Abstracts for Talks at the TSIL 2021

Day One, September 16th

Panel 1
Modular, Transdiagnostic, and Technique-based Approaches

Towards a mechanism-based personalized psychotherapy by moving beyond categorial classification systems and psychotherapy orientations

Eva-Lotta Brakemeier, University of Greifswald, Germany

After first showing that personalization of psychotherapy is indeed beneficial, EL Brakemeier argues for mechanism-based personalization by outlining specific approaches from her lab. She concludes by discussing possible ways to overcome categorial classification systems and traditional psychotherapy orientations in order to select the optimal treatment for each patient.

Treatment selection in a transdiagnostic universe: Dark art or science?

Tim Dalgleish, University of Cambridge, UK

The classical challenge for treatment selection within clinical psychology and psychiatry follows a path from assessment, through identification of a primary diagnosis, survey of available evidence-based interventions, and selection of one or more of those interventions as the referral choice for the client. Selection (assuming all options are available) has traditionally involved a combination of clinical judgement and client preference. More recently the work of TSIL and others has advanced the use of quantified assessments to inform this process. Following treatment selection, another more opaque process entails whereby clinicians will tailor and tweak the intervention being administered based on clinical judgement and individual formulation. More recent advances in ideographic approaches raise the potential for greater formalisation at this stage also. Within the transdiagnostic paradigm, each of these stages is somewhat different. Assessment and broader treatment selection are, arguably, more straightforward. After that, deciding the selection, order, and intensity of the

transdiagnostic treatment elements is perhaps more challenging. How can this more challenging stage best be navigated. Presently, one might suggest, the 'dark art' of clinical judgement grounded in (often many years of) experience tends to prevail. However, this presents barriers to the training and dissemination of transdiagnostic interventions. This talk reviews the shift in treatment-selection thinking that might be required by switching to a transdiagnostic paradigm and examines potential solutions to the within-treatment selection issues that arise.

An Overview of Research on the Unified Protocols for Transdiagnostic Treatment of Emotional Disorders in Children and Adolescents

Jill Ehrenreich-May, University of Miami, USA

Instead of being tasked to treat disorders one-by-one, clinicians might utilize a transdiagnostic approach to robustly decrease internalizing symptoms in youth. This presentation will introduce attendees to current research on the efficacy, effectiveness and possible limitations of the Unified Protocols for Transdiagnostic Treatment of Emotional Disorders in Children and Adolescents.

Personalizing psychotherapy at the process level: Going beyond treatments and diagnoses.

Juan Martin Gomez Penedo, University of Zurich, CH

In this presentation I'm going to discuss the possibility of personalizing psychotherapy based on individual predictions of process and mechanisms effects. As an example, I will present a recently published empirical study, using machine learning to predict problem coping effects on psychotherapy outcome.

The Future of Treatment Research is Process-Based Therapy

Stefan G. Hofmann, Boston University, USA; Philipps-Universität Marburg, Germany

Process-Based Therapy (PBT) is a radical departure from the latent disease model of the current psychiatric nosology of the DSM/ICD and the absurd proliferation of the protocols-for-syndrome approach. In essence, PBT offers a new paradigm for clinical science: Gathering high-density longitudinal idiographic data to capture the complexity of psychopathology using a dynamic network approach within the general framework of evolutionary science.

Expanding the Evidence Base for Clinical Decisions in Modular Therapies

Mei Yi Ng, Florida International University, USA

Modular therapies were developed to facilitate treatment personalization. However, more evidence is needed to inform the selection and sequencing of modules. I present results from a meta-analysis of candidate mediators of CBT and an idiographic analysis of CBT components for youth depression, and conclude with implications for informing modular therapies.

Which module(s) for whom? Personalizing modular/technique-based approaches to psychotherapy

Julian A. Rubel, Justus-Liebig-University Gießen, Germany

Modular transdiagnostic approaches are predestined to be applied in a personalized manner. Their toolkit structure provides a greater amount of flexibility for personalization than the nowadays much more common personalized selection of treatment packages. However, this greater flexibility also comes along with greater complexity. As such, empirically-based personalization of transdiagnostic modular treatments is faced with many challenges. In the present talk, Julian Rubel describes three key challenges and shows an exemplary approach trying to address two of them.

Testing a "simple" personalised transdiagnostic digital intervention to promote mental health and well-being in young people –the ECoWeB project

Edward R. Watkins, University of Exeter, UK

ECoWeB tests the efficacy of personalised emotional competence (EC) skill training via self- help app as scalable mental health promotion for young people. 3830 young people have been randomised to self-monitoring control, generic CBT self-help app or EC app with personalisation to 2 most needed EC skills, with 12-month follow-up.

Panel 2
Digital Approaches

Not Just "Big" Data: Importance of Sample Size, Measurement Error, and Uninformative Predictors for Developing Prognostic Models for Digital Interventions
Christopher G. Beevers, University of Texas, USA

Our simulations suggest that machine learning methods capable of discovering complex interactions and nonlinear effects perform particularly well in large samples when the predictors and outcomes have virtually no measurement error. However, in the presence of moderate measurement error, these methods provide little or no benefit over regularized linear regression.

The Complex Journey From Data-Informed to Data-Driven Personalization of Psychological Therapies: Learnings From the Development and Piloting of the RainFrog Digital Therapy Ecosystem
Zachary Cohen, University of California, Los Angeles, USA

Abstract coming soon

Scaling up treatment prediction research using online research methods
Claire M. Gillan, Trinity College Dublin, IRE

We developed an internet-based protocol that allows us to gather rich datasets (>650 variables) in a large samples (N>700 to date) of individuals starting antidepressants or iCBT. Recruitment of participant is rapid and attrition is low. This design may dramatically speed up progress in developing models to assist clinical decision-making.

Utilizing Passively Collected Data and Computational Models to Drive Scalable Personalized Interventions

Nicholas C. Jacobson, Dartmouth College, USA

Presenting results from approximately twenty studies from hundreds of thousands of participants across the globe, the current talk discusses the application of personal digital devices and machine learning to assess present and future changes passively and longitudinally in psychopathology symptoms, as well deliver personalized scalable interventions.

Personalizing Eating Disorder Treatment

Cheri A. Levinson. University of Louisville, USA

Eating disorders (ED) are extremely heterogeneous and treatments do not work for 50% of individuals. The current study (N=47) tested a personalized treatment for ED, using idiographic network analysis to inform treatment target selection (Network-Informed Personalized Treatment; NIPT-ED). NIPT-ED was highly feasible, rated as acceptable by patients, and decreased ED severity.

Little Treatments, Big Effects: Building Brief Interventions to Reduce Youth Psychopathology at Scale

Jessica L. Schleider, Stony Brook University, USA

Despite advancements in effective intervention development, most youths in need of mental health treatment cannot access support. In this talk, Dr. Jessica Schleider overviews her lab's work on building and testing online single-session interventions (SSIs) for youth depression and anxiety, highlighting how SSIs may help fill need-to-access gaps in mental healthcare.

Panel 3

Assessment (Idiographic Approaches and Intensive Longitudinal Assessment)

Life after the hype: Implementing networks and complexity fruitfully for idiographic assessment

Laura F. Bringmann, University of Groningen, NL

Networks and complexity approaches are increasingly used in clinical practice. However, although the theories sound plausible,translating them to a suitable model is less easy than originally thought. In this talk I will address some of the problems of VAR based networks and discuss ways forward.

Using Unsupervised Learning to Generate Supervised Clinical Tool

Aaron J. Fisher, Berkeley University of California, USA

The current talk presents an amalgam of methodological and statistical procedures which 1. Identify idiosyncratic states of experience in individuals, 2. Coalesce heterogeneous collections of states into a set of common, generalizable states, 3. Use this information to create prediction models which populate state markers into unseen data with fidelity.

Revisiting the theoretical and methodological foundations of depression measurement

Eiko I. Fried, Leiden University, NL

Depression measurement lacks validity and reliability, raising grave concerns about common uses of measures such as diagnosis or tracking treatment progress. Shortcomings arise because measurement rests on shaky methodological and theoretical foundations. Moving forward, we need to break with the field's tradition that has divorced theories about depression from measurement.

Dynamic cognitive assessment in health and disease

Laura Germine, McLean Institute for Technology in Psychiatry; Harvard Medical School, US

The translation of classic cognitive assessments to personal digital devices enables new approaches for understanding cognitive function and health. This includes better methods for developing cognitive measures that are sensitive, reliable, engaging, and accessible as well as shifting from a static and context-free understanding of cognition to one that is dynamic and context-rich. Different types of inferences that can be derived from dynamic measurement of cognition (using ecological momentary assessment) will be discussed.

Working towards personalization: A series of effects using EMA

Marilyn L. Piccirillo, University of Washington, USA

Ecological momentary assessment (EMA) offers a framework for studying dynamic processes on the individual-level. I present results from three studies examining group vs. individual level differences using EMA data. Results suggest a need for future research to define the boundaries of group versus individual-level differences, with greater attention to psychometrics.

Intensive longitudinal assessments for data-informed psychological therapy

Brian Schwartz, University of Trier, Germany

Intensive longitudinal assessments represent the most analytical assessment mode. In combination with network analysis they improved dropout predictions (study 1). Furthermore, digitally assessed stress levels were introduced to predict early improvements in outpatient psychotherapy (study 2). These models can be implemented into comprehensive feedback systems to support clinical decision-making.

Predicting benefit from app-based mindfulness training for ruminating adolescents

Christian A. Webb, Harvard Medical School, USA

Rumination prospectively predicts depression and anxiety, which surge during the adolescent years. Mindfulness training – with its emphasis on metacognitive awareness and present- moment attention – may be effective at reducing rumination. This presentation highlights some of our recent work on predicting which teens are most likely to benefit from app-based mindfulness training.

Where are we going? Embracing the Complexity of Mental Health

Claudi L. H. Bockting, Amsterdam University Medical Centers, NL

Where are we going in the field of clinical psychology? We are going to embrace the complexity of mental health and develop interdisciplinary mental health science that generates innovative more effective interventions on individual level as well as on societal level.

Combining Digital Phenotyping and Genetics for Precision Mental Health

Nelson B. Freimer, University of California, LA, USA

Large scale genetics has enabled clinical subtyping and trajectory-prediction throughout medicine. Genetic studies of mental disorders have yielded hundreds of replicated associations, but the lack of objective, scalable behavioral phenotypes has limited the clinical translation of such findings. Deployment of connected devices to obtain scalable, longitudinal behavioral phenotypes could transform the field.

On DANTE Project (Digitally Augmented iNTerventions in Evolution)

Toshi A. Furukawa, Kyoto University, Japan

We are currently designing a living RCT platform aiming at developing super-individualized treatments based on a modular iCBT smartphone app. It will involve first a fully factorial trial and next a SMART in conjunction with embedded A/B tests. We heartily welcome your feedback on our proposed project.

What do we really know?

Daniel R. Karlin, Tufts University, USA; Chief Medical Officer at MindMed

Our obsession with randomized RCT's as the highest level of evidence had led us to insist we can control relevant variables even while engaging systems we don't really understand, and measuring the phenomena that are easiest to measure at time points that are near term enough to be economically feasible. This has moved psychiatry from a curative stance to aiming for symptom reduction at 4 and 8 weeks.

Developing a consumer-driven platform based on healthcare's first RCT of a referral process

David R. Kraus; President and Chief Scientific Officer of Outcome Referrals

For the past thirty years we have been using large-scale naturalistic outcomes to improve care. Our latest RCT shows that we can roughly double the effectiveness of care over previous client-therapist matching protocols. We will review the research and how we have created a consumer-driven platform.

Panel 5
A Global Mental Health Lens and Personalization in Minoritized Populations

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Lacunae and Limited Data in the Treatment of PTSD among LGBT Patients

Jack R. Keefe, Weill Cornell, USA

Abstract coming soon

Incorporating Intersectionality in Mental Health Treatment Personalisation

Danilo Moggia, University of Trier, Germany

Intersectionality is an analytical framework for understanding how different aspects of a person's social and political identities converge to situate the person in a specific social position of advantage or disadvantage. The inclusion of sociodemographic variables and other variables to explain social disparities can be included in mental health treatment personalisation models to make the models more inclusive and pluralistic.

Treatment selection in global mental health

Vikram H. Patel, Harvard Medical School, USA

Abstract coming soon

Examining what works for whom

Daisy R. Singla, Sinai Health, University of Toronto, CAN

The current presentation will present the Scaling Up Maternal Mental healthcare by Increasing access to Treatment (SUMMIT) Trial and an effort to examine what works for whom among perinatal women with depressive and anxiety symptoms receiving one brief, behavioural activation (BA) treatment. The SUMMIT trial (www.thesummittrial.com) is currently taking place in academic hospitals across three hubs—Toronto, Chapel Hill, and Chicago. This non-inferiority randomized controlled trial (N=1368) includes adult women with perinatal depressive and anxiety symptoms, where all participants receive an 8-session course of BA delivered by either 1) mental health specialist providers (psychiatrists, psychologists or social workers) or trained non-specialist providers providers (e.g. registered nurses, midwives, with experience in perinatal care but not perinatal mental health care) and 2) either using HIPPA/PHIPA-compliant telemedicine platforms or in-person. The primary outcome is EPDS scores at 3-months and a range of baseline measures are being collected including demographics (age, education, immigrant and race/ethnicity, martial status, pregnancy history and clinical history) along with clinical outcomes including depressive (EPDS and PHQ-9) and anxiety (GAD-7) symptom scores, trauma (PCL-6) scores, perceived social support, activation levels, and functioning levels.

Personalization of mental health interventions:Leaving the therapist's office

Soo Jeong Youn, Massachusetts General Hospital, Harvard Medical School, USA

Individuals from underserved communities have high mental health needs are more likely to seek care in community settings than through mental health specialists. Thus, "personalizing" treatment to their needs includes rethinking interventions, who is capable of delivering such interventions, where they are delivered, in a long-term sustainable manner.

Using Artificial Intelligence to Advance Precision in the Treatment of Depression

Dana Atzil-Slonim, Bar-Ilan University, Israel

Depression is a serious and at times devastating illness. Given the personal, societal, and economic impact of depression, there is an urgent need to optimize existing health care practices. The current presentation discusses the potential of harnessing artificial intelligence and automated text and audio analytic techniques to pinpoint important information that emerges from the interaction in psychotherapy sessions.

Using personalized prediction to give more actionable progress feedback

Kim De Jong, University of Leiden, NL

In this talk, Kim de Jong will discuss the application of personalized prediction in the context of feedback on patients' progress to clinicians and/or patients. Two studies will be presented. First, the recent meta-analyses on progress feedback will be presented (De Jong et al., 2021), in which it was found that progress feedback enhanced treatment outcomes. There is a particular focus on Expected Treatment Recovery (ETR) curves and clinical support tools (CST). Second, a study in which a prediction model for patient complexity was used to divide the treatment group in three levels of complexity will be presented. The results showed that simple feedback was helpful for moderately complex cases, whereas ETR-CST feedback was particularly useful for highly complex patients.

Heterogeneity as an opportunity for precision medicine

Ann-Kathrin Deisenhofer, University of Trier, Germany

To move average effective psychological treatments to a level where treatment works for every individual we need personalization. Using the example of PTSD, this talk gives an overview of treatment selection methods. It highlights the practical limits associated with this line of research and suggests future directions

Quantifying the promise of personalized psychotherapy allocation

Lorenzo Lorenzo-Luaces, Indiana University Bloomington; USA

Discusses using data and knowledge of psychotherapy research to quantify potential of personalized medicine approached in psychotherapy (i.e.,instead of having a default assumption that such approaches will produce large effects). Applied to an example of internet-based cognitive-behavioral therapy (iCBT) vs. a waiting list control (WLC).

Current Topics and Challenges in the Delevopment of Optimal Treatment Decision Rules

Eva Petkova, New York University; Grossman School of Medicine. USA

This presentation covers topics of my statistical research related to precision medicine and the development of optimal treatment decision rules for identifying patients who will benefit more from one treatment than from another. It will also cover ideas about measures of confidence in the treatment decision for an individual patient and a sequential treatment decisions strategy for minimizing patient burden. Finally, I will present challenges in precision medicine in mental health that need attention from the broader research community.

Prediciton models for treatment selection in depression: the challenges of external validation

Suzanne C. van Bronswijk, Maastricht University, NL

Optimizing treatment selection with prediction models may improve treatment outcomes in depression by predicting the optimal treatment for a given individual.Models need to be externally validated to determine their generalizability,which has rarely been done. This presentation is about (the challenges of) external validation of these prediction.

Panel 7
Clinical Prediction Models

The use of machine learning in psychotherapy research: The future of a hype in precision medicine?

Katie Aafjes-van Doorn, Ferkauf Graduate School of Psychology, USA

Machine learning clinical prediction models have recently gained popularity in the broader mental health field. I will critically report on the current scope of machine learning methods in psychotherapy research (Aajfjes-van Doorn et al., 2020). Given its novelty and potential, the current proof-of-concept studies are limited but encouraging.

Born-again trees for predicting treatment outcomes.

Marjolein Fokkema, University of Leiden, NL

In the born again tree approach (Breiman & Shang, 1996), the predictive accuracy of a single decision tree is improved through the use of a black box method. I adjusted and applied the born again approach to predicting treatment outcomes, and results indicate that it provides an interpretable model with state of the art predictive accuracy.

Sample size calculations for clinical prediction model research

Richard D. Riley, Keele University, UK

In terms of sample size for model development, current "rules of thumb" are based on having at least 10 events per predictor variable, but I will describe a more scientific approach based on minimising expected overfitting and ensuring precise parameter estimation. In terms of sample size for model validation, "rules of thumb" suggest at least 100 events and 100 non- events. Again, a more scientific approach is possible, which uses the distribution of the model's linear predictor, and targets precise estimation of calibration, discrimination and net- benefit. Real examples are used to illustrate the concepts.

Implementation of prognostic models in clinical practice

Gonzalo Salazar de Pablo, King's College London, UK

Abstract coming soon

The PATH towards individualized decision making: perspectives at heterogeneity of treatment effect

Ewout Steyerberg, University of Leiden, NL

Heterogeneity of treatment effect (HTE) is defined as the nonrandom variation across levels of a covariate. The Predictive Approaches to Treatment effect Heterogeneity(PATH) statement presents approaches to predictive HTE analysis: all relevant patient attributes are considered simultaneously to make patient-centered predictions of individual treatment benefit. I will focus on a "risk-modeling" approach, where a multivariable model predicts an outcome, ignoring treatment assignment in the GUSTO-I trial.

Prediction models in the pandemic: Results and lessons learned from a living review

Laure Wynants, Maastricht University, NL

Diagnostic and prognostic models for covid-19 could have helped strained health care systems. A living systematic review and standardized risk of bias assessment identified hundreds of models, but almost all were at high risk of bias. This talk is about what went wrong, and how we can do better.

Panel 8
Prospective Studies and Implementation

Personalized care for depression and anxiety among college students

Michelle G. Craske, University of California, LA, USA

The STAND program personalizes level of care, ranging from self-guided online prevention, to coach-guided online intervention, to clinical care, for depression and anxiety. Within digital interventions, embedded measurement-systems personalize content delivery and ongoing symptom measurement enables rapid adaptation across levels of care plus suicide risk management

StratCare Trial: Multi-site randomised controlled trial of stratified care for depression

Jaime Delgadillo, University of Sheffield, UK

This randomized controlled trial (N=951) evaluated the cost-effectiveness of stratified versus stepped care for depression. In stratified care, patients were matched to either low or high intensity psychological therapies, based on their characteristics, using a data-driven algorithm. Stratified care was more effective but more costly than stepped care.

Evidence-Based and Personalized Recommendations in Clinical Practice –A Prospective Evaluation

Wolfgang Lutz, University of Trier, Germany

A prospective trial (RCT) investigating a digital navigation system (Trier Treatment Navigator) is presented. Patients were randomized to the TTN (n = 335) or TAU (n=203) groups. Results showed an effect, when therapists followed recommendations. Usefulness was a significant moderator of effects. Results underscore the importance of implementation issues.

Implementing Neuroscience Based Treatment Selection: Lessons from the ABCT Translational Neuroscience Think Tank 2018-2021 & Next Steps

Greg J. Siegle, University of Pittsburgh, USA

In 2018, the Association for Behavioral and Cognitive Therapies commissioned a Think Tank to help their members realize the promise of neuroscience for guiding psychological treatments. I will present our sobering but hopeful conclusions regarding harmonizing stakeholder vocabularies, creating clear translational pathways, improving psychometrics, and incorporating implementation science.

Designing trials for clinical implementation of prediction models

Rudolf Uher, Dalhousie University, CAN

Predictive models are typically derived from existing datasets. Before a predictive model is applied in clinical settings, the clinical benefits of allocating treatments according to the prediction may need to be directly tested. I will review a published example and ongoing work on trials testing clinical benefits of prediction. I will illustrate key features of personalization trials, including randomized comparison of allocation to treatment with and without prediction, use of comparable active treatments in both arms, similarity of case mix and treatments to discovery sample and to the intended clinical setting, and acceptability to clinicians and patients. This contribution invites discussion about the level of evidence required for clinical application of prediction and complementary advantages of analytic and pragmatic personalization trial designs.

Diagnostic and Predictive Neuroimaging Biomarkers: A Demonstration

Sigal Zilcha-Mano, University of Haifa, Israel

To improve treatment efficacy and effectiveness, a framework integrating the study of moderators and mechanisms of action is proposed. The talk focuses on one of our recent studies, demonstrating how identifying trait-trait individual-specific abnormalities can be instrumental in signalling the subpopulation-specific mechanisms of action that should be targeted to improve treatment outcome.

Karlin, Daniel R.

Keefe, Jack R.

Kraus, David R.

Levinson, Cheri A.

Lorenzo-Luaces, Lorenzo

Lutz, Wolfgang

Moggia, Danilo

Ng, Mei Yi

Patel, Vikram H.

Petkova, Eva

Piccirillo, Marilyn L.

Riley, Richard D.

Rubel, Julian A.

Salazar de Pablo, Gonzalo

Schleider, Jessica L.

Schueller, Stephen

Schwartz, Brian

Siegle, Greg J.

Singla, Daisy R.

Steyerberg, Ewout

Uher, Rudolf

van Bronswijk, Suzanne C.

Watkins, Edward R.
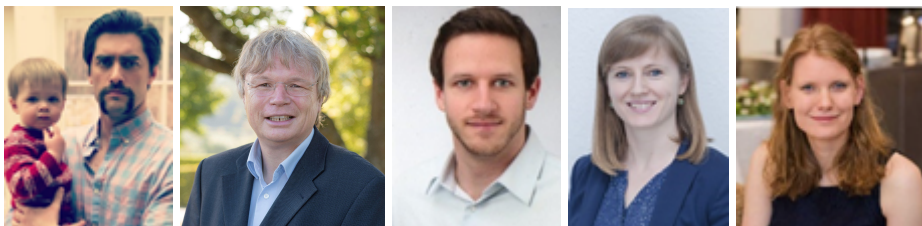
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Wynants, Laure

Youn, Soo Jeong

Zilcha-Mano, Sigal

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