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# **UMI**

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PREVIEW

**THE EFFECT OF EXTRINSIC REWARDS ON THE CREATIVITY OF  
ORGANIZATIONAL PARTICIPANTS: AN EXPERIMENTAL ANALYSIS IN A  
SIMULATED BUSINESS ENVIRONMENT**

by

Paul A. Marsnik

**A DISSERTATION**

Presented to the Faculty of The Graduate College at the University of Nebraska  
In Partial Fulfillment of Requirements  
For the Degree of Doctor of Philosophy

Major: Interdepartmental Area of Business (Management)

Under the Supervision of Professor Fred Luthans

Lincoln, Nebraska

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DISSERTATION TITLE

The effect of extrinsic rewards on the creativity of organizational  
participants: An experimental analysis in a simulated business  
environment

BY

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GRADUATE COLLEGE  
UNIVERSITY OF NEBRASKA

**THE EFFECT OF EXTRINSIC REWARDS ON THE CREATIVITY OF  
ORGANIZATIONAL PARTICIPANTS: AN EXPERIMENTAL ANALYSIS IN A  
SIMULATED BUSINESS ENVIRONMENT**

**Paul Albert Marsnik, Ph.D.**

**University of Nebraska, 1997**

**Adviser: Fred Luthans**

The purpose of this study was to examine the effect of extrinsic rewards on the creative behavior of subjects in an organizational setting. Creative behavior was measured by examining the quantity and rated creativity of suggestions submitted to a formal suggestion system. It was hypothesized that both the quantity of suggestions and the rated creativity of suggestions could be enhanced through the introduction of contingent extrinsic rewards. Quantity was measured as the number of suggestions submitted per organization, per two-day time period. Rated creativity was measured using a consensual assessment technique developed by Amabile (1983), in which three judges independently evaluated the overall creativity of each suggestion submitted.

An experiment was conducted using four organizations. The organizations had been assembled for a year long business simulation. Each organization consisted of between 8 and 10 individuals. The experiment took place over a three month period and it employed a counterbalanced multiple baseline design in which each of the four organizations was exposed to a baseline condition and a series of experimental conditions.

The primary purpose of the study was to examine the effect of three reward contingencies; rewards for quantity of suggestions, rewards for rated creativity of suggestions, and rewards for a combination of quantity and creativity of suggestions.

When the data from all four companies was aggregated, the results indicated that the condition where rewards were made contingent on a combination of quantity and creativity of suggestions was the most effective condition in terms of both number of suggestions and rated creativity of suggestions. The condition in which rewards were made contingent on quantity of suggestions also resulted in an increase in both quantity and rated creativity of suggestions over baseline conditions. The condition in which rewards were made contingent on rated creativity only resulted in a decline in both the number of suggestions submitted and a decline in the rated creativity of suggestions relative to the baseline condition.

Following the initial visual inspection of the experimental data, a one-way ANOVA was conducted to test for differences in mean scores across experimental conditions. The results of the ANOVA revealed a significant difference between means when quantity was the dependent variable. Further analysis indicated that the mean quantity of suggestions in the combined condition (rewards for a combination of quantity and rated creativity) was significantly greater than the mean quantity of suggestions in the baseline condition. When rated creativity was the dependent variable, the differences in mean creativity ratings across conditions was not found to be statistically significant.

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# **CHAPTER 1**

## **INTRODUCTION: PURPOSE AND NEED FOR THE STUDY**

As the new millennium draws near, organizations of all kinds are faced with environments that are changing at an increasingly rapid rate. To cope with the staggering rate of change, many organizations are attempting to become more innovative. Since organizational innovation begins with individual creativity, the study of creativity within the context of organizations should be an obvious target of attention. In the past it has not been. Recently, however, there has been growing interest in organizational participant creativity (Ford, & Gioia, 1995; Scott & Bruce, 1994; Woodman, Sawyer, and Griffin, 1993). Practitioners and researchers have come to realize that individual creativity and organizational innovation are critical to the development of sustainable competitive advantage.

In the present study, creative behavior is defined as the production of novel and useful ideas by an individual or small group of individuals working together (Amabile, 1988), and innovation is defined as the successful implementation of creative ideas within an organization (Amabile, 1988). Creativity is viewed as a necessary step in the innovation process (Smelz & Cross, 1984), contributing to the long-term productivity and the effectiveness of the organization (Galbraith, 1982).

The practical management of creativity is an issue which has not been adequately addressed (Carson, & Carson, 1993). The problem is not a lack of research on creativity per se. In fact, the volume of research literature on creativity is extensive. Only a small percentage of research done on creativity, however, has any practical relevance in organizational contexts. For example, a 1982 review of nearly 7,000 papers on creativity produced only 138 that examined social or contextual variables. Only a small number of those 138 papers specifically considered organizational contexts (Amabile, 1982). Twenty two years later, at the 1994 Academy of Management meeting, out of approximately 1,100 papers presented, not one empirical study of creativity was presented. In summary, many of the existing writings on creativity are, at best, marginally applicable to organizations. According to Ford and Gioia (1995) "The worst fault of some of these writings is that they simply come across as superficial to experienced organizational hands and therefore lack credibility" (p. 7). Perhaps Woodman et. al summarized the current state of affairs best:

"After decades of theory development and empirical research, researchers still know surprisingly little about how the creative process works, especially within the context of complex social systems such as formal organizations... we can make few definitive statements regarding the determinants of creativity in organizations, the processes by which it manifests itself, and how it is enhanced or inhibited. From the applied side, we also know little about how organizations can successfully promote and manage individual and organizational creativity." (Woodman, Sawyer, & Griffin, 1993).

The purpose of this study is to examine the effect of rewards on creative behavior in a simulated organizational setting. More specifically, the study seeks to examine the

effect of extrinsic rewards on the quantity and creativity of suggestions submitted to a formal suggestion system.

### **Simulated Organizational Setting**

A major contribution of the present study arises from the unique setting in which it is conducted. The study takes place on a college campus with students who are enrolled in a year-long business simulation. The research is categorized as a field study because the subjects are participants in real organizations. At the same time, the setting has many of the benefits of a laboratory study because the researcher has substantial experimental control over the organizational context.

### **Rewards and Creativity: The Research**

Questions concerning the effect of rewards on creativity have received a great deal of attention in recent decades. As mentioned above, very little of this work has been done in organizational contexts. Nonetheless, the results of these studies are worth noting for organizational researchers. A number of psychological researchers operating within a behaviorist paradigm have consistently shown that creative (novel) behavior of children, college students and animals can be brought under contingent control in a laboratory setting. Another group of behaviorist researchers studying reinforcement theory in organizations have provided substantial evidence to support the proposition that contingent rewards can be an effective mechanism for managing behavior in the work place. The large body of research on Organizational Behavior Modification (O.B. Mod.) has shown that contingent rewards can be used effectively to alter job performance in a wide variety of organizational contexts, worker populations and job types (Luthans and

Kreitner, 1985; Stajkovic & Luthans, 1997). Despite the impressive findings of the O.B. Mod. researchers, an area that has been left largely unexplored is the effect of rewards on creative behavior in organizations.

In stark opposition to the behaviorists, are the cognitive researchers who have shown numerous instances where the introduction of rewards result in reduced levels of creativity (Glucksberg, 1962; Glucksberg, 1964; McGraw & McCullers, 1974; McGraw & McCullers, 1979; Groves Sawyers & Moran, 1987; Amabile, 1985a; Amabile, 1985b, Amabile, Hennessey, & Grossman, 1986). Although the two research paradigms usually employ vastly different research methods, the widely disparate results are intriguing.

If a manager were to objectively review the literature concerning the effect of rewards on creative behavior, he/she would find it difficult to draw any definitive conclusions. The first problem with the research is one of applicability to organizations. As Ford and Gioia noted,

“Most of the existing work on creativity has only minimal direct applicability to organizations. As a result, despite the thousands of writings on the subject, academics still have relatively little confidence in offering recommendations to organizational people struggling to develop creative solutions to “real-life” problems. (Ford and Gioia; p.5).

Even if the concerned manager were to make the bold assumption that the research on children and college students was applicable to organizations, he/she would still find it difficult to draw straightforward conclusions about the use of rewards to enhance creative behavior. Staw summarized the dilemma:

“To increase innovation further, some firms may also place tangible rewards on creative behavior, attempting to harness extrinsic as well as intrinsic motivation for new products. But, given the experimental results

on the interaction of intrinsic and extrinsic motivation, it is not clear whether putting specific rewards on creativity is a practice that is dysfunctional or actually does constitute a double strength incentive” (Staw, 1990; p. 296).

### **A Social learning Approach**

This study draws from literature in both the behaviorist and cognitive paradigms by using a “social learning approach”. The social learning approach in organizational behavior (Davis, & Luthans, 1980; Kreitner, & Luthans, 1984, 1985) is based on the work of Bandura (1977) who proposed that behavior is best explained as a continuous, reciprocal interaction between cognitive, behavioral, and environmental determinants. Social learning theory is a comprehensive theory which incorporates the interactive nature of all the variables used in organizational behavior (the person, the environment and the behavior itself).

Using a social learning perspective, this study views creative behavior as the result of a continuous reciprocal interaction between the person (including skills, personality, past history, goals, expectations, causal attributions etc.), the environment (the workplace, including the reward system), and the behavior itself (quantity and quality of suggestions). Although it is not practical to examine all the potential influences on creative behavior in any one study, the present study helps shed light on the complex array of variables that impact creative behavior in organizations. Using the behavioral approach, this study hypothesizes that the frequency and creativity of suggestions can be enhanced with the introduction of contingent extrinsic reinforcing consequences.

From a cognitive standpoint, it will be recognized that cognitive processes are an important component of creative behavior, and that rewards contingent on a particular behavior might affect cognitive processes. A creative idea is not observable behavior. Rather, it is a covert (cognitive) process. While the creative process can not be directly observed, the result of that process (an idea or suggestion) can be observed. By observing measurable behaviors, in this case the submission of suggestions, we can draw inferences about the antecedent cognitive processes that lead to the behaviors.

The following chapter presents a review of the literature concerning rewards and creativity. The theoretical and empirical studies are then used to develop the formal hypotheses for the present study which are presented in chapter 3. To test the hypotheses a multiple baseline design is proposed. The research design is explained in chapter 3. In chapter 4, the results of the study are presented. Chapter 5 is devoted to a discussion of the results along with conclusions and recommendations for future studies.

## **CHAPTER 2**

### **THEORY DEVELOPMENT AND LITERATURE REVIEW**

The origins of contemporary creativity research may have begun with J. P. Guilford's 1950 speech to the APA, republished in Isaksen (1987). Guilford argued that more resources should be devoted to the investigation of creative talent in order to enhance the nation's returns from its human resources. Following Guilford's speech, there was a surge of interest and funding into the phenomenon of creativity. Guilford's subsequent work, examined the factors that are part of creative thinking, and he is most often cited for his research on the relationship between intelligence and creativity. It would be many years after Guilford's famous address before any comprehensive models of creativity in organizations would begin to emerge.

This chapter will begin with a review of theory building research in the areas of innovation and creativity. Next, a review of the empirical work examining the effect of rewards on creativity will be presented. The vast majority of empirical work has been done in laboratory settings. The lab studies are grouped by result. The first group of lab studies presented are those that provide evidence that rewards enhance creative behavior. The second group of lab studies provide evidence that rewards undermine behavior. The third group of lab studies present mixed results. After reviewing the extensive volume of work done in lab settings, the focus will shift to the relatively small number of field studies

examining the effect of rewards on creative behavior in organizations. A review of the literature on formal suggestion systems in organizations will then be presented. The chapter will conclude with a summary of the literature which provides the foundation for the hypotheses presented in chapter three.

## **THEORY BUILDING RESEARCH ON INNOVATION AND CREATIVITY**

This section will first review several of the most prominent models relating to organizational innovation and will conclude with a review of some recent attempts to develop a model of creativity in organizations.

### **Innovation**

In 1978, Cummings and O'Connell presented a model of organizational innovation, calling attention to the need for research in the area. In the Cummings and O'Connell model, innovation is viewed as a subset of organizational change in which new products, technologies, or structures are introduced with the objective of improving organizational effectiveness. The five stages in the innovation process are (1) search for the source of the problem, (2) alternative generation, (3) alternative evaluation, (4) selection and initiation of an alternative, and (5) acceptance and routinization. Variables that are postulated to influence the process and that in turn are postulated to be influenced by innovation are goals, environment, technology, structure, organizational control and coordination processes, leadership, and organizational slack (Cummings, & O'Connell, 1978).

In 1986 Van de Ven defined innovation as a process that centers on the formulation and implementation of new concepts by those involved in transactions with others involved in the institutional order. The definition stems from four main elements: people, transactions, new ideas, and institutional content. Comprehension of these elements depends on an analysis of four central problems faced by general managers: the process problem for introducing ideas into quality currency; the operation of part-whole relationships; basic problems with institutional leadership, and the human conflict inherent in managing attention (Van de Ven, 1986).

Innovation has also been defined as; the adoption of a change which is new to an organization and to the relevant environment (Knight, 1967), implementation of new procedures and ideas (Evan and Black, 1967), and first or early use of an idea by one of a set of organizations with similar goals (Becker and Whisler, 1967). For the purposes of the present study innovation will be defined as the implementation of an idea--whether pertaining to a device, system, process, policy, program, or service--that is new to the organization at the time of adoption. This definition was proposed by Damanpour and Evan (1984).

A key issue in the definition of innovation is the concept of implementation. Most authors consider innovation to be an idea which has been implemented or adopted, as opposed to an idea which has only been conceived. Innovation has been described as a four stage process including: stimulus, conception, proposal, and adoption (Becker and Whistler, 1967). The primary focus of this study will be on the proposal stage (the quantity and quality of suggestions proposed by organizational members).

In delineating the different types of innovation, perhaps the most often used classification scheme is to use technical and administrative innovation (Evan and Black, 1967; Van De Ven, 1986). Knight (1967) identified four types by essentially splitting administrative innovation into organizational structure innovation and people innovation. Damanpour (1987) proposed three types of innovation; technological, administrative, and ancillary. Ancillary innovations are defined as organization-environment boundary innovations.

For the purposes of this study, innovation will be thought of as encompassing technological and administrative innovation. Technological innovations are those that bring change to organizations by introducing changes in the technology and administrative innovations are those that change an organization's structure or its administrative processes (Dalton, Barnes, and Zalesnik, 1968). Daft and Baker (1979) and others have emphasized keeping technical and administrative innovations distinct. This study will take the approach proposed by Van de Ven (1986) which maintains that making such a distinction often results in a fragmented classification of the innovation process. Most technological innovations involve both technical and administrative components (Leavitt, 1965). Therefore, the present study will not attempt to limit suggestions to a particular category, but will consider all suggestions regardless of their nature.

### **Creativity**

In contrast to theories of innovation at the organizational level are theories concerning creativity which usually operate at the individual level of analysis. Over the years, creativity has been conceptualized in a number of different ways. Freud (1928)

characterized creativity as the sublimation of unconscious drives. Guilford (1959) viewed creativity as a set of intellectual traits. Rogers (1959) looked at creativity as the realization of individual potential. Barron (1969) saw creativity as a constellation of personality characteristics. Skinner (1974) referred to creative thinking as “mutations” that are followed by selection. One component that is included in virtually every definition of creativity is novelty or originality. Some researchers have chosen to consider any and all novel behavior to be creative. Many researchers have added usefulness as a necessary condition for behavior to be defined as creative. According to the philosopher Victor Thomas (1964):

Although we do not judge a work to be a work of creative art unless we believe it to be original, it is not enough that we should judge it to be merely different or novel. In discourse about art, we use “creative” in an honorific sense, in a sense in which creative activity always issues in something that is different in an interesting, important, fruitful, or other valuable way. If what the artist produces is a novelty, yet indifferent or bad, we do not regard him as a creator. (pp. 100-101)

The notion that a creative product must possess both novelty and quality poses a problem for researchers, particularly those operating in the behaviorist paradigm where behaviors must be observable and measurable. A problem arises in finding an acceptable mechanism for identifying the usefulness of a behavior or the quality of a product. Until recently, many researchers have simply ignored the quality problem and focused exclusively on novelty or originality of behaviors.

In 1965 Larry Cummings called attention to the potential benefits of creativity research in organizations. “Given a genuine and high priority concern for the generation

of creative responses within the organization combined with our knowledge of the characteristics of the creative individual, the creative organization...would seem to be a fruitful adventure in organizational innovation (Cummings, 1965; p. 227).

For several decades it appeared that few if any organizational researchers were willing to embark on the "fruitful adventure". Isaksen and Murdock (1993) offered four reasons why organizational researchers were not studying creativity: 1. creativity is too often construed as mysterious; 2. creativity is frequently treated as something magical, 3. creativity is occasionally associated with some form of madness, and 4. creativity is sometimes perceived to be a "frivolous" topic by the academic community (Ford and Gioia, 1995; p.6).

In 1988, Amabile proposed the integration of a model of individual creativity into a preliminary model of organizational innovation. Amabile maintains that creativity is a necessary but not sufficient condition for organizational innovation, and that the organizational environment may be the most crucial determinant of creativity (Amabile, 1988).

Amabile defines creativity as "the production of novel and useful ideas by an individual or small group of individuals working together." She then defines organizational innovation as "the successful implementation of creative ideas within the organization (Amabile, 1988; 126). Both of the above definitions will be used in the present study.

Amabile's componential model of creativity and innovation proposes that individual creativity consists of three critical components (domain relevant skills, creativity relevant