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THEORETICAL ARTICLE

Emotional inertia: A key to understanding psychotherapy process and outcome



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Abstract The processes underlying psychotherapeutic change have increasingly been emphasized in both research and clinical practice. Nonlinear dynamical systems theory (NDS) offers a transdisciplinary scientific approach to the study of these processes. This paper introduces the NDS concept of “emotional inertia”, the property of human emotion by which it retains its course so long as it is not acted upon by an external force, as a key to understanding moment-by-moment and also longer-term change processes within psychotherapy. A testable mathematical model of emotional inertia is presented that represents specific impacts of psychotherapeutic processes on emotional dynamics over time. Emotional trajectories in phase space, treatment energy, and the interaction between them are the essential elements of the model, and a detailed explanation is provided. Procedures for testing this model are described, such as by tracking the movement of emotion in phase space within and across therapy sessions, along with clinical implications of the model, which can potentially help to make more clear the complementary roles of therapeutic force, timing, and leverage.

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PALABRAS CLAVE

Resultado
psicoterapéutico;
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Inercia emocional

Inercia emocional: la clave para comprender el proceso y los resultados de la psicoterapia

Resumen La importancia de los procesos subyacentes al cambio psicoterapéutico se ha ido enfatizando de forma creciente tanto en la investigación como en la práctica clínica. La Teoría de los sistemas dinámicos no lineales (TSD) permite una aproximación científica transdisciplinar

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Sistemas dinámicos;
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para el estudio de dichos procesos. Este artículo presenta el concepto de "inercia emocional" derivado de la TSD, es decir, la propiedad de la emoción humana por la cual ésta sigue su curso mientras no incida en ella una fuerza externa, como clave para la comprensión de los procesos de cambio en la psicoterapia, tanto a corto como a largo plazo. Se presenta un modelo matemático contrastable que representa los impactos específicos de los procesos terapéuticos en la dinámica emocional a lo largo del tiempo. Los elementos esenciales del modelo son las trayectorias emocionales en el espacio de fase, la energía del tratamiento y la interacción entre ambos, y se ofrece una explicación detallada de los mismos. Se describen algunos procedimientos para contrastar el modelo, como monitorizar el movimiento emocional dentro y a través de las sesiones terapéuticas, así como sus posibles aplicaciones clínicas, que pueden potenciar el papel complementario de la fuerza y el momento de la intervención.

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In this theoretical study (Perestelo-Pérez, 2013) we present a novel model of psychotherapy process. The basic assumptions of this model are: (a) Patients' emotions are nested within complex dynamical systems; (b) Emotional change may be represented in phase space, with trajectories that depend on emotional inertia and external influences; (c) Trajectories can be derived by means of phase space reconstruction; (d) Therapeutic efforts often aim first at moving the emotional system from unhealthy regions to healthy regions in phase space; (e) Therapeutic efforts aimed at more permanent change to emotional dynamics aim to make changes to the phase space itself. Based on these primary assumptions, one may specify the relationship between a client's emotional trajectory and the force of intervention necessary to modify this trajectory.

The paper has been structured as follows. In the first section we present the rationale for the model, describe its potential utility, and define the key concept of emotional inertia as embedded within Nonlinear Dynamical Systems theory. The second section is devoted to the specific concepts of phase space and trajectory, which are crucial elements of our model. The model itself is presented in the third section along with its mathematical expression. In the third section we propose ways the model may help to understand early phases of therapy. The fourth section considers the longer-term goal of enduring change and relapse prevention. Finally we discuss other clinical implications of the model and directions for empirical research.

Rationale

To understand why our model may help, a good starting point can be wondering why are the results of a psychological treatment not the same for all patients? This is of course a very complex question because treatment outcome depends on many different variables (see for a review Murphy, Cooper, Hollon, & Fairburn, 2009). Research attempting to identify a universal short list of outcome predictors for psychotherapy has not been very fruitful, and this is an area where there is room for the use of new

paradigms. One such paradigm is the dynamical systems paradigm (Hayes, Hope, & Hayes, 2007; Pezard & Nandrino, 2001). For example, in a comprehensive introduction to this approach applied to psychotherapy, Salvatore and Tschacher (2012, p.12) have described it as "a paradigmatic way of looking at phenomena that changes the very agenda of the scientific enterprise". Essentially, the nonlinear paradigm offers a more holistic approach to science (less reductionistic), while retaining key aspects of the scientific method such as empirical testing of theoretical propositions, formal mathematical modeling, falsifiability and parsimony. This approach involves a broad array of models and methods commonly referred to as: nonlinear dynamical systems theory (NDS; Guastello, Koopmans, & Pincus, 2009).

Models and methods from NDS each have in common a set of basic assumptions. First, most natural phenomena involve *nonlinear* (disproportionate) causes. One property of linear systems is scaling, which means that "if a given input produces a given output, then doubling the size of the input will double the size of the output, and so on for any arbitrary scaling of the input" (Shelhamer, 2007, p.10). This property does not hold for nonlinear systems. Within psychotherapy, nonlinearity implies that the intensity of intervention (i.e. the input) is often not proportional to therapeutic outcome (i.e., the output)—e.g., many clients show a large improvement following a single key insight or therapeutic intervention. Second, therapeutic changes unfold over time, and timing of interventions serves a critical function. Strictly speaking, this is not an NDS assumption. However, we will show how precise timing can be set depending on our knowledge about the trajectory the emotional system is following in phase space. Third, NDS holds that most natural phenomena involve *systemic* (multivariate and complex) cause. In psychotherapy, for example, emotional, cognitive, behavioral and emergent relational dynamics are each coupled with one another and interact in complex ways in response to any given intervention.

Within this paradigm, one potential process holds great promise for psychotherapy: *emotional inertia*. Emotional inertia appears to be a general aspect of personality (Kuppens, Oravecz, & Tuerlinckx, 2010) that is related to

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