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Integrating self-regulation theories of work motivation into a dynamic process theory

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ABSTRACT

Instead of merely combining theories of self-regulation, the current paper articulates a dynamic process theory of the underlying cognitive subsystems that explain relationships among long-used constructs like goals, expectancies, and valence. Formal elements of the theory are presented in an attempt to encourage the building of computational models of human actors, thinkers, and learners in organizational contexts. Discussion focuses on the application of these models for understanding the dynamics of individuals interacting in their organizations.

> “The challenge to motivation theory now is more theoretical and research-based than practical. We have many of the pieces to the puzzle, we simply need to figure out how to assemble them.” (Landy & Conte, 2004, p. 364)

The field of human resource management (HRM) is premised on the notion that HRM is facilitated by understanding the nature of the resource (i.e., humans). Part of this understanding relates to individual differences in knowledge, skills, abilities, and other characteristics (e.g., personality), and part to the processes and parameters that affect motivation (Campbell & Pritchard, 1976). Of these two parts, the latter has arguably been the more difficult and disarrayed (Mitchell, 1997). Yet, most comprehensive theories of motivation were abandoned or grossly simplified, often by their originators, because of the overwhelming complexity of the nature they sought to understand. For example, McClelland, Atkinson, Clark, and Lowell (1953) introduced a comprehensive approach to understand motivation, but ended up focusing on need for achievement as an important aspect of the approach. Likewise, narrower approaches, focusing on either individual differences in persons *or* context variables in the environment, ruled the theoretical and empirical landscape of the day (Cronbach, 1957). However, Cronbach and others (e.g., Mischel, 1968) pointed out that neither approach alone was sufficient, leading researchers to consider interactions between person and environment variables (e.g., Magnusson & Ender, 1977). Indeed, most observers in the field have recognized for some time the dynamic (i.e., over time) interaction of persons with their environments and the reciprocal influences occurring due to these interactions (e.g., Bandura, 1986; Katz & Kahn, 1978; Lewin, 1951). Nonetheless, work stemming from these approaches maintained their focus on the causes of behavior, ignoring the role of feedback processes that could close loops of causation. The result was static, open loop conceptualizations of human behavior or dynamic conceptualizations but parsed into parts that could be more easily conceptualized. Both, as noted by Landy and Conte (2004) in the opening quote, are of only limited value to those seeking to understand how and why whole persons behave as they do in whole settings.

Recognizing these limitations, more recent efforts have been made to combine or integrate our knowledge, particularly in the area of motivation in applied settings (see, Kanfer, 1990, for a comprehensive review of many of these efforts). Interestingly, the majority of these theories share a view of the human as a self-regulator (Vancouver & Day, 2005). Self-regulation refers to the

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maintenance of internally represented desired states within the self (Vancouver, 2000). Internally represented desired states are called goals in psychology (Austin & Vancouver, 1996); hence, human self-regulation theories are those that attempt to describe the consequences or processes of goal striving (Kanfer, 1990). More comprehensive theories also describe the processes involved in the establishment, planning, and revision of goals (Austin & Vancouver, 1996; Vancouver, 2005).

The most common integrative approach is to articulate verbal theories of relationships (e.g., Locke & Latham, 2004) or underlying processes (e.g., Bandura, 1986, 1997). Although these approaches provide clues regarding research questions and potential insights toward innovative interventions, they are often imprecise or ambiguous (Luce, 1995). Indeed, these verbal theories can be contrasted with the more formal (i.e., mathematical) theories of the past (e.g., Hull, 1943). Interestingly, that contrast is considered an advantage of the more recent theories over the more formal theories of the past because the mathematically specified theories were seen as oversimplified and unable to account for a substantial amount of phenomena, or too abstract to be of much use (Pinder, 1998). Yet, the mathematics and formalization provide a foundation for precise prediction and unambiguous understanding needed more than ever given the complexity of the problem (Harrison, Lin, Carroll, & Carley, 2007). That is, mathematics is a tool theoreticians (and practitioners) need to fully understand the implications of the dynamic interactions among the various parts and the emerging properties and processes that arise from those dynamic interactions (Forrester, 1961). More specifically, it allows one to construct computational models and simulate the behavior of those models *over time* to see if the models can a) account for observed behavior of human beings, b) provide clues for understanding how individuals process information and self-regulate, c) make accurate predictions of an individual's future behavior after deriving parameter values that represent the individual, and d) predict or give clues regarding the effectiveness of interventions applied to the individual (Harrison et al., 2007; Hulin & Ilgen, 2000).

To capitalize on these benefits of a more formal and comprehensive theory of the dynamics of motivation and behavior, our end goal is to provide mathematical representations of the basic person *processes* by which computational models of specific persons-in-contexts (Ford, 1992) can be created. Moreover, these basic self-regulatory processes are comprehensive, including *acting*, *thinking*, *learning*, and *feeling*, as well as how these processes tie into each other *and* the context in which they are occurring. This theoretical integration of processes and context is critical given the interaction of these processes and context within the phenomena of interest to applied psychologists. We know of no modern attempt to integrate all these components into a formal, interconnected set of theoretical statements (i.e., equations).

Given the breadth of this endeavor, the complexity of the task, and the difficulties associated with measurement and observation, our descriptions must be considered preliminary. However, we are fortunate to have much of the trail blazed and some paths even well trod by the classic, grand theories of motivation and human behavior. For instance, our discussion of a dynamic process theory of self-regulation begins with a review of Lewin's (1951) work. Lewin wrote in a time when comprehensive theories of human behavior and motivation were revered. That period ended shortly after his death, but his theorizing became the basis of several middle-range theories that subsequently emerged (Pinder, 1998) and provides a context for understanding the theory presented here.

A second advantage of our dynamic process theory of self-regulation that becomes clear as one reads through the descriptions of the basic processes is that their underlying architectures are all highly similar and build off one another. This similarity provides a remarkable source of parsimony where one would expect complexity. Instead, complexity is hypothesized to arise as the parts are put together and repeated as necessary to represent the person-in-context and as elements of the complex environment are properly understood and represented. The perceived value of this perspective, along with advances in computational modeling, provides the background for why we believe now is a good time to essentially "reintroduce" Lewinian theorizing to applied psychology.[1] Below we briefly review Lewin (1951). Then in separate sections we consider the four basic processes of the human experience (i.e., acting, thinking, learning, and feeling). In each section, we describe the minimum amount of mathematics needed to represent each process and how the equations relate to previous theories and equations in previous sections. The aim of each of the sections is to provide a theoretical and mathematical description that will form the foundation for the development of computational models of these processes. In doing so, we draw on a wide range of basic and applied psychological research and theory. In the final sections of this paper we describe some of the implications of our theorizing, including examples of how this theory can be used to clarify some of the ambiguities and inconsistencies in the motivation literature and examples of types of organizational problems to which our dynamic process theory might be applied.

1. Lewin's legacy

Like the self-regulation theories of today, Lewin (1951) began the exposition of his theorizing of the processes underlying human behavior with the goal construct (Austin & Vancouver, 1996). Specifically, Lewin said,

"This property of a need or quasi-need can be represented by coordinating it to a 'system in tension'" (1951, p. 5). Further, he claimed that "by taking this construct seriously and using certain operational definitions, particularly by correlating the 'release of tension' to a 'satisfaction of the need' or the 'reaching of the goal', and the 'setting up of tension' to an 'intention' or to a 'need in a state of hunger,' a great number of testable conclusions were made possible" (1951, p. 6).

According to Lewin, a goal is not merely a construct that can be manipulated or changed, but part of a structure (i.e., system) that determines the motivation of an individual as that individual interacts with her or his environment over time. Specifically, if a discrepancy arises between a perception of the state of a variable in the environment and the goal (i.e., desired state) for that

[1] Note that Busemeyer and Townsend (1993) have already reintroduced it to cognitive psychology.