

STATE SPACE GRIDS: THEORY, APPLICATIONS, AND HANDS-ON PRACTICE

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Abstract

As interest in personalized assessment and intervention continues to grow, researchers increasingly require methods that capture the dynamic nature of individual change processes. State space grids are especially well suited for single-case research because they allow researchers to examine dynamic processes at the level of individual systems (individuals, parent-child dyads, classrooms, etc.), making them valuable tools for studying individual development, behavioral change, and personalized interventions.

State space grid methodology is grounded in dynamical systems theory and provides a powerful approach for visualizing and quantifying temporal patterns within individuals and interacting systems, such as parent-child dyads, classrooms, or therapeutic relationships. By representing how systems move through different behavioral or interactional states over time, state space grids reveal patterns of variability, stability, attractor states, and emergent processes that are often difficult to detect using aggregate measures.

A unique strength of state space grids is their ability to link processes across multiple time scales. At the micro-level, they capture moment-to-moment changes in behavior or interaction, often at the level of seconds or conversational turns. By constructing repeated state space grids across sessions or developmental periods, researchers can investigate how these short-term changes accumulate into longer-term developmental trajectories. In single-case experimental designs, state space grids can be used to evaluate how interventions influence interaction patterns in real time.

This workshop introduces participants to both the theoretical foundations and practical application of state space grid methodology, with a particular focus on its value for (single-case) intervention research and the study of developmental processes. Participants will learn how state space grids can be used to address research questions across multiple, interconnected time scales.

The workshop starts with an introduction to the principles of dynamical systems theory to provide the conceptual framework for state space grids, followed by examples from developmental psychology, education, health, and intervention research. Practical considerations will also be discussed, including data requirements, behavioral coding, grid construction, and interpretation of common metrics. The workshop concludes with a hands-on session using GridWare software (and possibly R) to construct, visualize, and analyze State space grids.

We invite researchers, clinicians, and students to follow this half-day workshop. No prior experience with state space grids is required, although familiarity with behavioral observation methods is advantageous. The workshop accommodates a maximum of 20 participants (minimum of 6).