

## BEYOND ADAPTATION: TRANSFORMATION IN MENTAL DISORDERS

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Considering transformative change in addition to adaptation, the prevailing concept in the mental health sciences, has the potential to account for, and more accurately represent, the complexity of mental disorders; specifically, to view mental illness as a form of complex system (Langelier et al. 2018). This view aligns with the notion that the human brain, the regulating organ of mental illness, is a complex system (Bullmore & Sporns 2009). Transformative change is a hallmark of complex systems and has been studied exhaustively in, for instance, the natural and social sciences (Allen et al. 2014). Transformation of complex systems has important management implications because such transformations often aim to achieve self-organizing and self-perpetuating system conditions that are beneficial for humans. In the case of mental illnesses such a condition would be a fully restored and functional human subject that no longer expresses mental disorder symptoms. However, achieving such conditions is a significant challenge with current treatment options. Adaptation concepts (e.g. recovery, coping) fall short of explaining these obstacles mechanistically (Angeler et al. 2018). In contrast, transformation provides a causally appropriate contextualization for the inability to fully restore mentally ill human subjects. Thus, the concept of transformative change allows for alternative perspectives on mental disorders and their treatment challenges compared to adaptation.

Transformative change is widespread across complex systems (e.g., clear-water lakes changing to a turbid lakes or democracies shifting to dictatorships). In psychiatry, transformations occur when healthy human subjects shift to a state in which mental disorder symptoms (e.g., mania and depression in bipolar disorder) manifest (Angeler et al. 2018). Several implications derive from such a transformation: 1) Before the shift occurs the adaptive ability (adaptation) to social and environmental stresses becomes exhausted, and healthy human subjects lose their capacity to cope with, respond to and recover from adverse condition. This vulnerability is often conditioned by genetic predisposition to mental disorders (Goodwin & Jamison 2007). Once adaptation is lost transformation becomes inevitable. 2) After having shifted a fundamental systemic reorganization into a new self-propagating state occurs. Such shifts often have negative consequences.

In the case of mental disorders, the impoverishment of the patient's health becomes stabilized and reinforced by complexly interacting genetic, structural and physiological changes in the brain. These changes are so profound that no back-transformation and thus full restoration of the previous healthy state can occur. This lack of back-transformation explains why mental illnesses are incurable. 3) Two conceptual implications for recovery follow: First, from a systemic perspective recovery fails to mechanistically describe systemic change (i.e. back-transformation). Second, from an adaptation point of view recovery describes a dynamic process. This dynamic process of recovery is an integral part of stress responses and can occur in every system state. In the healthy state human subjects can recover from stressful events as a function of their adaptation capabilities. In the diseased state patients can recover from (hypo)manic and depression episodes. Thus, viewed from a transformation perspective, recovery as a part of adaptation is a within state rather than a between state process.

Psychopharmacological and therapeutic interventions are well known to only mitigate symptoms of mental disorders rather than achieving full restoration of healthy conditions. This is evidenced for example by breakthrough depressions in bipolar disorder despite clinical treatment (Miklowitz & Gitlin 2015). Ideally, transforming the diseased states in mental disorders to a fully functional state with marginal or no symptom expression without clinical interventions would be desirable management goals. However, from a complex systems perspective the concept of transformation demonstrates that such a difficult process is currently not feasible. This allows from a complex systems perspective for the following view of treatment challenges. The lack of transformation invokes that clinical practice only artificially mimics a healthy state that is maintained through constant therapy and medication. Once clinical interventions are discontinued the diseased state manifests with the return of full-blown symptomatology of mental disorders. That management is artificial is further evident in the frequently substantial side effects of medication. Management input through clinical practice can therefore be regarded as a coercion of the diseased state. That is, rather than restoring a healthy state clinical practice only simulates

the ghost of a healthy state past. Opposed to adaptation and recovery that target the mitigation of illness episodes, the transformation of diseased states requires breaking the complex factors (feedbacks) that stabilize system states. Identifying these factors can provide insight into mechanisms of transformation as opposed to those of adaptation and ultimately increase our understanding of mental illnesses as complex systems and ultimately their treatment. Research currently obtains results that can be valuable for improving our knowledge about feedbacks in mental illness states and their clinical management.

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