illness fully manifests.

Background:
Major Depressive Disorder (MDD) is one of the most prevalent mood disorders. It is considered the single most disabling mental disorder and constitutes a substantial burden to individual patients, their surroundings and society as a whole. MDD is a complex disorder best described by multifactorial models that take into account the interplay between several factors, e.g., genetic and environmental. Most previous research focused on risk factors associated with groups of patients suffering from MDD. However, no reliable and accurate way to predict the onset of MDD in individuals has been developed so far. Early detection of people at risk would make early interventions possible and ultimately may allow us to lower the manifold burden of MDD.
Machine Learning (ML) is an umbrella term for several algorithms designed to solve regression and classification problems. The focus of classical statistical methods is on group-level differences and ensuing inference. ML on the other hand puts a clear focus on individual predictions and is the backbone of the currently emerging branches of personalized medicine and psychiatry.

Benefits of ML include the possibility to incorporate many predictors into models at the same time, a sophisticated procedure for internal cross-validation and the ability to model both linear and/or non-linear relationships as well as complex interaction patterns.
Our aim is to compare several machine learning algorithms and logistic regression for the task of prospectively predicting the onset of MDD.

Methods:
CoLaus | PsyCoLaus is a large-scale prospective cohort study that started in 2003 and is still ongoing. More than 5000 adults from Lausanne, Switzerland between the ages 35 and 75 have undergone both physical and psychiatric investigations at least once, with nearly 80% also having returned for one or more of the several follow-up assessments. Assessments covered various domains and include demographic, psychological, somatic & genetic data. We identified promising predictors from each of these domains in the literature a priori, matched them to predictors available in our own dataset and used these variables at baseline to predict MDD onset in individuals between baseline and follow-up assessments. The algorithms we aim to use in this study are logistic regression, LASSO, random forests, support vector machines, naïve bayes and artificial neural networks. Repeated nested 10-fold cross-validation will be used to tune hyperparameters and assess model performances. Outcomes of interest are the area under the curve (AUC), F1 and scaled Brier scores.

Results:
Results such as model performance measures and an overview of individual predictor contributions were not available at the time of submission but preliminary results will be presented at the congress.

Conclusion:
Based on our preliminary results conclusions will be presented and discussed.

Keywords: depression, machine learning, prospective prediction, cohort study

10 Compassion fade on gofundme.com

Dominik Meier

In experiments on charitable giving people tend to offer greater aid to one person who is suffering rather than to a large group with the same needs. Researchers came up with different explanations for this compassion fade effect. A meta-analysis found that both anticipated positive affect from helping and perceived impact mediated the effect of group size on helping. However, recent research that used joint evaluation of the victims was able to reserve the compassion fade effect. When subjects saw multiple victim (groups) at once (instead of only one victim or victim group), they donated more to larger groups. This aligns more closely with the situation people encounter on crowd donating sites like gofundme.com, where people are presented with many projects to choose from. The projects on gofundme.com are presented in a grid, where each project has a profile picture, a short description and an indicator of how much of the target amount has already been raised. Clicking on a project tile takes one to the project page, often accompanied by a more detailed description and more pictures. Using the natural variation in the number of people presented on a project profile picture, I try to estimate the effect of the number of people on the profile picture on the charitable funds raised by the project. Since this is an observational setting, we need to control for all confounders to be able to estimate a causal effect. I use the description text of a project to control for confounders like the topic of the crowdfunding projects. I use multiple ways to control for the text as a confounding variable (i.e., topic models and document embeddings). To control for confounders in a flexible (i.e., nonlinear) way and to accommodate the high dimensionality of the confounders, I use the double machine learning framework to estimate the treatment effect.

Double machine learning uses off-the-shelf machine learning algorithms to orthogonalize both the treatment and the outcome from the confounding variables and then regresses the residuals from the outcome on the residuals from the treatment. This gives us a causal estimate of the treatment effect, given that we controlled for all confounders. Using a total of more than 69'000 projects from four countries (the US, Canada, Australia and the UK), I find that the number of people pictured on a project profile picture have a positive effect on charitable contributions.

Keywords: compassion fade, crowdfunding, charitable giving, machine learning

11 Animal-assisted interventions and depressive symptoms

Elena Pauli, Karin Hediger, Heike Gerger, Filip Vrtic

Background:
Depressive Disorders have been increasing in the past decades. Animal-assisted interventions (AAI) are known to be effective in reducing distress associated with depressive symptoms.

Objectives:
This systematic review aims at investigating the effectiveness of AAI in reducing depressive symptoms. Furthermore, it aims at updating the current literature on the effects of animal-assisted interventions on depression.

Methods:
We searched 15 major online databases for studies reporting quantitative data on the effectiveness of AAI in reducing depressive symptoms in children and adults. Of 20'129 identified studies, 120 studies were included for data extraction. The primary outcome was depression symptom severity. Secondary outcomes were stress and anxiety. All outcomes were measured via a standardized measurement at pre- and post- intervention assessments. We will conduct random-effects meta-analyses with all controlled studies based on standardized mean differences (SMD), and calculated standardized mean change (SMC) as effect sizes for studies with a pre-post one-group design. Odds ratios will be generated as indicators of treatment acceptability. Two independent researchers assess the quality of the included studies.

Expected results:
We expect that AAI are at least equally effective in reducing depressive symptoms across different populations or contexts compared to standard treatment. We also expect a statistically significant superiority of AAI over waitlist condition in reducing depressive symptoms. Furthermore, AAI may be associated with higher treatment acceptability and therefore lower drop-out rates. Lastly, we expect heterogeneous findings in terms of study quality. Analyses are still ongoing, therefore results and discussion will be presented at the conference.

Keywords: open-label placebo, imaginary pills, test anxiety, psychotherapy

12 Effects of sleep duration and light on mental effort

Larissa Wüst, Christian Cajochen, Ruta Lasauskaite

Brehm and Self's (1989) motivational intensity theory predicts that invested effort is proportional to task demand, as long as solving the task is possible and the effort is justified. Among other factors, task demand is determined by the perceived capability to perform the task, which in turn should decrease with increased subjective sleepiness, e.g., as influenced by sleep duration or light intensity. We expected stronger effort in participants after short sleep compared to normal sleep duration and exposed to dim compared to moderately bright light.

Thirty-nine participants (18-34 years, 25 women) underwent two experimental sessions each (after 5 vs. 8 hours of sleep, within-subject), consisting of 8-min baseline, 15-min light exposure (1 lx vs. 100 lx, between-subject) emitted by a computer screen, and a 5-min auditory 2-back task . We measured mental effort as changes in sympathetic beta-adrenergic impact on the heart, indexed by the cardiac pre-ejection period (PEP) and systolic blood pressure (SBP). Additionally, heart rate (HR) and diastolic blood pressure were recorded. Subjective sleepiness and task difficulty were also assessed.

As expected, subjective sleepiness was significantly higher after the short than long sleep duration ($p < .001$). Participants felt also sleepier in the dim than moderately bright light condition ($p = .040$). However, we did not find evidence for a stronger effort as indexed by PEP or SBP during task performance. HR significantly decreased during task performance in the sleep-restriction condition ($p = .026$), which was more pronounced in moderately bright light (significant interaction term ($p = .041$).

Subjective task difficulty was higher in the sleep-restriction compared to the well-rested condition ($p = .045$), but not influenced by light intensity. Task performance did not differ significantly between sleep nor light conditions.

We could not find any effects of light intensity on effort-related cardiovascular response as indexed by PEP and SBP, while sleep restriction decreased HR, particularly during the brighter light condition. It is premature to conclude whether the observed decrease in HR reflects a decrease in mental effort since HR is controlled by the sympathetic and parasympathetic nervous system. As both sleep restriction and exposure to light-emitting computer screens are rather common in our society, sleep-loss related changes in cardiovascular activity should be further elaborated.

Keywords: effort, cardiovascular, sleep, light, working memory

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