Leadership Versus Management – Does the three-term operant contingency of behavior analysis distinguish between these roles?

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INTRODUCTION

For more than one hundred years, academic researchers have been studying leadership. Perhaps one of the most surprising outcomes of these efforts is that, even after all of this time, they still haven't come up with a concise and widely-accepted definition of leadership. In fact, Stogdill (1974) asserted that there are as many different definitions of leadership as there are people studying leadership. Many of these definitions have some similarities, but there are also important distinctions the make it difficult to distill leadership into a single set of accepted dimensions.

One of the most common dilemmas that researchers face, beyond simply defining leadership, is distinguishing it from management. In fact, many of the basic definitions of leadership may be substituted for a definition of management without making any substantial changes. For example, Lussier and Achua (2016), in their recent textbook on leadership, use the following definition of leadership, "leadership is the influencing process between leaders and followers to achieve organizational objectives through change." (p. 5) With just a few substitutions, we could rewrite this as a definition of management with which few might argue – management is the influencing process between managers and subordinates to achieve organizational objectives through change (italics highlight the words that have been substituted).

CRITERIA FOR IDENTIFYING LEADERS: CRITERIA FROM ORGANIZATIONAL BEHAVIOR, ORGANIZATIONAL PSYCHOLOGY AND POPULAR MANAGEMENT

Perhaps the simplest way to determine who is leading it to identifying the person out front ("in the lead"). Many who study leadership have started with this definition and have chosen as their subjects the individuals who exhibit the best performance. Jim Collins (2001), in his book Good to Great described the activities of those "leaders"

whose actions had transformed their companies from "good" companies (typical of their industry) to "great" companies (with sustained results far superior to the competitors in their industry).

Another common criterion used to identify leaders is the possession and exercise of legitimate and social power to influence others. This approach, for example, may be found in the definition of leadership provided by Lussier and Achua (2016) in the paragraph above. This kind of approach finds its roots in the work of French and Raven (1959) as they first attempted to define the power bases used by leaders to influence others within their organizations.

A third approach to the identification of leaders is to focus on those who have the authority to make decisions, or define policy for an organization, institution, or society. In this paradigm, leadership is the process of casting vision, setting direction, and determining the goals and objectives of an organization. This line of study has identified autocratic styles of leadership, where one individual unilaterally makes the decisions and instructs/directs the others within the organization as to what they are to do and has also identified a continuum of progressively-more participative decision-making and leadership styles.

The fourth, and perhaps most common, criteria to identify leaders that we will mention here simply defines leaders as those who are the hierarchical superiors on the organization chart. This approach names the organizational superiors as leaders and the organizational subordinates as the followers, resulting in an unclear distinction between a "leader" and a "manager".

CRITERIA FROM BEHAVIOR ANALYSIS

Behavior analysts tend to be sticklers for terminology, striving for clear definitions of any and all terms that work their way into our discussions of just about behavioral topic. Surprisingly, however, the definitional rigor that is applied to many areas within behavior analysis appears to be lacking in behavioral discussions of leadership. A review of articles on leadership from the behavioral literature reveals, for example, that the four criteria for identifying leaders outlined above are also used by behavior analytic researchers.

For example, Komaki (1998) emphasized that effective and exemplary leaders produce superior results, implicitly drawing on the first criteria for identifying leaders given above. Goltz and Hietapelto (2002) asserted that "leadership can be viewed as the exercise of social power" (p. 8), using the second criteria for identifying leaders mentioned above. Malott (2002), Brethower (2007), and Houmanfar and Mattaini (2016) all use ability and authority to make decisions and to determine policy as their criteria for defining leaders (the third criteria outlined above). Finally, Houmanfar, Rodrigues, and Smith (2009) and Komaki et al. (2011) routinely refer interchangeably to both leaders and effective managers, blurring the distinction between leaders and hierarchical superiors (the fourth criteria provided above).

So, how can it be that behavior analysts are struggling with the same issues related to leadership with which "others" (those outside of behavior analysis) also struggle? The answer stems from the methods used to study leaders and leadership. The vast majority of leadership studies, regardless of the academic field within which they are done, use an inductive approach. This approach studies a representative sample of subjects and then attempts to make generalizations and extrapolations from the sample to the whole. Essentially, in order to study leadership, we must identify a sample of "leaders" and then study what those individuals do in order to make inferences as to what constitutes leadership. Of course, the difficulty with this approach is that the individuals may perform activities that can/should be categorized as something other than leadership (management behaviors, for example), but it can be difficult to correctly and discretely categorize all of their different activities into appropriate categories on which all can agree.

An alternative approach to defining leadership would be to attempt to build a deductive argument for leadership, beginning by defining some key assumptions/axioms and then coming to a logical conclusion about the topic. For example, a deductive approach to defining leadership might frame a statement in the form of "If premise A is true, and if premise B is true, then leadership MUST BE…." The strength of such an approach would be dependent on the strength of the premises/assumptions/axioms on which the argument was based. Building such an argument is beyond the scope of our present discussion, but perhaps we might begin to take some steps in that general direction.

LEADERSHIP-MANAGEMENT DISTINCTIONS MADE BY BEHAVIORISTS

Several behavior analysts have attempted to defined the distinction between leadership and management. Brethower (2007) differentiated between the tasks carried out in leadership and those carried out in management, stating that the task of leadership is to create an agreed upon clarity of action/direction (decision and policy making), while the task of management is to do what it takes to follow the lead and give leaders information about whether the direction is correct or incorrect. In contrast, Daniels and Daniels (2007) asserted that leadership involves establishing the conditions under which performers will choose to execute the mission, vision, and values of the organization, while management involves the technical mechanisms and functions of the organization, ensuring that people, processes, and systems function together efficiently. Both of these attempts draw distinctions between leadership and management that allow them to be conceptually separated from each, highlighting ways in which these activities are different, and mutually exclusive from each other. In the present discussion, we will similarly attempt to draw a distinction between leadership and management, albeit using criteria that are unique.

MANAGEMENT AND LEADERSHIP AS CONCEPTUAL COMPLEMENTS

The first premise we will make on the path to building a deductive understanding of leadership and its distinction from management is that these two concepts are complements to each other – mutually exclusive behaviors that, when combined, form a necessary and sufficient combination required for influencing behavior within an organizational context. In order to clarify this assertion, we may define several examples of conceptual complements to illustrate. Glenn et al. (2016), for example, defined the distinction between process and content. In order to illustrate this distinction, they provided the example of a prototypical operant experiment in which a rat presses a lever and food is delivered contingent upon some feature of this pressing behavior. The details of the experiment exhibit the experimental content – the specific approach used to study the process of operant conditioning. The specific relationships of operant conditioning may be explained using content-free terms and are not dependent on any empirical content particulars. We may, for example, substitute the particular empirical content of a pigeon pecking a disc for the rat pressing a lever without compromising the process of operant conditioning.

In a similar distinction, biologists Maturana and Varela (1987) distinguished between organization and structure according to the following definitions:

> Organization denotes those relationships that must exist among the components of a system for it to be a member of a specific class. Structure denotes the components and relations that actually constitute a particular unity and make it organization real. (p. 47, italics theirs)

Maturana and Varela illustrated their distinction between organization and structure using a rather peculiar example – a toilet. The organization of a toilet constitutes a system of water-level regulation involving the relations between a mechanism that detects the level of water in the tank and another mechanism(s) capable of either allowing or stopping the flow of water into and out of the tank. Typically, a particular toilet structure involves particular mechanisms constructed of plastic, metal, and rubber (the float, for example, that detects water level, the bypass valve that allows water to flow into the tank, etc.). The particular structure of a given toilet may be changed by substituting wood in the place of metal and plastic without changing the underlying organization of the toilet.

In our quest for making a clear distinction between management and leadership, we will use another pair of conceptual complements relevant to behavior – the distinction between the mechanics of a behavioral system and the dynamics of a behavioral system. Driving the need for this distinction is a second premise that applies to both management and leadership, and that is the premise that both of these concepts are defined in their relations to behavior – the common factor that requires both management and leadership. Daniels and Daniels (2007) already made the connection of the first half of our conceptual complements when they asserted that management involves the technical mechanisms of the organization, ensuring that people, processes, and systems function together efficiently. Management, therefore, has to do with the mechanics of

a behavioral system. If we are to maintain the integrity (and by integrity, we are referring to the idea that complements consist of mutually exclusive concepts that, when combined, form a cohesive whole) of our conceptual distinction, leadership must therefore be integrally linked with the dynamics of a behavioral system.

MANAGEMENT, LEADERSHIP, AND THE THREE-TERM OPERANT CONTINGENCY

The questions that inevitably follows the discussion outlined above are twofold. First, what, precisely, constitutes a behavioral system? Second, assuming that we can clearly define a behavioral system, what aspects of that system precisely represent the mechanics of the system, and what mutually exclusive aspects of the system precisely represent the dynamics of the system?

The good news for us (as behaviorists) is that we already have a clear, and widely accepted definition of a behavioral system – it is defined by the three-term operant contingency. The three terms of the operant contingency, of course, are antecedents, behaviors, and consequences for behavior. Antecedents are those events, activities, things, etc. that occur before a given behavior and encourage or facilitate the occurrence of a given behavior and provide the context within which the behavior occurs. The behavior is the action taken by an individual in response to the antecedents that preceded the action (an operant response). The consequences are the outcomes that follow behaviors and influence the future likelihood that the behavior will recur, either increasing or decreasing it. Behavior is prompted by its antecedents, but its rate is a function of the consequences that follow it. As Daniels (2000) has asserted, behavior is a function of its consequences. These relationships define a behavioral system in that behavioral processes, over time, are iterative – the outputs of one cycling of the process become the inputs for the next cycling of the behavioral process.

At this point, we have laid enough groundwork to take a large step (hopefully, not too big a leap at this point) in our attempt to build a deductively-constructed definition of leadership. Given the behavioral system defined by the three-term operant contingency, we may define management activities, having to do with the mechanics of an organization, as being the comprehensive set of antecedent interventions taken within an organization, and that precede the behaviors of those that are part of the organization, while leadership, having to do with the dynamics of an organization, may be "found" in the consequence-related interventions that follow the behaviors of those that are part of the organization. Inherent in the statement "behavior is a function of its consequences" is the idea that dynamics of behavior (rates of occurrence, changes in the rates of behavior) are governed by the consequences, so it is on this side of the behavioral "equation" that leadership resides.

LEADERSHIP IS NOT ALL CONSEQUENCES

When considering the consequences that follow behavior in an organizational setting, we may distinguish between naturally-occurring consequences and socially-provided consequences. Naturally-occurring consequences are integrally related to the performance of the task and occur regardless of whether that task is performed in the presence of other people or not. Socially-provided consequences are those consequences delivered by other people to the performer following the task. Leadership activities do not include naturally occurring consequences but are instead limited to socially-provided consequences supplied by others to the performer.

Further, we may ask if leadership is constituted of all socially-provided consequences or is constituted by some particular subset of this set. In response, we may argue that neither managers or leaders are in the business of getting less behavior, so leadership, then, would, at most, consist of the application of those consequences that result in the increased likelihood that a behavior will recur – positive and negative reinforcement.

While there are behaviorists that argue that the distinction between positive and negative reinforcement is merely a semantic and unnecessary distinction (see, for example, Baron & Galizio, 2005; Michael, 2004), this assessment is not shared by all behaviorists. Daniels and Daniels (2007), for example, argued that positive reinforcement was necessary to produce discretionary performance, while the use of negative reinforcement only produces compliance or conformance. They defined discretionary performance as "that behavior which a person could do if they choose, but for which they would not be punished if they didn't." (p. 16)

This distinction might be further supported by moving a bit afield of behavior analysis and borrowing a couple of terms from systems theory (von Bertalanffy, 1968) and systems dynamics (Senge, 1991). Feedback, in a general sense, is a general criterion necessary in the definition of a system and occurs when the outputs of one cycling of a system become the inputs for the next cycling of a system. This makes a process an iterative process, as was mentioned above in the context of a behavioral system. Theorists draw a distinction between the effects of positive feedback and negative feedback that occur within a system. Negative feedback often results in a decreasing rate of some output of a system but can also result in increases of some output of a system, particularly those where the rate of increase is decelerating (approaching an asymptote). In contrast, positive feedback amplifies the rate of change within a system, causing the rate of change to accelerate.

The dynamics produced by these two types of feedback closely parallel the dynamics that positive reinforcement and negative reinforcement have on behavior. In systems where positive feedback is present, rates of change will accelerate until the system bumps up against physical constraints the limit its growth (availability of resources, for example). In thermodynamics terms, these systems will maximize their rate of entropy production. This closely parallels the concept of discretionary performance as defined by Daniels and Daniels (2007).

Further, in systems where negative reinforcement is present, the rate of change decelerates as it approaches an asymptote determined by factors other than physical restraints, following a path of minimum entropy production. This closely parallels the compliance or conformance characteristics of negative reinforcement as described by Daniels and Daniels (2007). Rates of behavior governed by negative reinforcement converge on constraints constructed by the schedule (just enough to get by) rather than being limited only by the physical and mental potential of the performer.

Finally, thanks to the Nobel Prize-winning work of thermodynamicist Ilya Prigogine, research has been able to show that positive feedback is a necessary condition for the emergence of self-organization of structures and behaviors of greater order and complexity within systems of physical energy (Nicolis and Prigogine, 1989; Prigogine, 1996, Prigogine and Stengers, 1984). This work has been demonstrated within thermodynamic systems and biological systems (see also Kauffman, 2000), and has been extended into ecological systems (Ulanowicz, 2009) and even to cultural systems (Krispin, 2017). Such dynamics might possibly be necessary for self-organization and adaptation within behavior, further supporting the assertion that leadership is specifically the set of consequence interventions using positive reinforcement within organizations.

CONCLUSIONS

The implications of the line of thinking outlined in this present discussion are numerous. First, and perhaps most significantly, using principles of behavior analysis and systems theory, it may be possible to define leadership using a deductive approach, gaining clarity and consensus around a concept that has defied the efforts of other fields for more than one hundred years. Second, this approach may also be able to clearly differentiate between management and leadership using the antecedent/consequence criteria within the context of efforts to influence the behaviors of workers within organizations. This also would solve a problem the solution of which has long been problematic in other fields.

Another implication of this present discussion is that it is generally more confusing than helpful to talk about leaders and managers, and our discussions, particularly within the realm of behavior analysis would be better served if we centered our discussion on leadership behaviors and management behaviors. This would also be more in keeping with the best-practices of building the discipline of behavior analysis that have unfolded over the lifetime of this field.

Finally, and perhaps most practically, this approach may add a tremendous amount of clarity to the area of leadership development, enabling many more (and more effective) leaders to be trained. Those within the field of behavior analysis have long lamented the fact that, while we have behavioral technologies that are far superior for solving the "problems" of the world, we have largely been marginalized and ignored by other fields that follow different approaches to addressing some of the same kinds of problems that we address. Given that the logical progression of thought integrates principles of

behavior analysis with concepts from other, well-accepted fields of study, this approach to defining leadership and differentiating between management and leadership may further the integration and acceptance of behavior analysis on a new level.

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