



Figure 3. The Characterization and Analysis of Time Series (CATS) Method. Actual therapy sessions are recorded and coded to produce within-session time series data (yellow and pale yellow boxes at top left). A computerized Characterization Routine (central blue box) analyzes the data for time-invariant "deep characteristics", producing a report of characterized session data (pale yellow box below central blue box). A computerized Mathematical Model Generator Routine (blue box at upper right) structures coupled nonlinear equations that produce time series data simulating therapy sessions (pale green box at top centre of page). These time series are reviewed by the Characterization Routine (central blue box) and equation coefficients producing data that do not conform to chosen deep characteristic limits derived from actual therapy sessions are eliminated. The Mathematical Model Generator and Characterization Routines iterate to produce reports of acceptable characterized model data (pale green box in lower centre of page). Mathematical models can be further weeded out with a Fitting Routine (blue box at centre bottom), yielding a shortlist of acceptable models (pale green box at bottom right) that can be explored further in a Manipulation Routine (blue box at bottom right). All results feed back (blue arrows) to improve therapy, coding, choice of deep characteristics and selection of suitable mathematical model equations and coefficients. The CATS method is content-neutral and is designed to support researchers interested in various methods and approaches in psychotherapy.