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## When Are Rewards Bad for Creativity? Examining the Role of Leadership and Integrated Extrinsic Motivation

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### ABSTRACT

The relationship between common creativity antecedents and creative performance is seldom clarified and the assertion that employee attitudinal and work environment factors spur creative performance has rarely been tested. The present study adopts an individual level of analysis and investigates the association between leader behaviors, employee extrinsic motivation, creative performance behaviors and creative performance in the Indian R&D context. Data were collected using a survey questionnaire from 493 scientists working in 11 government-owned R&D laboratories of India and structural equation modeling was used to test the hypothesized relationships between the study variables. The study found evidence for the mediating role of employee integrated extrinsic motivation for the relationship between leadership and creativity (behaviors as well as performance). Building on the foundations of organismic integration and self-determination theories, the study shows that extrinsic motivation is positively related to creativity when the value of rewards is integrated to one's sense of self. Extrinsic motivation, otherwise, was found not to be related to creativity. Supervisory leadership was shown to be positively related to employee integrated extrinsic motivation. Thus, the study also provides an insight into the underlying process through which leaders can impact employee creativity at workplace. Implications for theory and practice are discussed.

**Keywords:** Leader behaviors; integrated extrinsic motivation; creative performance; creative behaviors; R&D management.

## **When Are Rewards Bad for Creativity? Examining the Role of Leadership and Integrated Extrinsic Motivation**

### **INTRODUCTION**

Turbulent business environment, heightened competition, and unpredictable technological changes have brought to the forefront of management cognition the challenge of development and sustenance of employee creativity. Employee creativity is defined as the production of novel and useful ideas by an individual or by a group of individuals working together (Amabile, 1983) and has been found to make important contributions to organizational innovation, growth and survival (Amabile, 1996; Madjar, Oldham & Pratt, 2002; Suh, Bae, Zhao, Kim & Arnold, 2010). Every employee has the potential to produce creative ideas that can generate valuable innovations for their employers (Fairbank & Williams, 2001). Ability to recognize the key social-psychological factors that can foster and sustain employee creativity carries significant implications for enhancing organizational competitiveness but has not received much attention by the research community (Ángel & Sánchez, 2009; Manolopoulos, 2006; Zheng, Khoury, & Grobmeier, 2010).

To promote creativity, management often uses rewards. For example, employees may be offered financial inducements for suggesting new ways to increase productivity, new ideas for products or services or for reducing operational costs. However, the use of reward has been the focus of heated controversy in psychology. Skinner (1938) argued that reinforcement is at the heart of behavioral control. According to him, if desired behaviors are rewarded, the likelihood of those behaviors will increase. Creativity and intrinsic motivation theorists have, however, suggested that extrinsic motivation can undermine certain aspects of behavior under some conditions. Extrinsic motivation occurs when behaviors are perceived as instrumental in getting rewards (Deci & Ryan, 1985). Amabile's works on *The Social Psychology of Creativity*

(Amabile, 1983, 1996) have demonstrated the negative effects of extrinsic motivation on creativity. Rooted in the “overjustification” hypothesis, Amabile and colleagues show that under certain conditions extrinsic constraints may lead to a decrease in intrinsic motivation as the external constraint is taken to be a more salient and plausible cause than the subject’s own interest in the task (Amabile, Hennessey & Grossman, 1986). Cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1980) suggests that the presence of salient external constraints on performance causes a shift in the individual’s perceived locus of causality from internal to external. Thus, it is argued that explicitly contracting to do an activity in order to obtain a reward may lead to lower levels of creativity than contracting to do the activity for no reward, or simply being presented with the task, or being presented with the task and a subsequent reward.

On the other side, there have been other researchers who have shown that the negative effects of rewards and extrinsic motivation hold only under some specific conditions. Eisenberger and Rhoades (2001) demonstrated that rewards that are specifically contingent on creativity increase creativity by enhancing perceived self-determination and intrinsic task interest. Performance-contingent rewards vary greatly in their impact because they can highlight either the informational aspects or the controlling aspects of the situation. They can convey competency and self-determination, as well as pressure to different degrees depending on the interpersonal context of administration (Deci & Ryan, 1985; Ryan, Mims & Koestner, 1983). Rewards are argued to increase intrinsic motivation with respect to no-feedback/no-reward controls when informationally administered or decrease intrinsic motivation when administered controllingly. Baer, Oldham and Cummings (2003) showed a positive relation between extrinsic rewards and creativity for employees with an adaptive cognitive style who work on simple jobs, a weak positive relation between rewards and creativity for employees with an innovative

cognitive style who work on complex jobs and a negative relation for those in adaptive style/complex jobs and innovative style/simple job conditions.

Given these contradictory findings of the existing studies, research is needed that explores the specific circumstances under which extrinsic, contingent rewards have positive, neutral, or negative effects on creativity (Baer et al., 2003). The results of such studies can help us better understand the earlier inconsistent findings and provide practitioners a more nuanced understanding for the optimal use of extrinsic rewards with respect to creativity. The present investigation explores the role integrated extrinsic motivation has on employee creativity. According to the Organismic Integration Theory (OIT), a sub-part of the Self-Determination Theory (SDT) (Deci & Ryan, 2000), integrated extrinsic motivation is defined as a type of extrinsic motivation where the value of rewards is integrated to one's sense of self. Individuals who are motivated by integrated extrinsic motivation still work for rewards but assimilate the value of those rewards to their sense of being. Actions characterized by integrated motivation share many qualities with intrinsic motivation, but they are still considered extrinsic because they are done to attain separable outcomes rather than for their inherent enjoyment.

Of all the forces that impinge on employees' daily experience of the work environment, one of the most immediate and potent force is likely to be their supervisors – the 'local leaders' who direct and evaluate their work, facilitate or impede their access to resources and information, touch their engagement with tasks and with other people (Amabile, Schatzel, Moneta, & Kramer, 2004) and impact their creativity at work (George & Zhou, 2007; Gong, Huang & Farh, 2009; Zhang & Bartol, 2010). Leaders are likely to have their strongest and most immediate impact on subordinate attitudes and perceptions (Yukl & Van Fleet, 1992). Given the intuitive appeal of this assertion, there is little empirical evidence testing the behavior-perception

connection (Amabile et al., 2004; Shin & Zhou, 2003; Zhou & Oldham, 2001). There exists a dearth of empirical evidence on the possible mediating role of subordinate reactions, and the absence of holistic views of how patterns of leader behavior might have their effects over time (Amabile et al., 2004). The present study tests the impact of supervisory leadership on subordinates' development of both extrinsic motivation and integrated extrinsic motivation. Also, an aim of the study is to investigate the mediating role of integrated extrinsic motivation for the relationship between leader behaviors and employee creativity. Finally, the study tests these ideas in a field setting.

The remainder of the paper is structured as follows. The next section discusses arguments leading to the hypotheses. The 'Method' and 'Results' sections present details about the study sample, the measures used in the study and the data analyses performed. The final section discusses the main findings, the implications of the results for both theory and practice, the limitations of the research and the directions for future research.

## **LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **Integrated Extrinsic Motivation and Creativity**

Motivation concerns energy, direction, persistence and equifinality – all aspects of activation and intention and has been a central and perennial issue in the field of psychology, for it is at the core of biological, cognitive, and social regulation (Ryan & Deci, 2000). Given today's economy, a motivated workforce represents both a competitive advantage and a critical strategic asset in any work environment (Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009). Organizational researchers see employee motivation as a fundamental building block in the development of effective theories. *Intrinsic motivation* is related to the natural inclination toward assimilation, mastery, spontaneous interest, and exploration that is so essential to cognitive and social

development and that represents a principal source of enjoyment and vitality throughout life while *extrinsic motivation* refers to the performance of an activity in order to attain some separable outcome. Extrinsic motivation has been classified according to variations in relative autonomy (Deci & Ryan, 2000, 2008; Ryan & Deci, 2000). At the low end lies *amotivation* in which individuals either lack the intention to act or act passively. Next along the continuum is *external regulation*, which means doing an activity only to obtain a reward. Next is *introjected regulation*, the regulation of behavior through self-worth contingencies like self-esteem and guilt. *Identified regulation*, refers to doing an activity because one identifies with its value or meaning, and accepts it as one's own. Finally, there is *integrated regulation*, which refers to identifying with the value of an activity to the point that it becomes part of the individual's sense of self. Integrated regulation is the form of extrinsic motivation that is most fully internalized and is said to be autonomous.

In an increasingly scarcity-ridden world, extrinsic rewards can be strong motivators of innovative behaviors provided the outcomes of such behaviors are tangibly and justly linked to incentives. Not all forms of extrinsic motivation may be detrimental to performance. Integrated regulation of extrinsic motivations can be useful for performance. Integration occurs when identified regulations are fully assimilated to the self, which means they have been evaluated and brought into congruence with one's other values and needs. Actions characterized by integrated motivation share many qualities with intrinsic motivation, although they are still considered extrinsic because they are done to attain separable outcomes rather than for their inherent enjoyment (Ryan & Deci, 2000; Deci & Ryan, 2008). In developing a theory linking leader behaviors, motivation and creativity, the present study examines the impact of integrated extrinsic motivation on subordinate creativity.

Motivation and creativity researchers contend that extrinsic rewards are detrimental to creative performance (e.g. Amabile, 1983, 1996; Deci, Koestner, & Ryan, 1999), because they redirect attention away from the heuristic aspects of the creative task and toward the technical or rule-bound aspects of task performance. An individual's extrinsic motivation is said to interact with her choice. Monetary reward given for performance on a task for which the individual has no choice can enhance creativity, but when the individual is offered a reward for consenting to perform the task, creativity may actually be undermined (Deci & Ryan, 1980). Adopting a middle path and citing support from the OIT, the study argues that extrinsic motivations are detrimental to intrinsic motivation (and creativity) when employees don't internalize extrinsic motivation. An employee who does her work because she personally grasps its value for her chosen career is extrinsically motivated, as is one who does her work because of her supervisor's control. Both involve external instrumentalities rather than enjoyment of the work itself, yet the former case of extrinsic motivation entails personal endorsement (internalization) and a feeling of choice, whereas the latter involves compliance with an external regulation.

There have a few empirical studies that have demonstrated that in certain conditions extrinsic motivation may be positively related to creativity. Manolopoulos (2006) found that R&D professionals (considered to be more creative) can be motivated by both extrinsic and intrinsic factors that will fulfill their perceptions regarding success, reward and satisfaction. Igalens and Roussel (1999) reported significant positive correlation between performance, job satisfaction, motivation and compensation. The opportunity to take responsibilities that lead to promotion has been labeled as an influential motivation factor for technical employees (James, 2002). Allen and Katz (1986) found that substantial proportion of young engineers report preference for 'technical ladder advancement.' In the present study, I make use of the concept of



integrated extrinsic motivation to provide an explanation for the positive relationships between extrinsic motivation and task performance. Specifically, I argue that if the employee has integrated regulation of extrinsic motivation, then she will be high on creativity. For example, an employee who considers her work important for career growth and advancement has integrated the value of her work to her sense of being. Such an employee will have integrated extrinsic motivation that can complement intrinsic motivation (interesting and challenging work) rather than reduce it. Based on the above arguments, I hypothesize:

*H1. Integrated extrinsic motivation will be positively related to employee creativity.*

*H2. Extrinsic motivation that is not integrated will not be related to employee creativity.*

### **Leadership, Extrinsic Motivation and Creativity**

Considering the potential usefulness of integrated extrinsic motivation, identification of key factors that can lead to its development and sustenance in present-day organizations carries significant implications for enhancing organizational competitiveness, and hence societal development (Gupta & Singh, 2014). An effective leader is a social architect who understands the interaction between organizational and behavioral variables and can foster a climate of participation and minimal dysfunctional conflict (Judge, Fryxell, & Dooley, 1997). Leadership is one of the most important social-contextual factors that can potentially influence employee motivations in organizational settings. However, most of the evidence linking the influence of social-contextual factors on motivation has either been obtained from laboratory and controlled-setting experiments or from field settings that include schools, homes (parent-children relationships), or other non-applied setting (Amabile, 1983; Deci et al., 1999; Ryan & Deci, 2000). In this paper, I draw support from the individual literatures on OIT, SDT (Ryan & Deci, 2000; Deci & Ryan, 2000, 2008) and leadership to theorize about how leader behaviors can

influence intrinsic and extrinsic motivations. Before I do that, I briefly describe the leader behaviors considered in this study.

### ***Creativity-Stimulating Leader Behaviors***

Researchers studying the impact of leader behaviors on employee creativity (e.g., Gong et al., 2009; Jung, Chow, & Wu, 2003; Nederveen Pieterse, Van Knippenberg, Schippers, & Stam, 2010; Shin & Zhou, 2003) continue to use an available, “validated” questionnaire for their research without careful consideration about the relevance of the content for their research question and sample. The apparent differences between the leadership requirements of traditional and R&D environments suggest that conventional measures of leadership may apply only partially to empowered environments (i.e. R&D) (Arnold, Arad, Rhoades, & Drasgow, 2000; Yukl, 1999, 2008). For instance, transformational leadership, as conceptualized by Bass (1985) and measured by the popular Multifactor Leadership Questionnaire (Bass & Avolio, 1990), does not include behaviors like inspiring, developing, empowering, team building, and leading by example, that may be important for R&D teams (Gupta & Singh, 2013). Moreover, the validity of the questionnaire and transformational/transactional conceptualization is questionable (Van Knippenberg & Sitkin, 2013).

In the present study, I have used the R&D leader inventory that was developed by Gupta and colleagues (Gupta & Singh, 2013; Gupta, Singh & Khatri, 2013) and was validated to be positively related to employee creative behaviors (Gupta & Singh, 2014a,b). The inventory consists of behavior items exhibited by immediate supervisors while interacting with their subordinates on a day-to-day basis. The item inventory was derived through an inductive, bottom-up, investigation of leadership behaviors in R&D laboratories across India. The study was based on in-depth interviews conducted with 52 scientists of five Indian R&D labs located

in different parts of India. The interviews were content coded using a repository of behavior items created through an exhaustive literature review. Based on the consistency score, a final list of 52 behavior items representing 13 behavior categories was generated. Gupta et al. (2013) performed a quantitative analysis of the behavior inventory to provide evidence regarding the underlying factor structure and to assess the scale psychometric properties using data collected from 584 R&D professionals. A final set of 39 items were developed. Exploratory and confirmatory factor analyses revealed five leader behavior categories, namely, *task-oriented, recognizing and inspiring, empowering, team-building and developing, and leading-by-example*. A full description of the behaviors can be found in Gupta and Singh (2013) and Gupta et al. (2013). Next, I theorize about the relationships between leader behaviors and integrated extrinsic motivation.

### ***Mediating Role of Integrated Extrinsic Motivation***

Whenever a leader attempts to foster certain behaviors in others through extrinsic rewards, the others' motivation for the behavior can range from amotivation or unwillingness, to passive compliance, to active personal commitment. These different motivations reflect differing degrees to which the value and regulation of the requested behavior have been internalized and integrated. Internalization refers to people's "taking in" a value, and integration refers to the further transformation of that regulation into their own so that, subsequently, it will emanate from their sense of self (Ryan & Deci, 2000). According to SDT, extrinsically motivated people initially perform such actions because the behaviors are prompted, modeled or valued by significant others to whom they feel attached or related (need to feel belongingness and connectedness with others). Deci and Ryan's (1985) OIT suggests that 'support for competence' facilitate internalization. People are more likely to adopt activities when they feel efficacious

with respect to those activities. The experience of autonomy facilitates internalization and, in particular, is a critical element for a regulation to be integrated (Deci & Ryan, 2000). Again, to quote Ryan & Deci (2000):

“... contexts can yield autonomous regulation only if they are autonomy supportive, thus allowing the person to feel competent, related, and autonomous. To integrate a regulation, people must grasp its meaning and synthesize that meaning with respect to their other goals and values. Such deep, holistic processing (Kuhl & Fuhrmann, 1998) is facilitated by a sense of choice, volition, and freedom from excessive external pressure toward behaving or thinking a certain way. In this sense, support for autonomy allows individuals to actively transform values into their own.” (pp. 73-74)

Leadership has been shown to be positively related to employee creativity (Gupta & Singh, 2014a, b). By modifying their behaviors suitable, leaders can affect the three components of creativity specified by componential theory of creativity (Amabile, 1983, 1996), that is, expertise, creative-thinking skill, and task motivation. Integrated extrinsic motivations are most likely to be evident when individuals experience support for competence, autonomy, and relatedness. Leader’s interpersonal orientation is related to subordinate’s sense of competence, autonomy and relatedness. Task-oriented behaviors can help the subordinates acquire the necessary skills and expertise in tasks that aid in task accomplishment (Amabile et al., 2004; House, 1971, 1996). Leader’s *information-sharing, supportive monitoring, problem solving, coaching and mentoring, clarifying roles and objectives* behaviors may lead to perceptions of competence at work and are labeled as task-oriented behaviors (Yukl, 2008). *Participating and empowering*, and *experimenting* behaviors may lead to enhanced perceptions of autonomy, while *individual considerations* and *coaching and mentoring* may lead to fulfillment of relatedness needs (Deci, Connell, & Ryan, 1989; Yukl, 2008). Choice, acknowledgement of ideas, and opportunities for self-direction significantly promote motivation and engagement at work (Bakker & Demerouti, 2008; Yperen & Hagedoorn, 2003). Deci et al. (1999) observe that *recognizing* behavior that provide verbal rewards, unexpected rewards, task non-contingent

rewards, and rewards along with relevant feedback (i.e. minimizing the use of authoritarian style, acknowledging good performance but not using rewards to try to strengthen or control the behavior, providing information about the reward decision) are ways of integrating extrinsic motivation and can minimize the detrimental effects of extrinsic motivation on employee's intrinsic motivation. Recognition for creative ideas, clearly defined overall project goals, and frequent constructive feedback on the work confirm competence and provide important information on how to improve performance (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Leaders, by emphasizing teamwork, can increase the frequency of interactions between team members leading to a better understanding of the problem and its creative solution (Hoegl, Weinkauff, & Gemuenden, 2004; Mumford et al., 2002). Leading-by-example behaviors can satisfy an individual's need for competence (Deci & Ryan, 2000). Individuals are more likely to perform a work after a visual demonstration of a successful behavior or through setting examples of appropriate rules and thought processes (Bandura, 1997; Shalley & Perry-Smith, 2001). Employees who work under expert supervisors are bound to be receive greater modeling experience that can enhance their competence and eventually engagement at work (Gupta & Singh, 2014a). Leaders of productive groups serve many roles that depend on technical expertise, including recognizing good ideas, defining the significant problems, influencing work goals and providing technical stimulation (Badawy, 1988). Based on the above argument, I hypothesize:

*H3: Leader behaviors (a, task-oriented; b, recognizing and inspiring; c, team building and developing; d, empowering; and e, leading by example) will be positively related to employee integrated extrinsic motivation.*

*H4. Integrated extrinsic motivation will mediate the relationship between the leader behaviors (a, task-oriented; b, recognizing and inspiring; c, team building and developing; d, empowering; and e, leading by example) and employee creativity.*

Extrinsically motivated people perform actions because their behaviors are prompted, modeled or valued by significant others to whom they feel attached or related. Extrinsic motivation is influenced by individual's upbringing, socialization and personal needs, and leadership may have very little role in influencing this type of work motivation. We, thus hypothesize:

*H5: Leader behaviors (a, task-oriented; b, recognizing and inspiring; c, team building and developing; d, empowering; and e, leading by example) will not be related to employee extrinsic motivation (that is not integrated).*

## **METHOD**

### **Sample and Data Collection**

The research study was conducted in 11 R&D labs of India's largest civilian research organization. Data were collected using a survey questionnaire that was administered to the scientists working in the research labs. One of the researchers went and stayed at each of the labs for a period of 1 week. Survey was distributed to all the scientists who were present during the period the researcher visited the laboratories. Anonymity of responses was ensured and the respondents were not asked to write their names or any other identifiable information. Each respondent was given an envelope to return the filled form to the researcher. Four hundred and ninety three completely filled surveys were returned to the researcher. Twenty-five percent of the respondents were females. Five percent of the respondents had a graduate degree, 33% had post-graduate qualification and 62% had a PhD degree (or an equivalent qualification like a post-

graduation degree in Medicine). The average job tenure was 13.4 years. Forty-one percent of the respondents were junior level scientists, 39% were middle-level scientists, and 20% were senior-level scientists.

## Measures

We used established scales that have been tested for their content and construct validities in the non-Western contexts.

### *Independent Variables*

**Leader Behaviors.** Leader behaviors were measured using the 39 item leader behavior scale for R&D context developed by Gupta and colleagues (Gupta & Singh, 2013; Gupta et al., 2013). Scientists were asked to rate how frequently their immediate supervisors exhibited each behavior. The responses were measured using a 5-point Likert scale ranging from 1, not at all, to 5, great extent. Model consisting of five first-order factors (task-oriented, recognizing and inspiring, team building and developing, empowering and leading-by-example) showed strong interrelationships between the first-order factors (average  $r = .78$ ) suggesting the presence of a higher-order common factor (Kline, 2005). Another model was specified consisting of the first-order dimensions plus one second-order factor of 'creativity-stimulating R&D leadership'. The model showed very good fit with the data ( $\chi^2[681] = 1163.82$ ,  $p < .01$ ; CFI = .99; NNFI = .99; RMSEA = .04; SRMR = .04).

**Extrinsic Motivation.** Integrated extrinsic motivation was measured using 3-item scale adapted from Tremblay et al. (2009). Sample item included "I am involved in my work because this work provides me a meaning for my life". Extrinsic motivation was measured using 3 items. Sample item included "I am involved in my work for the income it provides me". The responses were measured using a 5-point Likert scale ranging from 1, strongly disagree, to 5, strongly

agree. The two-factor (integrated extrinsic motivation, extrinsic motivation) model showed very good fit with the data ( $\chi^2[8] = 21.10, p < .01; CFI = .99; NNFI = .99; RMSEA = .046 SRMR = .05$ ).

### ***Dependent Variables***

***Subjective Measures of Creativity.*** Self-reported subjective score of creativity was obtained using scale developed by Gupta and Singh (2014b). The scale comprises of four dimensions, namely, problem identification, information search, idea generation and idea promotion. The responses were measured using a 5-point Likert scale ranging from 1, never, to 5, very frequently. The items asked individuals to rate the level of engagement in creative process as proposed by various creativity researchers (e.g., Amabile, 1983; Reiter-Palmon & Illies, 2004; Zhang & Bartol, 2010). Sample items included: “I spend considerable time trying to understand the nature of problem” (problem identification), “I consult a wide variety of information when solving a problem” (information search), “I engage in generating original solutions for problems” (idea generation), and “I mobilize support for innovative ideas” (idea promotion). This measure was selected because of its good fit with the sampling methodology. In addition, it was not feasible to have supervisor rate employee creativity since the methodology assured anonymity and there was no reasonable way to follow up and match individuals. That said, although self-reported measures are subject to bias, they have been found to correlate with supervisory ratings of creativity and are considered to be valid because the employees are best suited to self-report creativity because they are the ones who are aware of how involved they are in the activities that they are supposed to be doing in their jobs and that make them creative (Axtell, Holman, & Unsworth, 2000; Ng, Feldman, & Lam, 2010; Shalley, Gilson & Blum, 2009). The model consisting of the four first-order factors showed strong interrelationships



(average  $r = .64$ ) suggesting the presence of a higher-order common factor. The model comprising of the four first-order factors plus one second-order factor of creative performance behavior showed excellent fit with the data ( $\chi^2[46] = 59.14$ ,  $p > .05$ ; CFI = 1.00; NNFI = 1.00; RMSEA = .02; SRMR = .03).

***Objective Measures of Creativity.*** The indicators of creative performance were identified based on a review of literature (Oldham & Cummings, 1996; Dewett, 2007; Tierney, Farmer & Graen, 1999) and the interviews conducted with scientists working in the R&D laboratories surveyed. Each scientist was asked to provide performance data on the following 5 metrics: 1) research papers published in peer-reviewed journals in last 3 years; 2) research papers presented in conferences in last 3 years; 3) number of guest lecture given in last 3 years; 4) PhD students guided in last 3 years and 5) number of patents applied in last 3 years. The scientists agreed that the objective measures identified were indicative of both novelty and usefulness aspects of creativity (Amabile, 1983). This was considered to be the most appropriate method of collecting data on objective performance of individual scientists as there was no way of matching the performance data of scientist with the filled in form (the forms were filled anonymously). It was assumed that the information provided by the scientists was correct because the respondents were assured of confidentiality of their responses and were not asked to mention their name on the survey form.

### **Control Variables**

Scientists' age, gender, education and job tenure were modeled as control variables in the study. Gender was modeled as an ordinal variable. Employee age and job tenure were measured in years and were modeled as continuous variables. Education was modeled as a categorical variable and was measured using two dummy variables (DumEd1, DumEd2). Graduates were

assigned a code of 2, post-graduates were assigned a code of 1, and PhDs were assigned a code of 0.

### **Analyses**

Latent variable structural equation modeling (SEM) was adopted to test the hypotheses. In order to reduce the number of parameters in the analysis and maintain a reasonable degree of freedom for the mode, I adopted the general approach of parcels (partially disaggregated indicators) and the items measuring each construct were averaged to create a scale score for each respondent on each of the multi-item scales. This approach has been used in previous studies, corrects for random measurement error and produces parameter estimates virtually identical to those produced by a pure latent variable analysis (Carlson & Kacmar, 2000; Lenka, Suar & Mohapatra, 2010; Williams & Boyle Jr., 2008). Since all the variables were measured at the same time and from the same person, concern over the effects of common method variance was warranted (Podsakoff, MacKenzie, Lee & Podsakoff, 2003; Podsakoff & Organ, 1986). The influence of common method bias was checked both procedurally and statistically. A procedural control was incorporated in the study by ensuring anonymity of respondents and the confidentiality of the responses collected from them. Collection of objective performance data of scientists also reduced the confounding effect of common method and common source biases. In addition to these procedural remedies, I conducted a set of supplemental statistical analyses. Confirmatory Factor Analysis (CFA) was conducted to assess the convergent and discriminant validities of the constructs.

The convergent and discriminant validities of the constructs were tested by CFA. The LISREL 8.80 software package was used to analyze the responses. Creative performance is count data representing the number of times an event occurred during a given time period.

Skewness and restrictions of range associated with event counts result in a high degree of non-normality (Cameron, & Trivedi, 1998). Ordinary Least Squares (OLS) technique is inappropriate to assess relationships in such instances. As an alternative to OLS regression, all the analyses were conducted with maximum likelihood (ML) and Satorra-Bentler corrected standard errors (Satorra & Bentler, 1994). ML adjusts the chi-square (resulting in the Satorra-Bentler corrected chi-square [SB- $\chi^2$ ]) for its upward bias in the case of non-normally distributed data and the latent product variable that is not normally distributed (Falk, Hammerschmidt, & Schepers, 2010; Steinmetz, Davidov, & Schmidt, 2011). To generate SB- $\chi^2$  values, I included the covariance matrix of the indicators and the asymptotic covariance matrix as input of the model. Apart from the SB- $\chi^2$ , other measures of fit like the root mean square error of approximation (RMSEA), non-normed fit index (NNFI), comparative fit index (CFI), and standardized root-mean-square residual (SRMR) were also analyzed.

## RESULTS

### Tests for Common Source Effects and Discriminant Validity

A series of dimension-level confirmatory factor analyses were carried out to examine whether the constructs included in the study captured distinct versus common source effects. The measurement model fits the data very well (SB- $\chi^2 = 236.19[136]$ ,  $p < .01$ , RMSEA = .04; CFI = .98, NNFI = .98, SRMR = .04). The measurement model, obtained by combining creative performance behaviors and extrinsic motivation factors gave a very poor fit (SB- $\chi^2 = 1074.71[151]$ ,  $p < .01$ , RMSEA = .11; CFI = .85, NNFI = .85, SRMR = .10). One factor model too gave a very poor fit with the data (SB- $\chi^2 = 1675.36[157]$ ,  $p < .01$ , RMSEA = .14; CFI = .76, NNFI = .71, SRMR = .14). Further evidence of discriminant validity of the constructs was obtained by computing Average Variance Extracted (AVE) for each construct. The factor means,

standard deviations, inter-correlations between factors, Cronbach's alpha reliabilities and AVE are presented in Table 1. AVE for each factor is given in the parentheses along the diagonal. The average variance extracted for all the constructs were greater than 0.5, thereby suggesting adequate convergent validity (Fornell & Larcker, 1981; Ping, 2005). Moreover, the square of the correlation between any two constructs was not greater than either of their individual AVEs, suggesting that the factors each have internal (extracted) variance greater than variance shared between the factors and have adequate discriminant validity (Fornell & Larcker, 1981; Ping, 2005). The internal consistency of the measurement model was assessed by computing composite reliability. These composite reliability coefficients ranged from .65 to .92, greater than the benchmark of .60 recommended by Fornell and Larcker (1981). Results of CFA tests and Table 1 provide evidence of the convergent and discriminant validities of the constructs.

Following recommendation of Podsakoff et al. (2003), antecedents were separated from outcomes in the survey, respondents were ensured anonymity and confidentiality of their responses, and surveys were returned sealed in an envelope directly to the researcher. These steps were followed to reduce shared method variance. In addition, the results of Harman one-factor test showed that the variables failed to converge onto a single factor and the unrotated first factor accounted for less than half of the total variance in the data.

Table 1. Descriptive Statistics and Correlations

|                                    | Mean | SD   | CR <sup>a</sup> | Alpha <sup>b</sup> | 1     | 2      | 3     | 4     | 5     | 6     | 7     | 8     | 9  |
|------------------------------------|------|------|-----------------|--------------------|-------|--------|-------|-------|-------|-------|-------|-------|----|
| 1. Leadership                      | 3.74 | .75  | .92             | .92                | (.69) |        |       |       |       |       |       |       |    |
| 2. Integrated Extrinsic Motivation | 4.19 | .72  | .65             | .77                | .32** | (.55)  |       |       |       |       |       |       |    |
| 3. Extrinsic Motivation            | 3.32 | 1.04 | .87             | .86                | .04   | -.01   | (.68) |       |       |       |       |       |    |
| 4. Creative Behaviors              | 4.00 | .50  | .81             | .8                 | .31** | .58**  | .02   | (.52) |       |       |       |       |    |
| 5. Papers                          | 6.74 | 9.69 | --              | --                 | -.01  | .21**  | -.05  | .07   | --    |       |       |       |    |
| 6. Conference Papers               | 4.94 | 6.69 | --              | --                 | -.05  | .16**  | -.06  | .08*  | .55** | --    |       |       |    |
| 7. Patents Applied                 | .36  | .86  | --              | --                 | .03   | .10*** | -.01  | .06   | .42** | .26** | --    |       |    |
| 8. Guest Lectures                  | 2.22 | 4.87 | --              | --                 | -.04  | .21**  | -.13* | .05   | .40** | .50** | .17** | --    |    |
| 9. PhD Guided                      | .95  | 2.32 | --              | --                 | -.02  | .21**  | .001  | .13** | .66** | .31** | .24** | .41** | -- |

a. CR: Composite Reliability of the measurement model; b.  $\alpha$ : Cronbach Alpha Reliability

Average Variance Extracted (AVE) for each construct (no. 1-4) is provided in parenthesis along the diagonal; Values below the diagonal are inter-construct correlations;

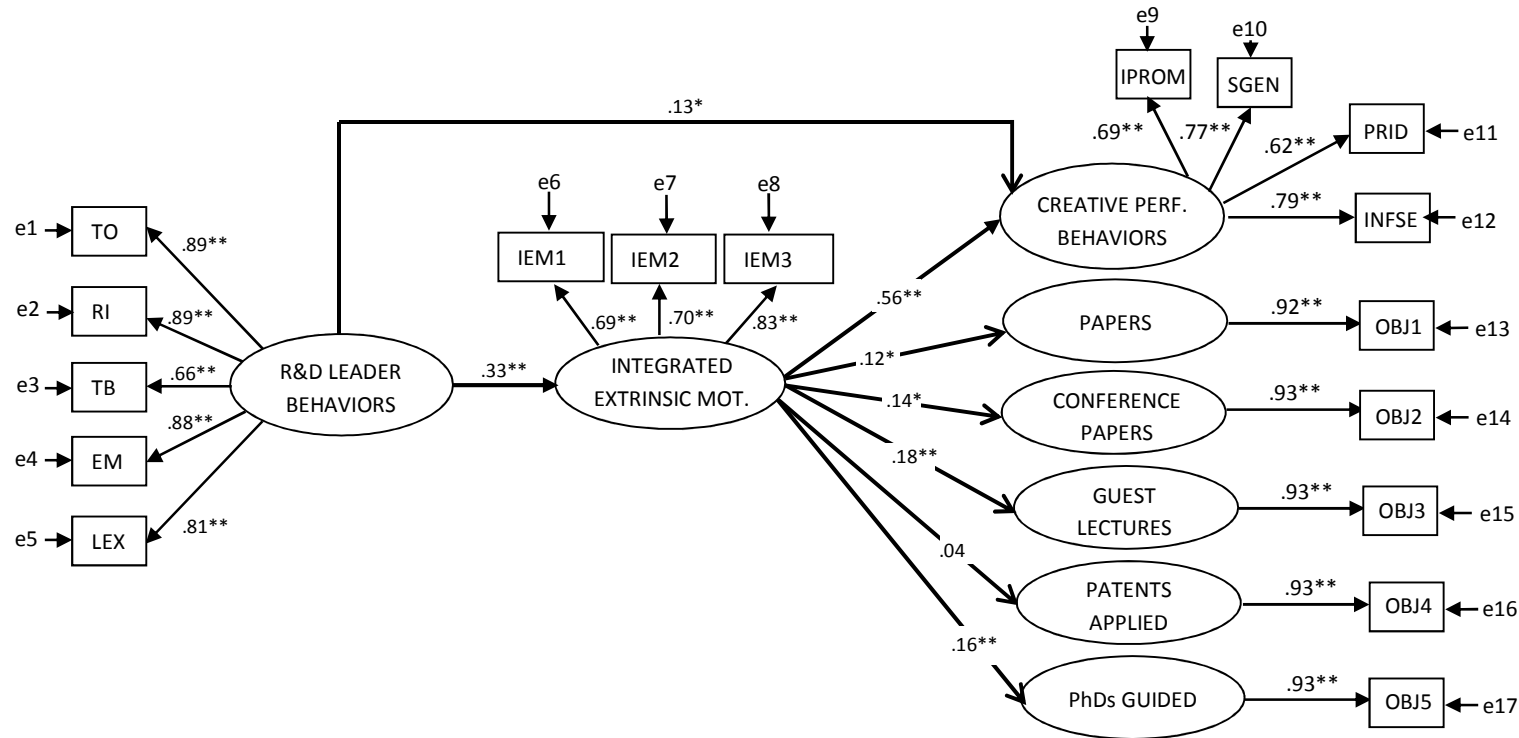
\*\*p < .01(two-tailed); \*p < .05 (two-tailed); \*\*\*p < .1 (two-tailed); N=494

## Hypotheses Testing

Table 1 reports the zero-order correlations between the variables of the study. Structural modeling results suggested that the hypothesized model fit the data well ( $SB-\chi^2[df] = 385.18[208]$ ,  $p < .01$ ; CFI = .98; NNFI=.97; RMSEA = .04; SRMR = .04; GFI = .94).

Figure 1 presents the overall model with standardized path coefficients.

Figure 1. Best Fitting Structural Equation Model with Standardized Path Coefficients



**Legend:**

1. TO-Task-oriented behavior; RI-Recognizing & Inspiring; TB-Team building & Developing; EM-Empowering; LEX-Leading by Example; PRID-Problem Identification; INFSE-Information search; SGEN-Solution Generation; IPROM-Idea Promotion; IEM1-IEM3 – Items measuring Integrated Extrinsic Motivation; EM1-EM3 – Items measuring Extrinsic Motivation; OBJ1-OBJ5 – Objective measures of creative performance
2. Direct paths from leader behaviors to extrinsic motivation, creative performance behaviors and creative performance measures were non-significant at  $\alpha=.1$
3. Direct paths from extrinsic motivation to creative performance behaviors and creative performance measures were non-significant at  $\alpha=.1$
4. The paths related to the control variables (gender, age, education, tenure, and job level) are not shown for the ease of representation.
5. \* $p<.05$ ; \*\* $p<.01$ ; N=494

From the SEM results of figure 1, we see that integrated extrinsic motivation was positively related to creative performance behaviors ( $\beta = .56, p < .01$ ), papers published in peer-reviewed journal articles ( $\beta = .12, p < .05$ ), conference papers ( $\beta = .14, p < .05$ ), number of guest lectures taken ( $\beta = .18, p < .01$ ) and to the number of PhDs guided ( $\beta = .16, p < .01$ ). Integrated extrinsic motivation was positively but non-significantly related to the number of patents applied. Hypothesis 1 was, therefore, supported. Extrinsic motivation was neither related to leader behaviors nor to creative performance behaviors and creative performance measures. Hypothesis 2 was supported. R&D leader behaviors were positively related to integrated extrinsic motivation ( $\beta = .22, p < .01$ ), thereby supporting hypothesis 3.

Table 2. Direct, Indirect and Total Effects of Leadership as Reported by LISREL

| Path  | Total Effect |         | Direct Effect |         | Indirect Effect |       |
|---|--------------|---------|---------------|---------|-----------------|-------|
|   | B            | $\beta$ | B             | $\beta$ | B               | B     |
| 1. R&D Leadership → Integrated Extrinsic Motivation | .22**        | .33**   | .22**         | .33**   | --              | --    |
| 2. R&D Leadership → Extrinsic Motivation            | -.01         | -.01    | -.01          | -.01    | --              | --    |
| 3. R&D Leadership → Creative Performance Behaviors  | .19**        | .31**   | .08*          | .13*    | .11**           | .18** |
| 4. R&D Leadership → Papers                          | .29          | .03     | -.16          | -.01    | .45*            | .04*  |
| 5. R&D Leadership → Conference Papers               | -.22         | -.03    | -.58          | -.07    | .36*            | .04*  |
| 6. R&D Leadership → Guest Lectures                  | .05          | .01     | -.30          | -.05    | .35**           | .06** |
| 7. R&D Leadership → Patents Applied                 | .04          | .04     | .02           | .02     | .03             | .02   |
| 8. R&D Leadership → PhDs Guided                     | .05          | .02     | -.09          | -.03    | .14**           | .05** |

B – Unstandardized Effect;  $\beta$  – Standardized Effect  
 \*\* $p < .01$ ; \* $p < .05$

Table 2 presents the direct, indirect and total effects of leadership on creative performance behaviors and creative performance measures. The table shows that leadership has positive and significant indirect effects on creative behaviors and objective creative measures. Surprisingly, after controlling for integrated extrinsic motivation, leadership had negative direct effects on objective creative measures. The negative direct effect and positive

indirect effect add up to a net positive total effect. The total effect is, however, non-significant at 5% level of significance. Leadership was positively related to creative behaviors even in the presence of integrated extrinsic motivation. This provides evidence of partial mediation of the relationship between leadership and creative behaviors through employee integrated extrinsic motivation. The results provide partial support for hypothesis 4. Leader behaviors were not related to extrinsic motivation, thereby supporting hypothesis 5. Overall, all the variables were able to explain 36%, 18%, 19%, 29%, 14%, 26%, 9% and 26% of total variance in creative behaviors, integrated extrinsic motivation, extrinsic motivation, papers published, conference papers, guest lectures, patents applied and PhDs guided respectively.

## **DISCUSSION**

### **Theoretical and Practical Implications**

The relationship between common creativity antecedents and creative performance is seldom clarified and the assertion that employee attitudinal and work environment factors spur creative performance has rarely been tested. Moreover, most of the evidence linking the influence of social-contextual factors on motivation has either been obtained from laboratory and controlled-setting experiments or from field settings that include schools, homes (parent-children relationships) or other non-applied setting (Ryan & Deci, 2000; Deci et al., 1999). The present study adopts an individual level of analysis and investigates the association between leader behaviors, employee extrinsic motivation, creative performance behaviors and creative performance in the Indian R&D laboratories. Contradictory findings exist in literature regarding the influence of extrinsic rewards on employee creativity. There exists little agreement among scholars concerning the likely direction of the effects of rewards on creativity (Baer et al., 2003). While some authors argue that offering extrinsic rewards for creativity will enhance individuals' subsequent creative performance (Eisenberger &



Rhoades, 2001), others argue that the use of contingent, extrinsic rewards will actually diminish creativity by undermining individuals' intrinsic motivation (Amabile, 1996). Given that the predominant style of management and behavior reinforcement in our organization is based on extrinsic rewards, research is needed that explores the specific circumstances under which extrinsic motivation and contingent rewards have positive or negative effects on creativity. The results of such research could help us better understand these earlier inconsistent findings while providing managers with a clear strategy for the optimal use of extrinsic rewards with respect to creativity (cf. Baer et al., 2003).

Considering the above mentioned research gaps, the present study makes multiple contributions to both theory and practice. The study provides evidence of the importance of integrated extrinsic motivation in motivating employee creativity. While extrinsic motivation is always considered to be negative and harmful for intrinsic motivation, and thus creativity (Amabile, 1996; Amabile et al., 1986), the present study shows that extrinsic motivation when internalized can actually be beneficial and conducive for creative behaviors and for creative performance. According to the OIT proposed by Deci and Ryan (1985), extrinsically motivated activities can become self-determined through the processes of internalization and integration. Internalization involves taking in a regulation, and integration involves fully transforming it into one's own. Thus, extrinsic motivation can be of two forms: one in which case an individual's behavior is controlled by contingencies external to him; and second in which the person has identified with and integrated the regulations, thereby forming the basis for self-determined extrinsic motivation (Deci et al., 1999). An individual having integrated extrinsic motivation has assimilated and reconstituted formerly external regulations such that she becomes self-determined while enacting them. When the internalization process functions optimally, people will identify with the importance of social regulations, assimilate them into their integrated sense of self, and thus fully accept them as their own (cf. Deci & Ryan,

2000). When people develop integrated extrinsic motivation, they experience volition, or a self-endorsement of their actions (Deci & Ryan, 2008). The results of the present study demonstrated that extrinsic motivation is positively related to creativity (both behaviors and outputs) for employees who have integrated the value of the rewards to their sense of being. Employees having integrated extrinsic motivation are much more likely to be high on creative performance than those who are just motivated by extrinsic rewards.

These findings add to the existing body of work (Eisenberger & Rhoades, 2001; Baer et al., 2003) that has tried to understand the conditions under which extrinsic motivation can be beneficial. The results provide substantial support for the notion that the effects of monetary incentives and recognition on creativity are not uniform across employees. Neglect of the subtle differences that exist between individuals might be one reason previous research studies have failed to produce consistent and conclusive support for either positive or negative effects of rewards on creativity. As shown in this study, extrinsic incentives can promote creative performance in the workplace, inhibit it, or not affect it at all depending on how employees perceive their rewards. Hence, rather than focusing on the question of whether extrinsic incentives positively or negatively affect creativity, the present work shows that the conditions that make rewards important to individuals are equally relevant topics of research.

Internalization does not happen automatically. The degree to which people are able to actively synthesize cultural demands, values, and regulations and to incorporate them into the self is in large part a function of the degree to which fulfilment of the basic psychological needs is supported as they engage in relevant behaviors (cf. Deci & Ryan, 2000). The study not just delineates the importance of integrated extrinsic motivation but it also tests a conceptual model that integrates behavioral leadership theory with motivation and creativity theories. The study makes a significant contribution to leadership, motivation and creativity

literatures by examining and confirming the positive relationship between leader behaviors and integrated extrinsic motivation in a field setting. To the best of my knowledge, there has been no focused field study analyzing the impact of leadership (an important workplace factor) on employee integrated extrinsic motivation.

SDT suggests that the integration of extrinsic motivation is facilitated by feelings of relatedness to relevant others and feelings of competence with respect to the regulation being internalized and feelings of autonomy to freely process and endorse transmitted values and regulation. The positive relationship between behaviors identified by Gupta and colleagues (Gupta & Singh, 2013; Gupta et al., 2013) and integrated extrinsic motivation shows that if managers and organizations are interested in impacting the creativity of their employees through extrinsic rewards then it is essential that they also ensure that the rewards are accompanied with feelings of self-efficacy, competence, autonomy and relatedness. Leaders should modify their behaviors accordingly in order to ensure that the subordinate's needs for competence, autonomy and relatedness are satisfied.

A surprising finding of the study is that leadership had no direct impact on the objective creative performance indicators of employees. The findings lend support to the observation that performance behaviors and outcome effectiveness are two distinct constructs (Gupta, 2014). In a review of creativity constructs, Montag, Maertz and Baer (2012) found that while there are a number of environmental factors outside of employee's control that may determine outcome effectiveness and that performance behaviors of multiple individuals can jointly cause the effectiveness of one outcome. Thus, while displaying and engaging in creative behaviors is in the control of an individual, the outcomes may be determined by a lot of other factors like teamwork, trends, market shifts, etc. where a leader may have very little influence. The relationship between integrated extrinsic motivation and creative behavior was

also stronger than the relationship between integrated extrinsic motivation and creative outcomes.

The present study contributes to the R&D management literature by testing the conceptualized model in a R&D setting. The characteristics of R&D professionals (more educated, and having distinct goal orientations) and the nature of their work (high risks of failures, uncertain processes) make R&D a unique and interesting context to study. Given the impact creativity can have on the performance of an organization, R&D becomes a very important context for present day management research. Examination of leadership influence on R&D professional's performance has been inadequate and controversial (Gupta & Singh, 2014a, b). While some argue that leadership is redundant in a R&D setting, others contend that leadership is essential even in a R&D setting (Zheng et al., 2010). More research is needed to provide us a deeper understanding of the leadership needs of R&D professionals that would help them develop effective interventions to nurture desired behaviors and attitudes. This study makes important contribution by developing, testing and verifying a causal framework linking leadership to employee creative behaviors and creative performance.

### **Strengths, Limitations and Directions for Future Research**

We were able to directly access a large sample of full-time professionals from R&D laboratories that are generally considered to be difficult to approach and gain an access to. The study had a good response rate of about 64% for this type of survey. In addition, in designing our survey, I was aware of potential limitations associated with this methodology and took steps to minimize their influence by adopting suitable procedural controls (ordering of survey items, ensuring anonymity and incorporating important control variables) and statistical controls (testing for common method bias) (Podsakoff et al., 2003).

Although the findings of the study are in line with the developed theory, the study has some limitations that can be addressed in future research. The research was cross-sectional by design and so any inferences regarding causality are limited. Future studies should test the relationship between leadership, integrated extrinsic motivation and creativity using other study designs like longitudinal studies, analysis of daily diary entries to provide additional support for the linkages proposed. All responses on the scales were self-reported and it is likely that method variance inflated the relationships among these variables. Although I checked for the common method variance by procedural and statistical controls, the possibility of this error cannot be all together discounted. The study also collected objective performance data from the employees that should have reduced the chances of the existence of common method bias.

Integrated extrinsic motivation is similar to intrinsic motivation in terms of processes relating to its formation and its influence on creativity. However, I did not measure intrinsic motivation directly, and consequently, it is not clear whether the proposed effects of integrated extrinsic motivation will exist after controlling for an employee intrinsic motivation. More research is needed that directly assesses intrinsic motivation and determines its effects on integrated extrinsic motivation. Previous research has shown that other variables (e.g., locus of causality, poverty syndrome) may play a role in influencing an individual's behavior (Sinha, 2000). It will be interesting to examine how the effects of integrated extrinsic motivation get modified under the influence of such variables. The study showed a surprising finding of no relationship between leadership and creative performance measures. Future research should focus on examining the possible causes of this finding. Other potential avenues for future research might include examinations of additional contextual and cultural conditions that affect the relation between integrated extrinsic motivation and creativity. For example, rewards accompanied by informational feedback and evaluation have been

identified as conducive for creativity (Eisenberger & Rhoades, 2001). Also, tasks can be inherently interesting (e.g., R&D) or non-interesting (e.g., shop-floor job). It would be interesting to know, whether the type of job also plays an important role in determining how quickly the integration of extrinsic motivation happens.

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