A Social-Cognitive Model of Leadership: Open Systems Theory at the Individual Level of Analysis

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The answer to the question of whether leaders are born or made is "yes." While traditional and contemporary leadership theory often focuses on describing individual differences in leadership as either a function of the person (trait) or the situation (state) (e.g., Judge & Bono, 2000; Judge, Bono, Ilies, & Gerhardt, 2002; Vroom, 2000), advocates of each position acknowledge the importance of future research studying the interaction of the two (e.g., Sternberg & Vroom, 2002). The purpose of this article is to propose an interactionist framework to the science and practice of leadership that reflects contemporary social-cognitive models of human action.

Open systems theory (OST) is advocated here as a theoretical paradigm appropriate for describing person-situation interactions at multiple levels of analysis. The characteristics of an open systems model are then applied at the individual level of analysis using a cognitive-affective processing system (CAPS) model of personality (Mischel & Shoda, 1995) to identify and explain how personal constructs and situational features can exist simultaneously and dynamically within a parsimonious integrated model of leadership. This perspective has implications for both research and practice of leadership.

The grandfathers of modern social psychology, including James, Cooley, Mead, and Lewin all suggested that human behavior was a function of dynamic systems (Nowak & Vallacher, 1998). Indeed, the "founding father" of experimental social psychology, Kurt Lewin, advocated this position through Field Theory (Kruglanski, Clement, & Jost, 1997). However, psychologists' fixation on developing universal laws like those applied in the natural sciences (Secord, 1986) has left behavioral science with little attention being paid to more complex relationships (Guastello, 1995). Gould (1996) refers to this

obsession as “physics envy”. OST offers a paradigm that at once represents the past and future of psychological phenomena.

Interactionism and Open Systems Theory

Rost (1993) notes the importance of studying leadership as a relationship rather than simply a list of personal or situational characteristics, and laments the misplaced focus on “the peripheral elements surrounding leadership and its content instead of on the nature of leadership as a process, on leadership viewed as a dynamic relationship” (p. 4). While most psychologists have accepted a conceptual person-situation interactional paradigm (Bem, 1982; Chatman, 1989; Pervin, 1989; Schneider, Smith, & Goldstein, 2000), the persistence of scholarly leadership research focusing purely or primarily on traits (e.g, Judge & Bono, 2000; Judge, Bono, Ilies, & Gerhardt, 2002) or situations (e.g., Vroom, 2000) indicates sporadic empirical application.

Chatman (1989) notes that prior interactionist models have not always conceptualized persons or situations accurately. Shoda and Mischel (1998) challenge researchers to, “go beyond acknowledging that Person X Situation interactions exist to understanding just how personality interacts with situations in determining behavior” (p. 180). For example, Schneider (1983) proposes a typology that identifies five types of person-situation interaction, including descriptive, statistical, additive, interdependent, and reciprocal action-transaction.

Bandura (1999) similarly considers the interaction of persons and situations as unidirectional, partially bi-directional, or triadically reciprocal. While unidirectional frameworks emphasize the unique impact of both person and environment, partially bi-directional models add the impact of persons on environments, and vice versa. The triadic model, on the other hand, represents the relationships among the variables to be reciprocal, ongoing, and dependent on circumstances. Both Schneider and Bandura note that the latter of their respective types is the best description of true interactionist thinking.

Open systems theory (OST) offers a triadically reciprocal paradigm of interactionism that describes psychological phenomena at multiple levels of analysis as dynamic systems. Katz and Kahn (1978) describe the open systems framework diagrammed in Figure 1 as, “an energic input-output system in which the energic return from the output reactivates the system” (Katz & Kahn, 1978, p. 20).

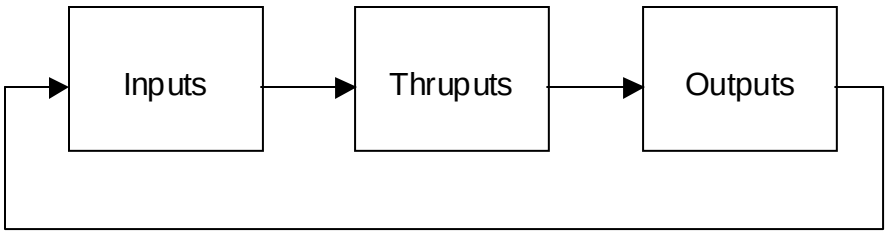

Figure 1. Open systems framework.

The importation of energy, or input, refers to the energy that the system takes in from the external environment for the purpose of transformation. For an organization this may mean raw materials or human resources; for an organism this may mean air, food, and water. The process also involves informational inputs which are coded and understood. The throughput is the transformation of these energic inputs into some product and/or service. For example, an automotive manufacturing plant may match steel and technology with labor to transform these materials into a car. The output of the system refers to the product and/or service that the system exports into the external environment. In the above automobile manufacturing example, these would be the cars themselves as well as scrap or other byproducts.

These systems are dynamic and cyclical in nature, indicated by the feedback loop in the model. Rather than being a linear process from beginning (inputs) to end (outputs), the open system is continually impacting its external environment and, thus, shaping its source of inputs. These cycles of events display a steady state and dynamic homeostasis. This means that the ratio of inputs to outputs remains the same. Any external perturbation causes the system to react by attempting to regain equilibrium. These perturbations to the system can be either real or anticipated. However, this equilibrium is "quasi-stationary, more like the constant depth of a flowing river than a still pond" (Katz & Kahn, 1978, p. 27). As these dynamic systems grow and develop, they become more complex. The processing or throughput becomes differentiated and integrated. For example, as subsystems become specialized, as the lungs and heart in an individual or the director of marketing and the director of human resources in a corporation, the resulting pieces must then reassemble to serve the functioning of the whole. Furthermore, the system's sensitivity to initial conditions illustrates how small changes in the origination of a system can result in dramatic outcomes.

An open systems perspective allows one to understand activity at both the micro and the macro levels of analysis. Psychologists have traditionally concentrated on the individual

or micro level of analysis (Katz & Kahn, 1978). While this approach may shed some insight on organizational functioning, the breadth of understanding is biased and restricted. Only person-centered explanations may be offered for phenomena that may be situationally induced. The systems level provides the conceptual understanding of phenomena about which to collect data.

The usefulness in applying OST to psychological constructs has been demonstrated across levels of analysis. At the organization level, the Burke-Litwin model of organizational change (Burke, 1994; 2003) and the Nadler Tushman Congruence Model (Nadler & Tushman, 1988) are both based on the concept of the OST framework. While each considers the content somewhat differently, both base their fundamental assumptions on systems characteristics outlined above. Similarly, at the group level of analysis, McClure (1998) reconsiders group development, which is often portrayed in a linear and unidirectional way (e.g., Tuckman & Jensen, 1977), as a dynamic system energized by the conflicting centripetal forces for groupness and the centrifugal forces for independence. Finally, at the individual level of analysis, the Cognitive-Affective Personality System (CAPS) developed by Mischel (Mischel & Shoda, 1995) uses OST to reconcile the longstanding personality paradox of person versus situation.

Open Systems Theory and Leadership

Mischel's (e.g., Mischel & Shoda, 1995) CAPS model provides an example of how behavior at the individual level of analysis can be modeled as a dynamic system to account for the seemingly paradoxical stability and variability in human behavior (Figure 2). This framework demonstrates that a person-centric or individual differences analysis of leader characteristics need not be trait based or static. Rather, the individual is described in context by identifying the pattern of inputs, throughputs, and outputs that provide the personality system with coherence. The construct of leadership can be dissected and analyzed similarly.

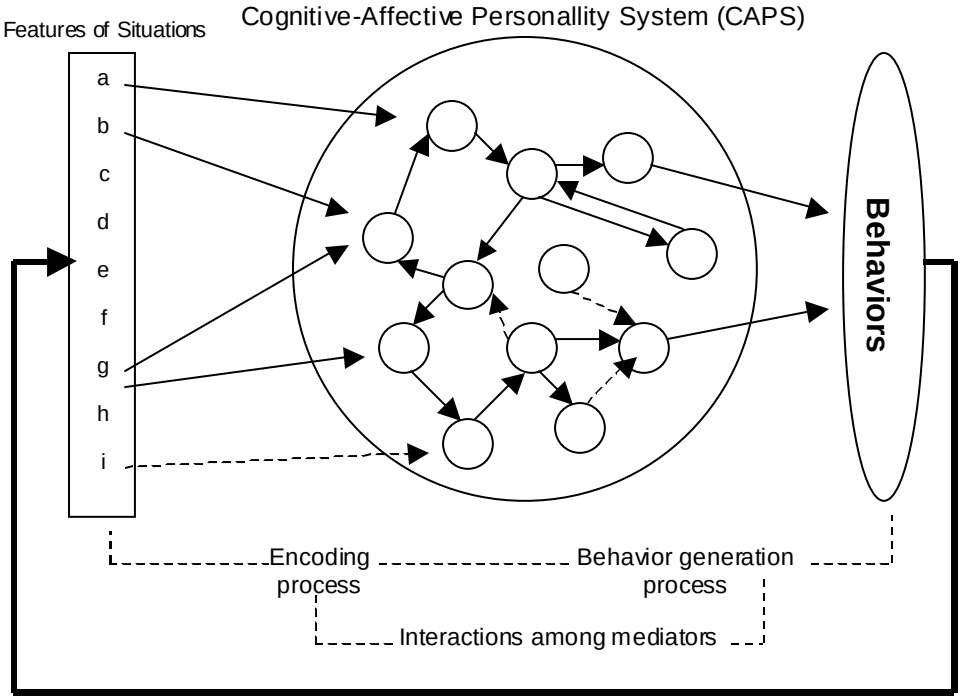

Figure 2. Cognitive-Affective Personality System adapted from Mischel & Shoda (1995).

Inputs

The components of a social-cognitive model of leadership (SCML) can be drawn from a century of scholarly research. The inputs to the system represent situational features that have been described by contingency theorists such as Fiedler (1971), Hersey and Blanchard (1974), and Vroom (2000). Situational theories, however, often consider the context at the nominal level. This only addresses one level in Shoda, Mischel, and Wright's (1994) taxonomy of situation. These authors described four levels of context; ecological setting, nominal situations, interpersonal situations, and psychological features. Developed in a longitudinal field study of children at a residential camp in New Hampshire, ecological settings included camp, school, and home. Nominal situations included woodworking, cabin meeting, playground, classroom, mealtime, and watching TV. The interpersonal situations included peer initiating positive contact, peer teasing, provoking, or threatening, praise by an adult, warning by an adult, and punishment by an adult. Finally, the psychological features of each situation were peer - positive, peer - negative, adult - positive, and adult - negative. Shoda et al. (1994) point out that as situations are personal, the psychological features of the situation are crucial in the activation of information and affect processing systems. These psychological features are

crucial in activating person variables and, thus, provide the level of context across which behavior is consistent.

The inputs to a SCML should be considered likewise. OST points out that in systems, situational inputs are both material and informational. While the nominal level of context emphasizes objective features, the psychological situation emphasizes the subjective coding and encoding of inputs. Furthermore, the encodings associated with any given leadership scenario are likely to vary according to the person, the situation, and the larger cultural context. This skill of attending to and encoding the important situational elements is essential to effectiveness, as the leadership environment becomes increasingly complex as one ascends the hierarchy (Zaccaro, 2002). In leadership situations, the encoding capabilities of leaders are limited.

> "A major issue that is getting practically no attention in the management literature is the reality that in many cases the chief executive officer does not have the conceptual capacity to grasp the degree of complexity that he or she must now confront. In short, they simply do not know what they are really up against and what is happening to them and to their organizations, let alone knowing what to do about it" (Levinson, 1994, p. 433).

Throughputs

OST models social information processing as inextricable from the situation. The consistency for which trait theorists have struggled for so long is therefore found in, "the cognitive and social competencies" rather than in cross situational expression of a static personality dimension (Mischel, 1984, p. 353). The relationship between one's experience of the context and his/her behavior is therefore mediated through one's strategy for attending to and encoding features of the external environment. The adaptive (or maladaptive) patterns of thoughts and feelings that are activated are the product of individual differences in encodings, expectations and beliefs, affect, goals, and competencies and self-regulatory plans (Mendoza-Denton, Ayduk, Shoda, & Mischel, 1997; Mischel & Shoda, 1995; Ross & Nisbett, 1991). Implicit in this definition of personality is the assumption that behavior is goal-directed and self-organizing, that it occurs on conscious and unconscious levels, and that reactions are the product of fast (sometimes automatic) routine behavioral scripts (Shoda & Mischel, 1998).

Leader reactions to the demands of the external environment are the product of both the structural and allocation properties of their processing system (Kruglanski, Shah, Fishbach, Friedman, Chun, & Sleeth-Keppler, 2002). Situational and dispositional factors influence the architecture of the processing system. For example, Metcalfe and Mischel (1999) identify developmental factors, stress, chronic environmental factors, dispositional and organic factors, and pharmacological factors as impacting one's ability to regulate affective responses with cognitive processing. Similarly, Fiedler (2002) notes the impact of stress on effective utilization of cognitive resources in leadership situations. Zaccaro (2001) notes that missing from current models of leadership is empirical study of the impact that aspects such as social perception, behavioral flexibility, and cognitive complexity have on organizational performance. This processing system can be

characterized in a parsimonious way using the underlying person variables listed above; encodings, expectations and beliefs, affect, goals, and competencies and self-regulatory plans.

These features in the throughput of an SCML incorporate current leadership research emphasizing practical, social, and emotional intelligence (Gardner, 1996; Peters, 1987; Riggio, Murphy, & Pirozzolo, 2002). The framework also provides for the perspectives of values-based or servant leadership (Greenleaf & Spears, 2002; O'Toole, 1996) in emphasizing the beliefs and goals of the individual and their reciprocal impact on organizational culture. By defining the person according to the architecture of this connectionist system, it is possible to generate both a nomothetic and idiographic illustration of the dynamic and reciprocal interaction between values, goals, and abilities of the individual and the perceived demands of the situation (Hanges, Lord, & Dickson, 2000; Kruschke, 2003). A social cognitive framework lies at the foundation of research on social intelligence, emotional intelligence, and practical intelligence. As a systems perspective has been used to organize and represent the field of personality psychology (Mayer, 1998), OST provides an explanatory framework for the study of multiple intelligences and leadership.

Leadership as dynamic cycles of events

The topic of Kotter's (1999) seminal work "What leaders really do" reveals an action-oriented approach that includes a reference to the contingency and complexity perspectives. The SCML augments Kotter's work by modeling leader behavior as the product of this differentiated and integrated connectionist network of thoughts and feelings. Most cognitive theories of leadership propose that this is the case. However, the unique contribution of this model is the dynamic relationship between one's actions, him/herself, and the external environment. Behavioral outputs reactivate the system by influencing the external environment. According to the model, leadership behavior is both a product of and impacting to the external environment. This is consistent with the characteristic of dynamic homeostasis as individuals change and adapt (sometimes subtly and sometimes drastically) relative to their perception of the environment in an attempt to maintain equilibrium.

The SCML is one example of how OST can be applied at the individual level of analysis. The model described here locates the individual within the larger organizational suprasystem. This paradigm is an important development in social psychology as it implies that the individual, the group, and the organization are nested systems exhibiting reciprocal causal relationships. Further, the purpose of identifying CAPS as but one application of OST is to emphasize that researchers should choose to apply the characteristics in other ways to understand how dynamic systems can be helpful in the description of leadership. In accordance with the dimension of equifinality, there are many means to the same end.

Implications for Research

The research implications of an open systems model of leadership are as follows. First, this framework requires a diverse methodology that captures the complexity of the phenomenon. The proposition suggested by this writing is that a social-cognitive framework will account for more variance in effective leader behavior than traditional trait based or situational models of leadership. Nowak and Vallacher (1998) note that the fluidity of cognitive and affective processing of information, while widely supported, makes the phenomenon difficult to measure. However, this does not imply that one cannot identify patterns underlying the seemingly limitless responses to any given stimuli. For example, Brown (1995) advocates both qualitative and quantitative methods in testing dynamic systems in general. Qualitative methods, subjective methods such as the Q-sort, and longitudinal studies can provide alternatives to static assessment.

Second, a study of persons should include a nomothetic and idiographic approach, as well as investigation across situations (Chatman, 1989). Tests of the social-cognitive models of personality heed this advice. For example, Mendoza-Denton, Ayduk, Shoda, and Mischel (1997) capture the richness of personal experience while also providing data with which to draw statistical inferences. The resulting intraindividual profiles of behavior provide an explanation of the individual's unique patterned set of responses that mediate the relationship between the perceived (or psychological) situation and behavioral outcomes. This schema or pattern of cognitive affective units (CAU's) was shown to be comprised of both "hot" and "cool" elements. Moreover, feeling and reasoning about situations regulated one's effectiveness in dealing with them. This is supported by Zaccaro, Foti, and Kenny (1991), who suggest that the ability to perceive the demands of the context varies across individuals. While each person's profile is unique, shared experience and history often result in a shared perspective. The approach, then, allows for both an idiographic and a nomothetic understanding about individual differences across situations.

Third, future research should not only include a description of the steady state of personality and leadership, but also the ways in which these systems are transformed through subtle or chaotic change. While systems theories do stress these dynamic interrelationships, they tend to emphasize the establishment of the steady state or equilibrium (Vallacher & Nowak, 1997). However, in order to understand the nature of any particular system, one must understand its equilibrium as well as its disequilibrium. Chaos and complexity theory, on the other hand, describe how systems change and evolve (McClure, 1998). Further, the nature of open systems theory implies that the nonadditive, nonlinear behavior of a system is meaningful. The applications of systems theories to the study of leadership should therefore consider the fluid way that the personality system of a leader changes in evolutions and revolutions. For example, former GE CEO Jack Welch's transformation from "Neutron Jack" could be better understood to prevent the suffering from "moral amnesia" (Werhane, in Cuilla, 1998) that occurs when past bad behavior is forgotten or excused in favor of profit.

Implications for Practice

There are also practical implications of a systems perspective on selecting, training, and developing leaders in organizations. First, the importance of identifying and selecting leaders according to valid criteria is stressed in the literature (Howard, 2001). While some (Hogan, Curphy, & Hogan, 1994; Judge & Bono, 2000; Judge, Bono, Ilies, & Gerhardt, 2002) advocate a trait-based selection methodology, this article highlights the advantages of a more dynamic approach. The interactionist approach is also advocated by Fiedler (1996) who notes that the tools being used to select and train leaders are often unvalidated and that, instead, leaders should be recruited and selected according to abilities that can be utilized in context.

An open systems perspective advocates the identification of those personal attributes that allow the leader to accurately assess the external environment, process this information effectively, and act accordingly. This cognitive and behavioral complexity is both an area for future research (Zaccaro, 2001) and challenge to managers to assess persons in situations more holistically. For example, Zaccaro, Foti, and Kenny (1991) identify social perceptiveness and response flexibility as traits that account for variance across situations. Therefore, these characteristics may be the kinds of competencies that predict real-world leadership success.

Second, upon entering the organization, the way that leadership is developed and socialized has important and self-fulfilling implications. The importance of ongoing development is essential to establishing and maintaining a climate of leadership. This is particularly acute with the application of OST. For example, Schneider's (Schneider, Smith, & Goldsten, 2000) Attraction-Selection-Attrition framework illustrates that over time organizations become progressively more homogeneous. Therefore, those characteristics must be used not only in recruitment and selection but also during socialization, training, and development.

Greene (2002) gives an example of how leaders are trained and developed in the public sector with an institutionalized "Leadership Academy." Kur and Bunning (2002) suggest a model of leadership development that incorporates business and institutional experience, behavioral skills, and intrapersonal insight. This combination of experience, and self-knowledge emphasizes the importance of intra and extra-personal foci. Moreover, a systems perspective answers Schriesheim's (2002) call to represent the complex phenomenon of leadership more simply by concentrating on those relational elements essential for comprehensive description; encodings, expectations and beliefs, affect, goals, and competencies and self-regulatory plans.

Third, OST emphasizes the important role of the suprasystem in shaping behavior. Therefore, the selection and development of leadership within an organization needs to consider the fundamental role that organizational culture plays in the nature of the behavior that is expressed. In order to reinforce the nature of leadership exhibited in individuals, the organization must maintain a supportive culture and climate (e.g., Earley & Mosakowsky, 2002).

The importance of an organizational culture that supports leadership and leader development is highlighted by Ruvolo, Peterson, and LeBoeuf (2004), who identify a supportive culture as key to the success of any leader development. Similarly, the nature of the culture can dictate the nature of an appropriate leadership style. For example, Pasa, Kabasakal, and Bodur (2001) illustrated that managers in a collectivistic culture were better at satisfying the needs of followers when emphasizing a team focus. Together, these two studies point to the importance of both developing a culture that supports leadership as well as developing leaders who support the culture.

Conclusion

The purpose of this article is to introduce OST as a useful way of framing an interactionist perspective on leadership. This article uses the CAPS framework as one example of how the characteristics of an open systems framework can be applied at the individual level of analysis. This framework has been shown to account for earlier paradoxes in personality science. A dynamic systems paradigm has been presented as a more comprehensive foundation for theory and practice. This also suggests implications for the study of psychology at higher levels of analysis, thus representing a paradigm that can unify the fields of personality and social psychology (Kruglanski, Clement, & Jost, 1997). Accordingly, leadership research can benefit by adopting such a framework that describes phenomena as dynamic open systems.

Zaccaro (2002) notes that a person-centric approach to leadership represents a return to traditional trait-based approaches to the study of leadership. However, this article demonstrates that the two need not be synonymous. The criticisms leveled at trait models of personality (e.g., Block, 1995; Pfeffer, 1997) are addressed in individual differences approaches that consider psychological phenomena more dynamically. The social-cognitive renaissance noted in the personality literature (Mischel & Shoda, 1995) and the related call for emphasizing process models (Pervin, 1983; 1989) can therefore be usefully applied to leadership research.

Smith and Peterson (1988) propose a model of leadership in which the elements of the experienced situation, cognitive processing, and behavioral choice are diagrammed to present an alternative to traditional person-centric explanations of leadership. Similarly, Gardner and Avolio (1999) provide a compelling interactionist model of the charismatic relationship between the roles of leader and follower. They point out some ways in which personal characteristics of the leader (i.e., self-esteem and self-monitoring) interact with motives and values such as "activity inhibition," or the extent to which a leader uses his/her influence for personal or social purposes. These approaches are an example of the incorporation of more dynamic frameworks and the future of leadership research.

OST pays tribute to early theorists such as Lewin, whose famous dictum $B = f(p, e)$ represents the notion that who we are and how we behave is a function of the interaction of person and environment, not solely one or the other. It also represents the direction of research in the social sciences. The "new wave of dynamism" is positioned to make the impact in social psychology as it has in the natural sciences (Kruglanski, Clement, &

Jost, 1997). Brown's (1995) assessment of the utility of complex systems notes: "[I]t is far better to model a social phenomenon correctly using deterministic algebra, thereby gaining a realistic understanding of the complexity of the underlying social dynamics, than it is to make a linearized mess of the specification while simultaneously maintaining the fantasy of probabilistic completeness because of the algebraic availability of a new worthless measure of variance"(p. 6).

This "new science" (Glieck, 1987) challenges psychologists and other scientists to represent phenomena more dynamically. By applying more dynamic frameworks to the study of leadership, a more comprehensive and parsimonious model of the relationship is possible.

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