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Paper title: General System Theory and the Use of Process Mining to Improve Care Pathways

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Keywords specific to the paper: General Système Theory, Learning Health Systems, Process Mining

Summary:

The article explores General Systems Theory (GST), which emerged after the Second World War as a unifying framework for interdisciplinary science. TGS proposes that systems share common properties and characteristics irrespective of discipline, thus laying the foundations for a systems approach. TGS terms have become commonplace influenced systems thinking. The article examines the key elements of the original TGS, such as control, feedback, emergence, holism, and systems hierarchy. It also explores the role of TGS in various fields such as biology, medicine, it states that there has been a recent shift towards viewing healthcare organizations as Learning Health Systems (LHS) and using Megadata techniques, such as process mining, to improve personalized care trajectories. Drawing on TGS, the article offers a reflection on these emerging approaches, focusing on urgent and emergency care.

The aim of the article is to trace the influence of TGS in the context of LHS and to apply its framework to the analysis of the successes and failures of process mining in the trajectories of LHS. apply its framework to the analysis of the successes and failures of process mining in care trajectories. care trajectories. It offers a perspective on the opportunities and limitations of the current approach, encouraging reflection on the challenges ahead for process mining in healthcare. Healthcare. It introduces the General Systems Theory (GST) proposed by Karl Ludwig von Bertalanffy, which stems from Western and Eastern systems thinking. Fundamental to fields such as software engineering, cybernetics and artificial intelligence, GST is presented as a unifying framework applicable to organisms and organizations. Health informaticians are encouraged to consider TGS as a powerful tool in their field, emphasizing the ubiquity of the systems language in informatics and the need to understand systems thinking in medicine and health informatics. TGS is presented as a single language for systems, supporting the systems, supporting the idea that organic systems tend towards order rather than disorder, promoting homeostasis. The key principles of TGS are outlined, highlighting its genericity, the hierarchy of systems and the importance of relationships between components. It is also defined as an attempt to provide a general definition of "system" as a complex of interacting components, creating an organized whole. Three fundamental principles emerge: genericity, system hierarchy and a focus on relationships rather than components. Two criticisms of TGS, its alleged excessive generality and its status as a theory, are its role as a theoretical model rather than an exhaustive theory.

In "Advances in General System Theory", Bertalanffy explores the expansion of post-war systemic approaches and their articulation with General Systems Theory (GST) to form a broader theory of systems. He highlights the importance of communication and of communication and control to describe how systems work, and how systems use information to reduce uncertainty. And finally, Game Theory describes logical and competitive decision making in systems, while TGS encompasses decision theory, network theory and graph theory to model the complex relationships between system components.

In conclusion, TGS extends from a theory to an ambitious project, integrating various ideas a starting point for systems thinking and various approaches, such as systems engineering such as systems engineering, the flexible systems approach, complexity science, system dynamics and learning organizations. Health informatics professionals can benefit from TGS by identifying, modelling and defining a system of interest, facilitating interdisciplinary communication and developing their understanding of TGS within a broader systems approach to problem solving.

Supported by a software application? (If yes, provide more details)

No.