

SPSP 2021 Summer Psychology Forum: Dynamics Modeling

Event Schedule

Tue, Jul 06, 2021

9:00am

Welcome Video

🕒 9:00am - 9:15am, Jul 6

Watch this short welcome video from SPF organizer, Alex Danvers, to get oriented to the conference, learn more about what sessions are for you, and get answers to your questions.

If you have any additional questions, put them in the chat or Q&A to your right and a conference organizer will answer them!

🗣️ Speaker



Alexander Danvers Postdoctoral Fellow, University of Arizona and U.S. Army Research Labs

10:00am

Beginner Topic: Introduction to Complex Systems Theory

🕒 10:00am - 1:00pm, Jul 6

Beginner Topic

This workshop will introduce attendees to dynamical systems and complexity science broadly. The first half of the workshop will focus on foundational concepts and the second half will broadly overview basic techniques used in the field. This workshop will not cover mathematical formalizations in much depth or provide source code, but rather aims to get attendees up to speed on theoretical tenants and technical jargon. By the end of the workshop, participants will be able to 1) consume scientific literature in dynamical systems and complexity science, 2) have a broad understanding of the available analytics and their assumptions, and 3) be able to formulate research questions and methods to address those questions using the dynamical framework. No prior experience will be assumed, and the workshop will be introductory in nature. As such, this workshop will be appropriate for those with little/no experience. Those who have a foundation in complexity and a familiarity with the types of modeling techniques used should sign up for a different workshop to maximize benefit.

🗣️ Speaker



Brian Eiler Assistant Professor, Davidson College

Open Discussion Room

🕒 10:00am - 1:00pm, Jul 6

Open Discussion Room

Advanced Topic: Group Iterative Multiple Model Estimation (GIMME)

🕒 10:00am - 1:00pm, Jul 6

Advanced Topic

🗣️ Speaker



Aidan Wright Associate Professor, University of Pittsburgh

1:15pm

Opening Keynote by Robin Vallacher

🕒 1:15pm - 2:15pm, Jul 6

Opening Keynote

Human experience covers a lot of ground, with everything from moment-to-moment thoughts and feelings to intimate relations, intergroup relations, and social change qualifying as fair game for theory and research. The diverse topical landscape of psychology is undeniable, but it has promoted theoretical fragmentation, with principles narrowly defined for localized phenomena, and a vast array of disconnected tools and methods to validate these principles, leading many to conclude that psychology is a pre-paradigmatic discipline. Recent years, however, have witnessed the adaptation of principles and methods of nonlinear dynamical systems and complexity science to psychological phenomena. This perspective is showing promise as an integrative paradigm, as it not only highlights a small set of principles for integrating virtually every topic in the field, but it also provides methods and computational tools for investigating the manifestation of these basic principles across intrapersonal, interpersonal, and collective phenomena. The keynote address will provide a brief overview of the dynamical perspective, describing of what has been accomplished thus far and outlining what remains to be done in order for it to secure its status as an integrative paradigm for the diversity of human experience.

🗣️ Speaker



Robin Vallacher Professor, Florida Atlantic University

2:30pm

Advanced Topic: Extensions of Recurrence Quantification Analysis

🕒 2:30pm - 5:30pm, Jul 6

Advanced Topic

The last several years have produced an ever-increasing interest in characterizing behavior in terms of nonlinear dynamical systems. Likewise, the prevalence of motion capture devices and other rapidly sampled sensor data has also increased. Meeting the theoretical and technical challenges resulting from these trends requires researchers to expand their expertise in nonlinear time series methods for continuous data. In this workshop, I will give a crash course on Recurrence Quantification Analysis (RQA), using the R programming language. The workshop will include a brief introduction to the major concepts from dynamical systems theory (e.g., attractor dynamics) that are necessary for understanding and applying this general RQA framework, which now appears in virtually every area of science. The majority of the workshop, though, will focus on hands-on tutorials with real-world motion capture and physiological data. A major goal is to provide attendees with analysis templates they can immediately apply to their own datasets.

🗣️ Speaker



Aaron Likens University of Nebraska, Omaha

Open Discussion Room

🕒 2:30pm - 5:30pm, Jul 6

Open Discussion Room

Advanced Topic: Using formr.org to Build Complex R-Driven Online Studies With Personalized Feedback

🕒 2:30pm - 5:30pm, Jul 6

Advanced Topic

Formr.org is a free open-source software framework for online studies. Because formr tightly integrates with the R programming language, researchers can design custom, complex studies with ease. Key features include automated reminders for repeated surveys on computers and smartphones and the generation of personalised graphical feedback. Single surveys can be collaboratively edited in shared spreadsheets; complex designs are implemented using sequences of simple components. The framework makes the entire study design easily reproducible. You will learn workflows for collaboratively designing, testing, debugging, managing, and documenting experience sampling studies. We will touch on several advanced features, including planned missingness, event-driven schedules based on external data sources, and feedback. We will discuss different technical methods of contacting participants and ways to mitigate potentially thorny issues around privacy and anonymity.

🗣️ Speaker



Ruben Arslan Humboldt University Berlin

5:45pm

Networking Reception

🕒 5:45pm - 7:00pm, Jul 6

Networking Reception

This informal networking session is designed to allow SPF attendees to chat, network, and catch up with one another in a more casual setting. Connect with colleagues and friends, meet new people, and continue discussions from earlier in the day.

This reception will be hosted within the Remo platform, allowing attendees to freely move between virtual tables and converse with each other in a casual format. Go to Remo.co to set up your profile prior to the reception, or simply join the reception to get started.

Use this checklist to get your computer Remo ready. Learn more about attending an event in Remo [here](#).

Wed, Jul 07, 2021

10:00am

Beginner Topic: The Experience Sampling Method for Beginners

🕒 10:00am - 1:00pm, Jul 7

Beginner Topic

In recent years, the popularity of Experience Sampling Measures (ESM) have exploded. ESM has been

touted as the solution to issues with static measures of psychological constructs, including lack of ecological validity and variability. Despite this, however, there are almost no comprehensive resources for building ESM studies, resulting in great heterogeneity in survey construction and data collection.

This workshop aims to introduce beginners interested in using ESM to core considerations and issues in ESM research, including item selection, survey construction, survey distribution, and data maintenance. In addition, this workshop will consider how choices in each of these stages have implications for whether and to what degree the resulting ESM data can be used with other dynamic techniques taught at the forum.

Speaker



Emorie Beck Postdoctoral Researcher, Northwestern University - The Feinberg School of Medicine

Beginner Topic: Improving psychological science by formalizing psychological theories: the value of computational modeling

🕒 10:00am - 1:00pm, Jul 7

Beginner Topic

Most psychological theories are "verbal models": narrative explanations of a psychological phenomenon. Because of the vagaries of language, these theories are vulnerable to hidden assumptions and shortcomings. Moreover, they create fertile ground for questionable research practices. In this workshop, we provide an introduction to theory development through computational modeling. First, we review the advantages of modeling and show how it fosters transparent and cumulative science. We then propose ideas for how to develop and evaluate formalized theories. We provide examples throughout, focusing especially on a computational model of Panic Disorder. Our hope is that participants leave with an appreciation of the importance of formalized psychological theories and ideas for how to develop and evaluate formalized theories in their own work. We will illustrate the process of generating a computational model in R using difference equations.

Speakers



Eiko Fried Associate Professor, Leiden University



Donald Robinaugh Assistant Professor, Massachusetts General Hospital

Open Discussion Room

🕒 10:00am - 1:00pm, Jul 7

Open Discussion Room

1:30pm

Poster Session I

🕒 1:30pm - 2:15pm, Jul 7

Poster Session

6 Subsessions

- **Fluctuations in Received Support Predicts Changes in Relationship Satisfaction Across the Transition to Parenthood**
🕒 1:30pm - 2:15pm, Jul 7
- **Emergent Patterns of Cultural Change**
🕒 1:30pm - 2:15pm, Jul 7
- **Be Yourself But Try To Fit In: The Interplay Between Persons, Situations, and Behaviors Dynamically Predicts Affective States**
🕒 1:30pm - 2:15pm, Jul 7
- **Mirror, mirror on the wall, who's the most likeable of them all: the role of movement synchronization, complexity, and novelty in social bonding**
🕒 1:30pm - 2:15pm, Jul 7
- **Can we become emotionally similar through grounding?**
🕒 1:30pm - 2:15pm, Jul 7
- **Simulating Romantic Relationship Processes with Agent-Based Modeling**
🕒 1:30pm - 2:15pm, Jul 7

2:30pm

Beginner Topic: Introduction to MLM to Longitudinal Data Analysis

🕒 2:30pm - 5:30pm, Jul 7

Beginner Topic

This workshop covers multi-level models (MLM; also known as hierarchical linear models, mixed effect models, among others) that are suitable for intensive longitudinal data. We will pair substantive research questions common for intensive data with the appropriate statistical model. For example, what model is needed to test whether within-person fluctuations in stress influence health behaviors? Topics include centering, separating within- and between- sources of variance, lagged models, accounting for time, modeling variances, and visualization. The goal of this workshop is to provide a foundational framework on which researchers can build upon. Examples and syntax will be done with R, using the lme4 and brms packages. Familiarity with one of those packages is recommended but not necessary.

Speaker



Josh Jackson Washington University

Advanced Topic: Language as a Dynamic System: Where to Get it and What to Do Next

🕒 2:30pm - 5:30pm, Jul 7

Advanced Topic

Speaker



Rick Dale Professor, University of California, Los Angeles

Open Discussion Room

🕒 2:30pm - 5:30pm, Jul 7

Thu, Jul 08, 2021

10:00am

Beginner Topic: Introduction to Agent-Based Modeling

🕒 10:00am - 1:00pm, Jul 8

Beginner Topic

In this workshop, I will introduce participants to computer simulations of agent-based models. I will concentrate on models of social influence, one of the most pervasive social processes. I will start with very simple models following the principles of dynamical minimalism and progress toward more complex models ending with psychologically realistic Regulatory Theory of Social Influence.(RTSI)

During the workshop I will illustrate how to translate a psychological theory into a computer simulation model and demonstrate how to write fragments of the code that are critical for implementing a theory. We will play with the simulation program exploring how changing the rules of the simulations affects the simulation results. I will discuss the approach of dynamical minimalism as a research strategy that investigates emergence of complex group level properties.

After exploring the simple model, we will progressively introduce more complex rules into the model, making it more psychologically realistic. We will observe similarities and differences between simple and complex models of social influence and different strategies of simulating social processes. We will modify the rules of the simulation and consider how to operationalize different rules of social psychology in terms of the model. The implementation of RTSI will be demonstrated and compared to the minimalist model. On the basis of the theory we will discuss how to introduce notions of trust and coherence into simulation models. We will use empirical data concerning socio-economic transition to consider how to verify empirically predictions of the simulation model.

In demonstrating the model, I will discuss basic notions of dynamical models such as order parameters, control parameters, self-organization and emergence, the role of randomness and individual differences and also how models of social processes are different from models of physical processes. We will also discuss the role of computer simulations in social psychology as the third method of developing science, in combination with theory building and empirical research.

Speaker**Andrzej Nowak** University of Warsaw**Advanced Topic: Dynamic Network Analysis**

🕒 10:00am - 1:00pm, Jul 8

Advanced Topic

Modern data collection methods such as EMA/ESM techniques allow us to estimate personalized models. A popular example of such models are time-series networks, capturing dynamic interactions between variables. In this workshop, participants will learn to estimate dynamic networks and to critically reflect on their inferences. In the first part of the workshop, some background on the vector auto-regressive (VAR) model will be provided. The second part will then focus on how the VAR model can be used to construct dynamic networks from EMA/ESM data for both, single subjects as well as multiple subjects. In the third part, we will discuss current challenges to time series modeling and future avenues such as approaches to model continuous processes through differential equations. The workshop will be interactive while relaying key concepts and content. There will be practical exercises using open data, but participants are also able to use their own EMA/ESM data for these practical parts. For this, it is advisable to already do some pre-processing of the data in advance.

 Speaker



Julian Burger Teaching Assistant, University of Amsterdam

Open Discussion Room

🕒 10:00am - 1:00pm, Jul 8

Open Discussion Room

1:30pm

Poster Session II

🕒 1:30pm - 2:15pm, Jul 8

Poster Session

6 Subsessions

- **The emergence of bi-polarized states in multidimensional correlated topic spaces with or without asymmetric rules of interaction**
🕒 1:30pm - 2:15pm, Jul 8
- **When Does Prior Effort Expenditure Influence Choices to Engage in Additional Effort?**
🕒 1:30pm - 2:15pm, Jul 8
- **The Development and Validation of a Hierarchical Multiple-Goal Pursuit Model**
🕒 1:30pm - 2:15pm, Jul 8
- **Comparing Trends in Giving Participation Across Datasets**
🕒 1:30pm - 2:15pm, Jul 8
- **Cognitive function and temperament development from childhood to adolescence**
🕒 1:30pm - 2:15pm, Jul 8
- **Illusory Feelings, Elusive Habits: Lay Theories of Everyday Behavior**
🕒 1:30pm - 2:15pm, Jul 8

2:30pm

Advanced Topic: Neural Network Models for Building Theory

🕒 2:30pm - 5:30pm, Jul 8

Advanced Topic

Neural network models are a widely used architecture for building theoretical models of neurobiological and psychological processes. While widely used in Cognitive Psychology and Neuroscience, they are rarely used in personality and social psychology. This workshop will focus on teaching you to use neural network software to build runnable, theoretical models of dynamic psychological processes, such as motivation, emotion, and decision-making over time. The class will use the emergent modeling software, which can be found at <https://github.com/emergent-modeling/emergent-modeling>, and which is available for Mac, Windows, and Linux platforms. The software is open source and uses the Go programming language promoted by Google. By the end of the class, attendees should understand the basics of neural network models and how to create their own basic models. Attendees will also be provided with several runnable simulations of the dynamics of personality and motivation that they can then modify and tweak. Ideally, attendees should have a basic conceptual knowledge of neural networks and an idea for a theoretical model.

 Speaker



Stephen J. Read Professor of Psychology, Department of Psychology, University of Southern California

Beginner Topic: Analyzing Mobile Sensor Data

🕒 2:30pm - 5:30pm, Jul 8

Beginner Topic

New technology is allowing psychologists to give richer and more sophisticated answers to the question "What are people like outside the lab?" Using a variety of "off the shelf" sensors, we can get a comprehensive idea of people's daily lives, including physiological processes—like how their heart rate or respiration rate changes throughout the day—social processes—like how much they talk to other people—and even environmental processes—like how environmental CO2 and quality of light fluctuate throughout the day. This workshop will describe how to collect and analyze mobile sensing data, focusing on social processes. Data analysis will include Recurrence Quantification Analysis and Machine Learning. If you are hoping to start collecting this kind of data, or have data and need to think through how to analyze it, this workshop is for you.

🗣️ Speaker



Alexander Danvers Postdoctoral Fellow, University of Arizona and U.S. Army Research Labs

Open Discussion Room

🕒 2:30pm - 5:30pm, Jul 8

Open Discussion Room