

## Control Theory and Understanding Motivated Behavior: A Different Conclusion<sup>1</sup>

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*In the preceding article it was argued that control theory is not a useful paradigm for understanding work motivation. In doing so, three primary criticisms were presented: (a) that control theory, as originally formulated, does not adequately describe human behavior, (b) that modifications of control theory to describe human behavior have not been successful, and (c) that the use of logical deductions to develop a control theory model of work motivation is less efficacious than a grounded theory approach. In this reply, it will be shown that (a) the first criticism is not incorrect but is an inappropriate basis for criticism, (b) statements regarding modified control theory models are either inaccurate or premature, and (c) both inductive and deductive reasoning play an important role in theory development. In addressing these issues and in discussing the distinct advantages of current control theory models it will be shown that control theory does provide a viable paradigm for understanding work motivation.*

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In the preceding article, and in other writings (e.g., Locke, Cartledge, & Knerr, 1970; Locke & Latham, 1990), control theory has been challenged as a viable perspective for understanding human behavior and work motivation in particular. It is the view of this author that such a disparaging position is unjustified. While debates can play an important role in the development of knowledge, they can also become trivial, unproductive, and a waste of resources (Stablein, 1989). In the preceding article a number of

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assertions are made which can be challenged. Noting and redressing all of these, however, would not best serve the purpose of this exchange. As such, this rebuttal will focus on the three primary criticisms put forth in the preceding paper. It should not, however, be inferred that issues raised in that article and not addressed here are being conceded. Furthermore, this response will focus on the advantages of taking a control theory perspective rather than the shortcomings of alternative approaches to work motivation such as goal setting.

Three primary criticisms have been presented against control theory; (a) that control theory, as originally formulated, does not adequately describe human behavior, (b) that modifications of control theory to describe human behavior have not been successful, and (c) that the process used in modifying control theory to describe human behavior is less efficacious than a grounded theory approach. This paper will address each of these claims and then conclude with a summary of the distinctive advantages of taking a control theory perspective of work motivation.

### INITIAL FORMULATIONS OF CONTROL THEORY

The description of Wiener's (1948) initial cybernetic model, presented as Fig. 1 in the previous article, is an adequate depiction of control theory as initially formulated. The previous article is also correct in identifying the negative feedback loop as the central core of this theory. Finally, that paper correctly asserts that control theory, as initially formulated to depict mechanical systems, is not satisfactory for depicting the complexities of human behavior. Control theory can be modified, however, to depict human behavior and this modification does not require the abandonment of the central core. Control theory can be separated from past mechanical formulations as the feedback loop, not the mechanistic system it originally modeled, is the central core.

The origin of a theory is a poor criterion for evaluation. The validity of a particular theoretical model should be evaluated on its own merits. The fact that a theory may have originated in a different field to address a different type of phenomenon does not render it invalid. The basic notions of control theory have been adapted by many other fields of study. As reported by Carver and Scheier (1982) control theory has had an impact on engineering, applied mathematics, economics, and medicine as well as psychology. Contemporary control theory models of work motivation should not be evaluated on the basis of their original formulations any more than goal theory, or any other theory of work motivation, should be held to their original formulations.

All theories undergo modifications over time. The current statement of goal theory (Locke & Latham, 1990) includes several modifications from earlier formulations (Locke, 1968). For example, early statements of goal theory held that factors such as incentives and feedback would affect behavior only through their effects on goals (Locke, 1968). Later versions (Locke & Latham, 1990; Locke, Shaw, Saari, & Latham, 1981) recognize that goals and feedback interact to influence behavior and that incentives can affect performance independently of goals. Similarly, early formulations of goal theory diverge from the even earlier works on which they were based (e.g., Lewin, 1958; Mace, 1935; Taylor, 1911).

Therefore, the first criticism of control theory, that as originally formulated it does not adequately describe human behavior, is not incorrect but is an inappropriate basis for criticism. Virtually every author who has applied control theory to human behavior has recognized that human control systems are not appropriately modeled by rigid mechanical systems (e.g., Powers, 1978) and have been very careful not to take mechanical analogies too literally (Lord, 1989). Yet control theory can be modified to appropriately model human behavior and such modifications retain the central core of control theory — the negative feedback loop.

If the origin of a theory is a poor criterion for evaluation, what are appropriate dimensions for judging the value of a theoretical perspective? While different authors may have different opinions of the role of theory in the advancement of knowledge, the position will be taken here that a theory should serve three purposes. According to Dubin (1969) one function of a theory is to accurately predict the phenomenon it represents and a second function, one that goes beyond prediction, is understanding. One can predict a phenomenon without knowing *why* that phenomenon occurs. A theory should also provide insights as to the processes involved; it should explain the functioning of the phenomenon. A third function of a theory is the generation of hypotheses for research. A theory that nurtures and guides interesting research is valuable for the advancement of knowledge and the development of a field of inquiry (Lord, 1989).

## **CONTROL THEORY AS APPLIED TO WORK MOTIVATION**

In the preceding article, an adequate description of control theory as originally formulated was presented. The same cannot be said regarding the depiction of current formulations. In the paragraphs that follow, four specific criticisms made of current control theory models are challenged. Specifically, that (a) the central core of control theory has been abandoned,

(b) control theory only deals with discrepancy reduction, (c) control theory is simply an amalgamation of borrowed propositions, and (d) control theory is based on unsupported deductions.

### *The Core of Control Theory*

As stated above, the negative feedback loop is the core element of control theory. This feedback loop can and has been separated from earlier mechanical models. The negative feedback loop involves the use of feedback to ensure the attainment of valued goals or outcomes. Self-regulation, as described by control theory, is the process of determining goals and then using those goals as references for feedback systems in order to move from the existing state to a state that is in line with the goals (Carver & Scheier, 1981). There is nothing inherently mechanical about the negative feedback loop and this feedback loop remains at the heart of current control theory models of work motivation. A full description of any of these models is beyond the scope of this paper. Interested readers are referred to Hollenbeck (1989a), Klein (1989), Lord and Hanges (1987), Lord and Kernan (1989), and Taylor, Fisher, and Ilgen (1984).

One such model, taken from Klein (1989), is illustrated in Fig. 1. In comparing this model to the mechanical feedback loop provided in the preceding article, goals are equivalent to the standard, the comparator remains the same, behavior represents the effector, and feedback represents the deviation.<sup>3</sup> The primary difference is the inclusion of several cognitive processes between the comparator and the effector. These additional processes reflect the fact that in human systems neither the sensor, standards, nor effector are necessarily fixed quantities (Klein, 1989). In human control systems, feedback involves much more than the mechanical sensing of the environment, goals are not predetermined inflexible standards, and there are several alternatives for reducing discrepancies (Lord & Hanges, 1987). The model presented here does not rest on "cross labeling" but uses human phenomena in illustrating the feedback loop. Terms from mechanical control models are provided in parentheses only to illustrate that the core components of the feedback loop are present in both models. Control theory

<sup>3</sup>The negative feedback loop describes all feedback and goal-performance discrepancies, not just negative feedback as implied in Fig. 1 in the preceding article. The term "negative feedback loop" was used in mechanical models to describe systems which took actions to reduce errors as opposed to positive feedback loops which take actions to maximize distance from, rather than match, a standard. When talking about human behavior, the more common usage of negative and positive feedback is typically employed. That is, positive feedback refers to information connoting that one has done well or exceeded a goal and negative feedback to information indicating that the goal was not attained.

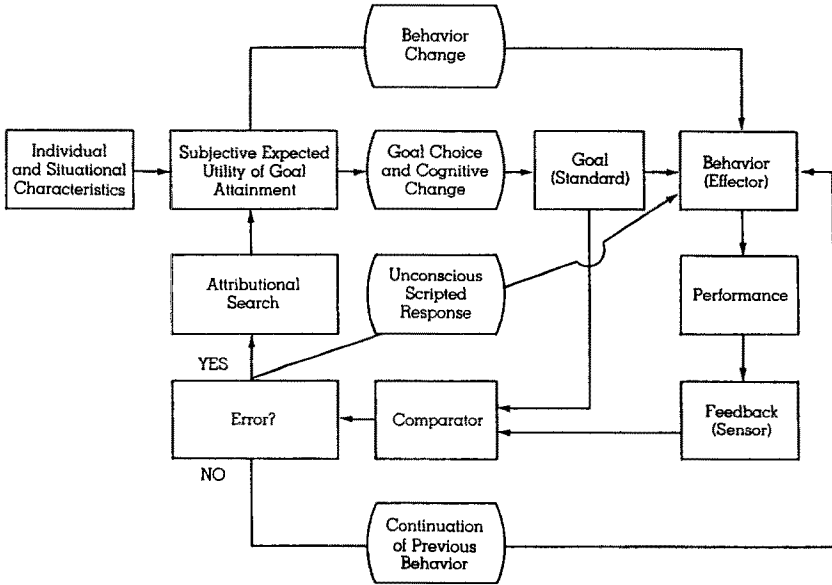


Fig. 1. An integrated control theory model of work motivation (from Klein, 1989).

models of work motivation, such as that illustrated in Fig. 1, represent very flexible, nonmechanical views of behavior. While these human control systems are more complex than the original mechanical control systems, they share the same basic core — the utilization to ensure the attainment of goals (Klein, 1989).

### *Discrepancy Creation and Reduction*

Control theory, while focusing on the use of feedback to reduce discrepancies does not revolve solely around discrepancy reduction. Control begins not with discrepancy reduction but with the choice of a goal. One cannot compare feedback to a standard until that standard is in place. Even in mechanical control systems, the reason those systems exist is to achieve a particular goal. In human systems, there is not a single fixed goal but multiple flexible goals, hierarchically organized, for the multiple work and nonwork roles individuals face (Klein, 1989). In such hierarchies, the *means* to reduce discrepancies in higher-order feedback loops become the *standards* of lower-order loops (Lichtenstein & Brewer, 1980; Powers, 1973). That is, the output or actions taken to attain one goal constitutes

the setting or revision of a lower-order goal (Carver & Scheier, 1981). Consider a salesperson who wants to meet a quarterly sales quota of \$100,000 but experiences a bad first month of only \$20,000 in sales. The means to reduce this discrepancy, perhaps to make \$40,000 in sales in each of the next two months, becomes the standard for the next lower loop in the hierarchy. The means to obtain that goal of \$40,000 a month yields an even lower-order goal (e.g., to contact 10 new perspective clients a week), and soon.

Control theory models of motivation are not at odds with goal theory with respect to behavior being goal-directed. Both goal theory and control theory models of motivation, such as the one illustrated in Fig. 1, hold that goal choice is a function of the subjective expected utility of goal attainment. That is, goals are chosen on the basis of perceptions of both attainability and the value of attainment. From a control theory perspective, an important factor influencing the attractiveness of goal attainment is the instrumentality of the goal for attaining other higher-order goals. In the above example, the perceived discrepancy between the first month's sales and the quarterly quota could be reduced by trying for a lower quota of \$60,000 or even by quitting the job. However, abandoning a goal is usually not a desirable and sometimes is not a viable response. A solution to a discrepancy that increases or creates a discrepancy for a higher-order goal is not particularly adaptive and is usually avoided if possible (Carver & Scheier, 1981).

The salesperson in the above example does not simply change jobs or lower the sales quota because obtaining that quota is viewed as important for the attainment of other higher goals—perhaps getting a merit bonus. That goal of getting the merit bonus is in turn important for obtaining higher goals (e.g., buying a new house) which, in turn, are important for yet higher standards (e.g., providing for one's family). A goal will only be abandoned if an alternative means of obtaining the same higher-order goal is discovered or if its attainment is perceived to be completely futile. For example, the salesperson may abandon the goal of making 10 new contacts a week if established customers begin to provide enough orders to meet the monthly targets of \$40,000. Similarly, the goal of obtaining the sales quota may reluctantly be lowered 2 weeks into the final month if the salesperson believes that reaching \$100,000 is no longer possible.

The use of goal hierarchies to explain goal origin does, to an extent, simply push the discrepancy creation–discrepancy reduction problem up the hierarchy. At some point, however, a level is reached which is represented by abstract perceptions (e.g., logical or moral principles) that are expressed across many different behavioral domains (Carver & Scheier, 1981; Powers, 1973). This hierarchical connection of goals up to moral

principles also provides an explanation of the strong observed relationship between goals and valence. Control theory may not provide a satisfactory explanation for the origin of such principles, but then neither do other theories of work motivation. Such an omission does not eliminate control theory as a general model of motivation as control theory does to deny discrepancy creation.

It should also be noted that the continuous creation of discrepancies is also at variance with the way people usually act (Hollenbeck, 1989b). A person who attains a given standard does not always set a higher standard for him- or herself. People frequently say “good enough” and focus their attention on other concerns. Goal setting is a theory derived from interventions. That is, the finding that difficult specific goals led to higher levels of performance emerged from having to introduce challenging goals in work and laboratory settings. If, by nature, individuals set challenging goals for themselves, such interventions would never have been necessary. Control theory is, therefore, a better descriptor of natural behavior. Control theory models of work motivation provide a framework for understanding why, when faced with a negative discrepancy, individuals will sometimes try harder, sometimes try smarter, and sometimes give up trying. Similarly, control theory explains why, when faced with a positive discrepancy, individuals will sometimes raise their goal and try harder, and sometimes retain the goal that is being surpassed and reduce their efforts so that the goal is not exceeded.

### *Integration of Other Theories*

Control theory models of motivation (e.g., Klein, 1989) incorporate a number of other separate but overlapping theories of motivation. These theories are not, however, borrowed to make up for a lack of a core premise. These other theories are organized around a central core. They are integrated at different points in the feedback loop to further specify the operation of those processes. Furthermore, control theory models of motivation are not based on findings from other theories. Rather, many observed empirical findings that are scattered throughout these literatures are explained by control theory (Hollenbeck, 1989b). Numerous propositions can also be derived from control theory models of work motivation — propositions that, as a whole, could not be derived without the control theory perspective (Klein, 1989; Lord & Hanges, 1987). While some of these hypotheses could be derived from other theories, none of these theories alone can account for all of the propositions.

Yet control theory provides much more than a simple aggregation of the perspectives incorporated. In this case, the total is greater than the sum of the parts. Control theory provides a fundamentally different orientation which focuses researchers on different research questions and different explanations of phenomena (Lord, 1989). Over half of the hypotheses presented by Klein (1989) are at least in part derived from taking a control theory perspective. Control theory does not simply borrow other theories to fill a void. Rather, control theory provides an overarching framework that shows how these models fit together to explain motivated behavior. Furthermore, control theory furnishes a parsimonious integration of existing motivational theories. Even in expanded form, control theory encompasses all of these theories, constructs, and perspectives while remaining a simple heuristic (Klein, 1989).

### *Control Theory As Unsupported Deductions*

The fact that hypotheses are deduced doesn't threaten the validity of a theory. The absence of an empirical base is justification for caution or even skepticism, but does not render a theory worthless. Control theory has been presented as one possible framework for understanding motivation — a framework that provides an distinct perspective for exploring the phenomenon of motivated behavior and a framework that provides a number of hypotheses to guide that exploration. The fact that the empirical basis for control theory models of motivation is just beginning to emerge is not justification for the abandonment of the perspective.

There is some empirical evidence for relationships and processes that are difficult to understand without the use of control theory (e.g., Campion & Lord, 1982; Earley, Lee, & Lituchy, 1989; Hollenbeck, 1989a; Hollenbeck & Williams, 1987; Kernan & Lord, 1990; Klein, 1990; Klein, Whitener, & Ilgen, 1990; Saavedra & Earley, 1990). The fact that there is only some evidence is, in part, a function of the newness of this perspective as applied to motivated behavior. Control theory was not introduced to the work motivation literature until 1982 by Campion and Lord. Furthermore, the nature of the hypotheses that are unique to control theory regard rather complex phenomena (e.g., the effects of goal performance discrepancies regarding multiple goals on shifts in attention within and cross goal hierarchies) and are thus challenging to research. In addition, any one study regarding a particular hypothesis is going to have its limitations, limitations that control theory antagonists are quick to point out. The empirical investigation of control theory's distinctive hypotheses regarding work motivation has just begun. If the results of these investigations are not



supportive of the hypothesis, then control theory as a framework for understanding work motivation will be invalidated. Until that time, such summations are premature.

### THE ROLE OF INDUCTION AND DEDUCTION IN THEORY BUILDING

In the preceding article, it was suggested that a grounded theory approach is more fruitful than taking a logico-deductive approach. In this section, some concerns are raised with taking a strictly grounded approach to theory building and it is suggested that both inductive and deductive reasoning play important roles in theory development.

Grounded theory involves the discovery of theory from data (Glaser & Strauss, 1967). In moving from data to theory the grounded theory approach relies predominantly on introspection and induction. While valuable, introspection is not necessarily any more accurate than deduction. A greater concern is the question of when data become a theory. That is, it is unclear at what point an empirical finding becomes a theory. The collection of goal-setting propositions presented in 1968 (Locke, 1968) was not called a theory. These propositions, modified and expanded, were called a theory in 1990 (Locke & Latham, 1990). What transformation occurred to justify this change in status? An abundance of evidence demonstrating relationships allows one to make predictions, but does not necessarily reveal why those relationships occur. A theory, at least in this author's view, needs to go beyond cataloguing observed relationships.

Another concern with grounded theories is that they cannot be disproved. Grounded theories are simply modified with the accumulation of additional data. This was recognized by Glaser and Strauss (1967) who stated, apparently as an advantage of taking a grounded theory approach, that "theory based on data can usually not be completely refuted" (p. 4). This is clearly counter to Popper's (1961) notion of falsification which holds that science advances only by disproofs. Platt (1964), also taking a falsification perspective, suggested that "a theory is not a theory unless it can be disproved. That is, unless it can be falsified by some possible experimental outcome" (p. 350). A grounded theory cannot be falsified by any experimental outcome. Even an outcome diametrically opposed to existing data would simply lead to the modification of the theory to include both findings.

A final concern with the grounded theory approach pertains to the waste of resources that comes from not systematically investigating a

phenomenon. It has been argued that the strong inference approach, whereby scientists deliberately attempt to disprove a hypotheses logically deduced from a theory, is the most efficient processes for pursuing knowledge (Mackenzie & House, 1978). A main advantage of taking a logico-deductive approach rather than a grounded approach is that the amount of information obtained at each step in a program of research is increased, cutting down the number of investigations required to rule out alternative explanations (Mackenzie & House, 1978). Perhaps if there had been a grand design to guide research on goal setting, more would be known after 25 years and 500 studies than is the case. For example, the role of goal specificity, a primary goal attribute, was not examined independently of goal difficulty until recently (Locke, Chah, Harrison, & Lustgarten, 1989) and it is unclear from that study whether the findings were due to quantitative differences in specificity or due to differences between quantitative and qualitative goals.

Theory building benefits from both inductive and deductive reasoning, and in most cases, both are involved. Grounded theory is the discovery of theory form data *systematically* obtained from social research (Glaser & Strauss, 1967). For those data to be systematically obtained, some framework or model is needed. Glaser and Strauss (1967) also state that the discovery of theory from data is an "initial" (p. 3) step in the theory building process. As noted by Dubin (1976), once the inductive conclusion has been set forth, the next step involves explorations of its implications. This is a deductive process that generates hypotheses which become the basis for further empirical testing. Without the use of deductive processes, grounded theories would evolve randomly and could not be generalizable beyond the samples, settings, and procedures of the studies which yielded the data. While the grounded theory approach incorporates deductive reasoning, the strong inference approach also incorporates inductive reasoning. Strong inference begins with conceptualization, but the conceptualization of a given set of phenomena (Mackenzie & House, 1978). That is, a logico-deductive approach to theory building begins from observations of the real world (Dubin, 1976).

### **DISTINCTIVE ADVANTAGES OF CONTROL THEORY**

Taking a control theory perspective for understanding work motivation is advantageous for a number of reasons, some of which have been previously mentioned. The primary advantages of taking a control theory approach to work motivation include the (a) parsimonious integration of other perspectives, (b) furnishing of a unique focus, (c) provision of

explanations for diverse findings, (d) generation of new hypotheses, and (e) generation of new research streams. Each of these is briefly discussed in the paragraphs that follow.

### *Parsimonious Integration*

An obvious advantage of control theory is the ability to incorporate concepts and findings from many diverse theories. The various approaches to work motivation often appear as a splintered and perplexing array of theories (Klein, 1989). This situation is both undesirable and unnecessary: unnecessary because the different perspectives often augment each other and are rarely contradictory, and undesirable because of the confusion created and the clear breach of the scientific principle of parsimony (Hollenbeck, 1989a; Klein, 1989; Lord & Kernan, 1989).

A control theory model of motivation explicitly incorporates feedback and goal setting, as well as expectancy and attribution, and other information processing theories. It can also easily be extended to incorporate need theories, equity theory, social learning theory, decision-making theory, cognitive dissonance theory, and theories of job satisfaction and turnover (Hollenbeck & Brief, 1988; Klein, 1989; Lord & Hanges, 1987). When considered in detail, control theory can become quite abstract and complex. On the other hand, the essence of control theory, the feedback loop, is really quite simple (Carver & Scheier, 1981). As such, a control theory approach to work motivation is parsimonious in that it encompasses these theories while still providing a simple heuristic framework.

### *Unique Focus*

Taking a control theory perspective provides a unique focus on work motivation in four interrelated respects which serve to further differentiate it from the component theories it incorporates (Klein, 1989). First, control theory allows goals to be conceptualized and investigated as *dynamic* antecedents of behavior. As pointed out by Campion and Lord (1982), the previous theoretical focus has been on static, isolated, and single goals. Control theory is a fluid model which can accommodate multiple competing goals and the modification of goals over time. Second, control theory focuses attention on the self-regulation of behavior. While most motivational theories are aimed at understanding the behavior of individuals, they generally emphasize the effects of external influences (e.g., assigning goals, providing incentives) on motivation, not the individual's self-regulation in response to those influences.

Third, in examining the self-regulation of behavior, focus is placed on the internal cognitive processes underlying motivation. In articulating these cognitive processes, control theory provides a structure for the simultaneous application of different cognitive processes at different levels of attention. Hierarchically organized feedback loops provide an explanation of how automatic and conscious processes operate simultaneously to initiate and direct behavior. Finally, from this emphasis on dynamic, cognitive, self-regulating processes control theory addresses more complex work activities that have been virtually unexplored in past research on work motivation (Lord & Kernan, 1989). From this unique focus has come new understanding of previous findings, new hypotheses within other perspectives, and entirely new streams of research.

### *Explanations of Findings*

Adopting a control theory framework provides explanations for empirical findings in several of the component theories it incorporates. Within goal setting, for example, control theory provides explanations for the following: the origins of personal goals, the importance of goal commitment, and the process by which goal characteristics (e.g., specificity, difficulty) affect behavior (Campion & Lord, 1982; Taylor, 1983). Similarly, control theory can account for consistent findings in feedback research, for example, the positive relationship between specificity and frequency of feedback and performance (Cook, 1968; Ilgen, Fisher, & Taylor, 1979; Ivancevich, Donnelly, & Lyon, 1970).

What constitutes an “adequate” explanation for a phenomenon is debatable as is whether one perspective provides a “better” explanation than another. What is not debatable, however, is that control theory provides integrated explanations for empirical findings dispersed throughout the work motivation literature. Returning to the above examples, control theory provides a complete understanding of goal-directed behavior by illustrating (a) the need for goal commitment, (b) that goals and feedback are dual elements in a single motivational system,<sup>4</sup> and (c) that performance, goals, and behavior may change over time based on responses to feedback (Lord & Kernan, 1989).

<sup>4</sup>Stating that goals and feedback are inseparable does not mean they are the same construct. Control theory suggests that goals and feedback are interconnected parallel components in a single motivational process. The inseparableness of goals and feedback refers to them both being necessary, hence the interaction, for either to result in performance improvement. That is, without goals, feedback will likely be perceived as meaningless and ignored (Taylor et al., 1984), and without feedback, individuals are unable to make appropriate changes in their behavior to ensure goal attainment.

*New Hypotheses*

Control theory has been instrumental in expanding the types of questions researchers have posed regarding the constructs in the different theories incorporated into control theory. Examples of these include (a) individual differences in goal/feedback priority (Hollenbeck & Williams, 1987), (b) the nature of goals and feedback (Klein, 1989), (c) choices among goal, effort, and strategy change over time in response to goal-performance discrepancies (Klein, 1989; Lord & Hanges, 1987), and (d) the role of attributions, expectancies, and goal hierarchies in determining those reactions (Klein, 1989). The hypotheses derived from an integrated control theory model of work motivation do not contradict the component theories. With the gift of hindsight, one could obviously claim that any or all of these hypotheses could have been deduced from alternative theoretical frameworks. Yet they would not necessarily have emanated from those perspectives either and the fact of the matter is they did not (Hollenbeck, 1989b; Lord, 1989). Although predictions can emanate from any theory, a substantial number have been generated by control theory in a relatively short period of time (Lord, 1989).

*New Streams of Research*

Control theory also generates research programs that would be unlikely to emerge from goal setting or other component theories. Two examples of this are goal-based approaches to work attitudes and withdrawal behaviors (Hollenbeck, 1989a). Another example would be programs of research examining the linkages between motivation and learning (Earley et al., 1989; Lord & Kernan, 1987). A final stream of research that would not have emerged without the control theory perspective concerns the regulation of discrepancies. Studies examining changes in effort following the receipt of feedback (Campion & Lord, 1982; Kernan & Lord, 1990; Lord & Kernan, 1989; Matsui, Okada, Inoshita, 1983; Podsakoff & Farh, 1989) and the operation of goals and feedback over multiple trials (Kernan & Lord, 1988; Klein, 1990; Vance & Colella, 1990) indicate that discrepancies are regulated over time as control theory suggests.

Other programs of research have been pursued by control theorists which concern issues recognized in the goal-setting literature as important (Locke et al., 1981), but which goal theory has left virtually unexplored. These include the operation of goal hierarchies (Campion & Lord, 1982; Klein, 1990) and the allocation of attention and resources among multiple competing goals and multiple criteria (Lord & Kernan, 1989). These

research streams, as was the case with the hypotheses discussed above, could have been initiated by researchers working within other perspectives. It has been, however, almost exclusively researchers working from a control theory perspective that have examined these issues.

## CONCLUSION

Taking a control theory approach to work motivation has helped move the literature in new directions, develop new concepts, and address important questions that have been overlooked by much of the work motivation literature. Understanding motivated work behavior requires modifying the control system to represent a flexible nonmechanical system. The fact that control theory, as originally formulated, requires modification to explain human behavior does not render it invalid for explaining human behavior. Such modifications also do not require the abandonment of the core of control theory. Furthermore, current control theory models of motivation represent substantially more than simple amalgamations of borrowed propositions. With respect to discrepancy creation, control theory may not provide a full explanation of human nature but it does no worse than alternative approaches in specifying goal origin and does a better job of illustrating the hierarchical nature of goals and the determinants of goal change.

The fact that many propositions derived from control theory have not been tested or thoroughly replicated is cause for caution and skepticism but not sufficient cause for abandonment of the perspective. Additional empirical support is clearly needed to support control theory models of work motivation. Until the collection of those data, however, it is premature to forsake this perspective simply because the propositions derived from it have yet to be tested. It is not the case that control theory propositions are untestable. These data are being collected by a number of different researchers working independently from several different perspectives. Furthermore, these data are being collected in a systematic theory-guided manner which will reveal in a relatively short period of time whether or not control theory models of motivation adequately depict work motivation as hypothesized.

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