PREDICTING INDIVIDUAL CREATIVITY IN ORGANIZATIONS: WHY DO ADULTS ENGAGE IN CREATIVE ACTIVITIES?

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Jeremy L. Bowers Schoen

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PREDICTING INDIVIDUAL CREATIVITY IN ORGANIZATIONS: WHY DO ADULTS ENGAGE IN CREATIVE ACTIVITIES?

Approved by:

Dr. Lawrence R. James, Advisor
School of Psychology and College of Management
Georgia Institute of Technology

Dr. Christina E. Shalley
College of Management
Georgia Institute of Technology

Dr. Terry C. Blum
College of Management
Georgia Institute of Technology

Dr. Rustin D. Meyer
School of Psychology
Georgia Institute of Technology

Dr. Charles K. Parsons
College of Management
Georgia Institute of Technology

Date Approved: 9, 6, 2011

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

Amabile (1983a) presented the most prominent theory currently used for studying individual creativity in organizations, the componential model, over 25 years ago. This model moved the study of creativity away from an individual differences-based paradigm to one taking into account the situation. The centerpiece of this model, the intrinsic motivation principle, suggests that situational factors influence individual creativity via an individual's intrinsic motivation (Amabile, 1996: 115). My review identifies anomalies in current research using Amabile's model that I use for new theory development. I then test that theory in a laboratory study.

New theory I developed and tested explores factors that affect individual creative performance at work. This theory focuses on the effects environmental variables, dispositional traits, and psychological mediators have on creative performance. The trait of achievement motivation is used to directly predict creative performance and also how individuals differentially react to environmental factors. The psychological mediator utilized here is regulatory focus, which is a concept related to the ways individuals frame and engage situations. I describe and test how the facets of regulatory focus (promotion and prevention) account for the ways that environmental factors, achievement motivation, and the interaction of environmental factors and achievement motivation affect creative performance of adults in work-like environments (e.g. behavioral laboratory with adults).

Results from this study were significant. First, achievement motivation significantly predicted creative performance. Second, there were no significant effects for regulatory focus, although this was mostly likely a result of limited scale development.

Third, achievement motivation interacted with the experimental manipulations (expectations of controlling or informational expected evaluations), as the environmental variable, to predict creativity. This suggests theories of creativity that do not consider personality (c.f. Amabile, 1983a, 1983b, 1996) leave out a potentially important and significant portion of what leads to differences in individual creative performance. Finally, many variables reported to predict creative performance in the literature were used as control variables. In no model tested did any of these control variables reach significance or moderate the effects of achievement motivation, as it was measured in this study, on creative performance. These results suggest the finding here for achievement motivation is robust.

CHAPTER 1

INTRODUCTION

Over the past twenty-five years a majority of the work in the field of individual creativity in organizations was influenced by Amabile's social psychological model of creativity called the componential model. Other models of creativity have also been presented (c.f. Ford, 1996; Woodman, Sawyer, & Griffin, 1993); however, propositions from the componential model (Amabile, 1983a, 1983b, 1996) have guided a substantial portion of the empirical research on individual creativity at work. The original version of this model suggested an individual's intrinsic motivation toward a task was a predictor of creative performance as were creativity-relevant skills and domain-relevant skills. An updated version of the componential model (Amabile, 1993, 1996) placed greater emphasis on an individual's intrinsic motivation, suggesting it is the most important variable predicting individual creativity and that all influences external to the individual work through intrinsic motivation.

Contrary to the suggestion of Amabile and Muller (2008), the componential model may not be the best theory for describing individual creativity in the workplace because of its reliance on intrinsic motivation and considerable lack of attention to individual difference variables. My analysis of the research relevant to the componential model reveals a number of anomalies suggesting other variables not included within the componential model may also explain individual creative performance. Intrinsic motivation may be problematic as a determinant of individual creativity at work (Locke & Latham, 1990, White, 1959) because individuals in work environments are often

overdetermined (Deci & Ryan, 1985, Locke & Latham, 1990). That is to say their behavior is controlled through organizational goals and reward structures. Thus, these individuals are nearly always under extrinsic constraints (or "strong situations" from the situational strength literature, see Meyer, Dalal, & Hermida, 2010) which hinders intrinsic motivation (Deci & Ryan, 1985). While some factors of one's job may be internally driven, individuals in organizations are influenced greatly by their work environment (c.f. Scott & Davis, 2007) and are likely to act in creative ways for a number of reasons not described by intrinsic motivation. If this is the case, a theory of creativity relying exclusively on intrinsic motivation as the motivating factor of creative effort may be incomplete thus hindering our understanding and prediction of individual creativity at work. Before delving into new theory, it is first necessary to define the phenomena under consideration.

Creativity is the presentation of novel ideas, products, processes, procedures, etc. that are also situationally appropriate (the situationally appropriate aspect of the definition has been similarly conceptualized as valuable or useful). This definition is stable, has existed at least since the 1950s (c.f. Barron, 1955; Bruner, 1962), and is supported by creativity scholars today (Amabile, 1996; Mumford & Gustafson, 1988; Shalley, 1995; Shalley & Zhou, 2008). Because we can define creativity, we can judge ideas in terms of their creativity on a range from not at all creative to extremely creative. Thus, it is possible to develop theory and study factors affecting individual creative performance.

Even though the definition of creativity has remained stable, the types of factors studied as predictors of individual creativity have not. Most early research focused on

individual traits or personality variables. Even though researchers suspected situational factors had an effect on individual creative performance at least as early as the 1950s (c.f. Barron, 1955; Cummings, 1965; Taylor, 1960), little was done to develop theory describing this effect. The componential model (Amabile, 1983a, 1983b, 1996) provided a way for researchers to theorize how situations affect individuals trying to be creative via intrinsic motivation.

My review suggests the effect of situations on individual creativity is significant, intrinsic motivation does somewhat affect creative performance, but the effect of situational factors on creativity often is not found to work through an individual's intrinsic motivation. It has been suggested that intrinsic motivation may not be the only psychological factor able to aid in prediction of creative performance (Zhou & Shalley, 2003). Theoretical concerns and research anomalies suggest it is time to use new theoretical perspectives that better explain individual creativity at work.

I develop theory to better explain individual creativity in the workplace. Existing theory (c.f. Amabile, 1996) predicts that different types of expected evaluations would differentially affect intrinsic motivation that will then affect creative performance. However, based upon new theory, these different types of evaluations may instead differentially affect regulatory focus that then has an effect on creative performance. Regulatory focus has two facets, promotion and prevention, that are used here to describe how individuals respond to environmental cues. Depending upon the environmental cue, individuals may regulate their behavior to prevent something from happening or, instead, work to try to make sure something does happen. In addition to the effects with

regulatory focus, achievement motivation is expected to affect regulatory focus and also explain how individuals interpret expected evaluation via interaction effects.

Expected evaluation is an important variable to consider in the workplace. Supervisors often have direct control of feedback and evaluation (Dansereau, Graen, & Haga, 1975; House, 1996). If managers do wish for their employees to be more creative then making effective changes to encourage this behavior may start with the actions of the leader him or herself (Mumford, Scott, Gaddis, & Strange, 2002; Shalley & Gilson, 2004). Additionally, expected evaluations have been used in previous tests of the effects of contextual variables (for both positive and negative effects) on individual creativity (c.f. Shalley & Perry-Smith, 2001). Thus, expected evaluation provides a contextual effect expected to predict individual creative performance.

In Chapter 3 I provide the results of a study designed to test the hypotheses developed in Chapter 2. This was a laboratory study that utilized an experimental design to critically test the propositions I developed regarding regulatory focus theory and achievement motivation as they relate to individual creative performance in work-like environments. Results from this study were significant. First, an implicit measure of achievement motivation, a personality variable, significantly predicted creative performance. Second, there were no significant effects for state regulatory focus. The lack of effects for regulatory focus was mostly likely a result of limited development of the state regulatory focus scale constructed specifically for this study. Third, achievement motivation interacted with the experimental manipulations of various types of expected evaluations to predict creativity. Specifically, those who are achievement motivated perform the most creatively when expecting an informational evaluation and those who

are fear of failure oriented perform the least creatively when expected this same time of evaluation. Finally, many variables reported to predict creative performance in the literature were used as control variables (i.e. they were entered into the model before the main effects). In no model tested did any of these control variables reach significance or change the effects of achievement motivation, as it was measured in this study, on creative performance, which suggests the finding here for achievement motivation is robust.

Chapter 4 concludes by providing the implications and a discussion of the theory and the results reported here. The results of this study suggest theories of creativity that do not consider personality (c.f. Amabile, 1983a, 1983b, 1996) leave out a potentially important and significant portion of what leads to differences in individual creative performance. It may be that environmental factors affect psychological processes such as regulatory focus or intrinsic motivation that then affects creative performance. The null results from this study regarding both intrinsic motivation and regulatory focus cannot rule out their possible effects. The important finding from this study is that the differential interpretation of environmental factors, because of differences in personality, significantly affects creativity performance.

CHAPTER 2

LITERATURE REVIEW, THEORY, AND HYPOTHESES

This section opens with a brief review of research in creativity and a description of the componential model (c.f. mabile, 1983a, 1983b, 1996; Amabile & Muller, 2008). I then discuss research relevant to the intrinsic motivation principle of the componential model. I provide a mean-weighted effect size for the effect of intrinsic motivation on creative performance based on research involving adults. This review sets the stage for my theory development. My theory suggests regulatory focus is an important mediator of the effect of external variables on creative performance. Specifically, expected evaluations may positively or negatively affect creativity depending on the type of expected evaluation, and this effect works through regulatory focus. Additionally, achievement motivation is an important predictor of the creativity of individuals in work-like environments. Achievement motivation helps to determine how individuals frame environmental variables and also predicts regulatory focus and the effect regulatory focus and environmental variables have on creativity. Without considering achievement motivation in conjunction with expected evaluation, it is difficult to fully explain the effects of these variables. Thus, achievement motivation is not only an independent predictor but works with environmental variables and through regulatory focus to predict creativity for adults at work or in work-like environments.

Measuring Creativity

Before delving into existing theory, it is beneficial to consider how creativity is measured. Amabile presented the consensual assessment technique as a valid way of

assessing individual creative performance (Amabile, 1982) and this then allowed greater flexibility in studying creativity. Selecting objective criteria (i.e. the number of ideas generated or the number of categories used when generating ideas) for the assessment of creativity that can be universally applied is nearly impossible. In Amabile's own words, "it can be argued that objective ultimate criteria for identifying products as creative will never be articulated" (1983a: 359). According to Amabile (1982), the best way to assess creativity then is to use multiple raters who independently agree on the creativity of an idea, concept, product, etc (this is most often an overall rating of creativity). The type of consensual assessment proposed by Amabile (1982) is commonly used in other areas of psychology. For example, clinical psychologists use consensual assessment to gauge personality using projective tests such as the Thematic Apperception Test (c.f. Westen, 1991). Use of consensual assessment to measure creative performance was a step that many believed moved the field forward.

The consensual assessment technique and the componential model (Amabile, 1983a, 1983b, 1996) together provided a paradigm shift in the study of creativity. Before the introduction of this technique and model, research on creativity was most often explored as an individual trait. According to Amabile (1983a), in an assessment of published creativity research, Rothenberg and Greenberg (1976) found that in only 138 of almost 7000 citations regarding creativity did researchers explore the effect of external factors on individual creativity. Instead, this research focused on characteristics of individuals. Research in this vein often relied on archival methods that used biographies of eminent individuals in their specific field. This meant that studying the creativity of individuals was often done posthumously. A second approach relied on assessing traits of

living individuals who varied in their creativity (c.f. Barron, 1955). This area of research relied on the study of eminent individuals or individuals that others had suggested were creative, which is a small population. The componential model, since it included a way for external factors to affect individual creative performance, allowed researchers to test for the effects of environmental and contextual variables on creativity.

Testing for the causal effects of these external factors would not have been possible without utilization of the consensual assessment technique. This is because consensual assessment allowed researchers to work with a common and recognized way to assess the creative performance of individuals. Laboratory researchers could manipulate various environmental variables and then reliably measure the creative performance of the participants. Use of the consensual assessment technique also allowed for research on a much larger population compared to those found in studies of eminent individuals or through biography studies as researchers no longer needed to wait for individuals to be identified by others as having demonstrated some form of creative behavior. Since its introduction, the consensual assessment technique has become a frequently used method for rating the creative production of individuals in the laboratory (c.f. De Dreu, Baas, & Nijstad, 2008; Ruscio, Whitney, & Amabile, 1998; Shalley, 1991, 1995; Zhou, 1998). But the consensual assessment technique is not the only method used to study creativity and that difference provides a distinction between research ideologies.

There are other methods utilized to measure individual creative performance that do not rely on consensual assessment (c.f. Friedman & Förster, 2000, 2001, 2005; Goncalo & Staw, 2006). These methods include the use of count variables such as the number of ideas produced (fluency) or the number of different categories individuals use

when coming up with a number of ideas (flexibility). A third measure used is "originality" and this can be assessed in at least two ways. One method is to have raters rate each idea or each laboratory participant's set of ideas for how novel or original they are. A second way is to produce a statistical originality score based upon how many times others in the study produce the same answer. These widely used measures were developed over 40 years ago (Torrance, 1966), yet my review of the literature avoids studies that use these measures for a number of reasons as given below, though these studies can provide important clues and is done here when valuable to do so.

Using fluency, flexibility, and originality as measures of creative performance is problematic for conceptual and statistical reasons. First, fluency, flexibility, and statistical originality are also measures of divergent thinking skills and divergent thinking is not creativity. Divergent thinking is most often conceptualized as a predictor of creative performance, not creative performance itself (c.f. Nichols, 1972). Second, using rated originality focuses on only the novelty aspect of the definition of creativity. By focusing exclusively on the novelty of the idea it is unclear then how this relates to creativity, which is a measure of an idea's novelty and appropriateness combined. Scholars suggest it is not yet clear how novelty and appropriateness combine to form a creative solution (Zhou & Shalley, 2003). Third, fluency, flexibility, and originality are infrequently used in the literature generated by management scientists. Fourth, there are often differential predictors for fluency, flexibility, and originality when compared to expert, peer, or supervisor rated creative performance (c.f. Baas, De Dreu, & Nijstad, 2008; Friedman & Förster, 2001, 2005). Fifth, these measures represent the kind of objective measures

Amabile (1983a) suggested could not be universally applied. There are also statistical issues with regard to these variables discussed below.

There are statistical problems with using count variables (i.e. number of ideas produced) in ordinary least squares (OLS) analyses schemes. Count variables are often overdispersed and do not meet the assumption of normality required for OLS analysis (c.f. Cohen, Cohen, West & Aiken, 2003). The majority of studies that utilize these count variables do not test for normality and blindly apply OLS, which means their statistical results may be an artifact of the statistical tool used and not because of a true difference.

The introduction of the consensual assessment technique was an important change to the way creativity is measured in the laboratory and more closely matches the kinds of ratings used by supervisors when judging the creativity of their employees. Thus, when trying to understand what affects individual creative performance in the workplace, which is often assessed by supervisors and managers, the best match when reviewing laboratory studies is to focus on those that use the same type of criteria. Unless otherwise noted, the studies discussed in this review only include research that uses supervisor or peer ratings or studies utilizing the consensual assessment technique. Furthermore, I only review research using adult aged populations (e.g. 18 and older) for this is the population to which I wish to generalize.

A Review of The Componential Model of Creativity

The componential model of creativity (Amabile, 1983a, 1983b, 1996) is a large model encompassing a number of variables and concepts. These concepts are divided among three parts: domain-relevant skill, creativity-relevant skill, and task motivation. Initially, Amabile (1983a, 1983b) proposed that all three components of the componential

model worked in a synergistic manner. The synergistic proposition suggests that those who have the highest levels of domain- and creativity-relevant skills and who are also intrinsically motivated are the most creative. A later modification, the intrinsic motivation principle (Amabile, 1996), suggests that intrinsic motivation mediates the effect all external variables might have on an individual's creative performance and that an individual cannot be creative without intrinsic motivation. The latest version of the componential model is shown visually in Figure 1. Because the model includes so many variables there are no comprehensive tests available.

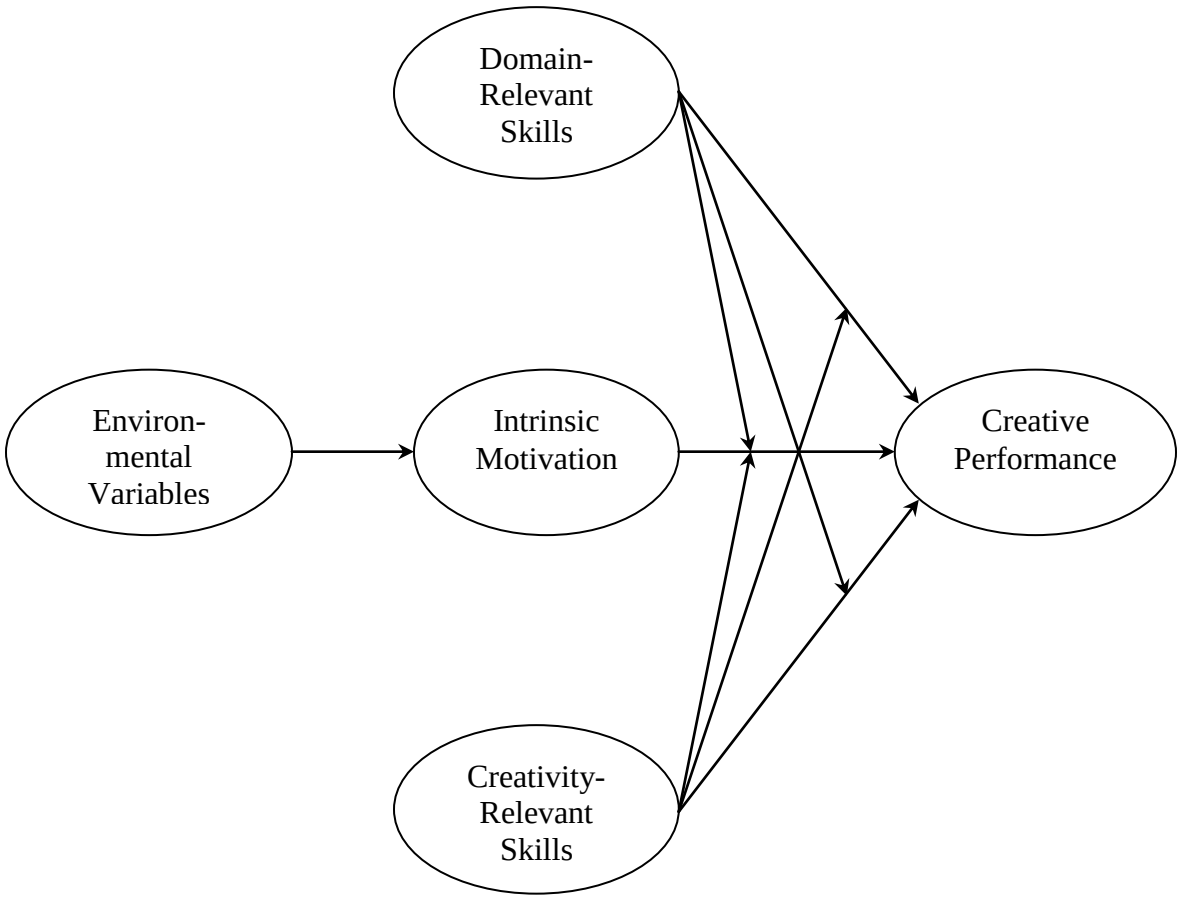

Figure 1. Componential Model (Amabile, 1996)

I focus on the intrinsic motivation component in reviewing research relevant to the componential model. A number of anomalies suggest other psychological mechanisms could account for the effects proposed for intrinsic motivation. I, therefore, also review studies that do not directly measure intrinsic motivation but use intrinsic motivation as the theoretical intervening psychological mechanism and reinterpret these studies using regulatory focus. Additionally, achievement motivation of the population sampled in at least one study could have been a driving factor in addition to intrinsic motivation (Amabile & Gryskiewicz, 1987). While speculative in nature, my reinterpretation provides the starting point for new theory development that should help to better our understanding of what leads individuals to go beyond what is required in most organizations (Ford, 1996) and put forth the effort needed for creativity (Amabile, 1996).

When Amabile proposed the componential model of creativity the only form of task motivation considered was intrinsic motivation (1983a, 1983b) and this theoretical perspective has changed little since (c.f. Amabile, 1996; Amabile & Mueller, 2008). Defined then, individuals are intrinsically motivated when they see themselves as the cause of their own enjoyable behavior. As an example, when someone is paid to perform a task, intrinsic motivation theory would suggest they are likely to see their own behavior as extrinsically motivated (c.f. Deci & Ryan, 1985; Kruglanski, 1978) since they are now performing the task for pay and not personal enjoyment. Individuals receiving pay should be less creative than unrewarded individuals (Amabile, 1983a, 1983b, 1996). Pay, of course, is only one example of the contingencies individuals' experience.

While intrinsic motivation might be a determinant of individual creative performance there are other psychological processes that may explain the effects found in some studies. These studies, using intrinsic motivation as the psychological process, may be explained using other psychological mediators such as regulatory focus and achievement motivation, which indicates that intrinsic motivation may not be the only motivational construct predicting creative performance. The effects of regulatory focus and achievement motivation are likely to be more salient predictors of individual creativity of adults working in an organizational setting ("at work") or in work-like environments (i.e. a laboratory work simulation). This is because intrinsic motivation is often overpowered by other factors in organizational environments (c.f. Locke & Latham, 1996) meaning we rarely expect intrinsic motivation to be enhanced by these settings. Achievement motivation and regulatory focus, on the other hand, have different effects, some positive and some negative based upon different environmental factors.

Research Involving Intrinsic Motivation

My review and analysis suggests that intrinsic motivation has only a small relationship with creative performance of adults when measured via supervisor evaluation, peer report, or expert ratings. Using other psychological mechanisms I reinterpret the results of a number of studies that might help explain this small relationship. I also review studies providing evidence of null or negative relationships between intrinsic motivation and creativity. Based on the limited and often contradictory support for the effect of intrinsic motivation on creative performance I develop theory that helps us to better understand why individuals exhibit creative performance at work.

Research in Support of the Intrinsic Motivation Principle

Critically evaluating the intrinsic motivation principle is important because this theory suggests intrinsic motivation is the only psychological mediator of external variables on creativity. If this theory is found untenable this would then further the notion that new theory development is required. Many more researchers use intrinsic motivation to develop predictions than report measures of intrinsic motivation. Few studies that report measures of intrinsic motivation find relationships that are significant or involved in fully mediated models as suggested by the intrinsic motivation principle. Only two studies (Dewett, 2007; Shin & Zhou, 2003) find full support for the intrinsic motivation principle but this support is questioned below based on conceptual and statistical issues below.

In the first study, Shin and Zhou (2003) explored the effects of transformational leadership and an individual's conservative values on individual creative performance in a sample of Korean R&D employees. These researchers found that intrinsic motivation fully mediates an interactive relationship of individual conservative values and transformational leadership on creative performance. These authors also found that intrinsic motivation partially mediates the relationship between transformational leadership and creative performance. The one fully mediated relationship – the intrinsic motivation principle requires full mediation – appears to provide support for the intrinsic motivation principle, but this may not be the case.

Shin and Zhou (2003) utilized the Baron and Kenny (1986) approach to test their fully mediated model. The Barron and Kenny (1986) approach misestimates the fully mediated model because it uses an incorrect term in the calculation (James, Mulaik, &

Brett, 2006; LeBreton, Wu, & Bing, 2009). The incorrect term is the path between the mediator and the criterion. The way this path is estimated in the Baron and Kenny method inflates this term and makes it easier to find a significant path when it may not actually be significant (the severity of the problem, however, varies based upon the data and is impossible to estimate indirectly). Because there is an incorrect calculation inflating the path between the mediator and the criterion in the fully mediated model it is impossible to know if these data support full mediation (James, et al., 2006; LeBreton, et al., 2009).

Dewett (2007) also found intrinsic motivation fully mediated the effect of perceived supervisor encouragement on supervisor rated creativity but not on an objective measure of creative performance. The statistical issue regarding mediation noted above is also true for the analysis of the data reported in this study as well. Additionally, Dewett argued that the effect of individual difference variables (i.e. openness to experience and self-efficacy) on creative performance were also fully mediated by intrinsic motivation and cited Amabile (1996) for this theory; however, the componential model (Amabile, 1983a, 1983b, 1996) does not suggest this is the form of these relationships, as previously noted. With these individual difference variables in the model, it is difficult to cleanly interpret the results. Furthermore, intrinsic motivation did not mediate the effect of the contextual or individual difference variables on an objective measure of creative performance. Regardless of the substantial conceptual and statistical problems, these two studies provide the most support for the intrinsic motivation principle.

Table 1 provides a list of the studies reporting correlations between intrinsic motivation and creative performance that used supervisor, peer, or expert rated supervisor performance. Most of these studies did not test fully mediated models. The mean-weighted correlation coefficient calculated from these data for the relationship between intrinsic motivation and creative performance (*Mr* = .16) is small (Cohen, 1988). If the data from Shalley, Gilson, and Blum (2009) are included (these authors utilized a self-report measure of creative performance) the mean-weighted correlation coefficient (*Mr* = .21) rises but is still considered small (Cohen, 1988). Additionally, if data from studies utilizing trait based measures of intrinsic motivation and the data from Shalley and her colleagues (2009) are removed from the analysis, the mean-weighted correlation coefficient is still small (*Mr* = .17).

Another way to divide the studies listed in Table 1 is between laboratory and field research. This suggests the effect of intrinsic motivation on creative performance is somewhat larger in the field (*Mr* = .24, *k* = 11) than in the laboratory (*Mr* = .13, *k* = 8), though the effect in the field is somewhat smaller if data from Shalley and her colleagues is excluded (*Mr* = .19). On average, intrinsic motivation explains around 3% of the variance in creative performance. These small relationships indicate the consideration of other variables may be necessary to explain creativity at work.

Table 1. Relationships between measures of intrinsic motivation and creative performance

Study	Intrinsic Motivation	N_i
Amabile, Hennessey, and Grossman (1986) [b]	0.2	60
Choi (2004)[a]	0.11	331
Dewett (2007) – supervisor rated performance	0.19	165
Dewett (2007) – combined objective measure	0.17	165
Eisenberger and Aselage (2009) Study 2	0.17	180
Eisenberger and Aselage (2009) Study 3[b]	0.09	405
Grant and Berry (in press) Study 1	0.32	90
Grant and Berry (in press) Study 2	0.21	111
Jaussi and Dionne (2003) [b]	0.15	322
Perry-Smith (2006)	0.2	97
Ruscio, Whitney, and Amabile (1998) - structure task[a b]	0.19	141
Ruscio, Whitney, and Amabile (1998) - collage task[a b]	0.03	150
Ruscio, Whitney, and Amabile (1998) - poem task[a b]	0.34	101
Shalley, Gilson, and Blum (2009)	0.3	1430
Shalley and Perry-Smith (2001) [b]	0.16	78
Shin and Zhou (2003)	0.19	290
Tierney, Farmer, and Graen (1999) - supervisor rated performance	0.28	159
Tierney, Farmer, and Graen (1999) - invention disclosure forms	0.13	159
Tierney, Farmer, and Graen (1999) - research reports	0.1	159
	Mr	*N*
	0.21	4593
	Mr[c]	*N*
	0.22	3870
	Mr[d]	*N*
	0.16	3163
	Mr[e]	*N*
	0.17	2440
	Mr[f]	*N*
	0.13	1588
	Mr[g]	*N*
	0.24	3005
	Mr[h]	*N*

Table 1. Continued

	0.19	1575

[a] Trait, [b] Laboratory, [c] w/o Trait, [d] w/o Shalley, et al., 2009, [e] w/o Shalley, et al., 2009 or Trait, [f] Laboratory Only, [g] Field Only, and [h] Field w/o Shalley, et al., 2009

Research Failing to Support the Effect of Intrinsic Motivation

Some research in creativity provides null or negative findings linking creative performance and intrinsic motivation. This is interesting because null findings are not often reported, making it impossible to directly estimate how many studies have actually tried to link intrinsic motivation and creativity. Additionally, Amabile published work that does not support the effect of intrinsic motivation on creativity that I cover only briefly since participants worked on art projects. And, while not a direct test of the intrinsic motivation principle, Zhou and George (2001) positively linked job dissatisfaction to creativity, which is a negative indicator of intrinsic motivation (Amabile, 1996). Finally, Eisenberger and his colleagues (Eisenberger & Aselage, 2009; Eisenberger & Rhoades, 2001) analyze data from a number of samples indicating a reward may actually increase intrinsic motivation, and this then has a positive effect on creativity. Rewards are typically regarded as extrinsic motivators that should reduce intrinsic motivation (Deci & Ryan, 1985). Reinterpretation of the results of these studies is speculative but can provide clues to aid in new theory development.

The first of the studies providing contradictory evidence for the relationship between intrinsic motivation and creative performance is by Shalley and Perry-Smith (2001). This study explored the effects of expected evaluation on creative performance via intrinsic motivation. The tests for intrinsic motivation as a mediator of the effects of

expected evaluation on creative performance failed to reach significance along with a test of intrinsic motivation moderating the effect of expected evaluation on creative performance. Specifically, these authors state, "our results indicated that intrinsic motivation does not mediate the relationship between expected evaluation and creativity [and] intrinsic motivation was not found to be a moderator" (2001: 17). Their manipulation did have an effect on creative performance but it did not work through or even with intrinsic motivation as suggested by the intrinsic motivation principle (Amabile, 1996).

Alge, Ballinger, Tangirala, and Oakley (2006) also report null findings regarding the effect of intrinsic motivation as a mediator of environmental factors on creative performance. Alge and his colleagues theorized that information privacy would be related to creative performance through intrinsic motivation. These authors did not measure intrinsic motivation directly but used constructs suggested to be components of intrinsic motivation (i.e. self-determination and competence) (Deci & Ryan, 1985). While the intrinsic motivation components were related to creative performance, the exogenous variable, which consisted of several components measuring information privacy, was not related to creativity. Additionally, information privacy was not related to competence. These authors suggest information privacy is a distal predictor of creative performance based on the results of a path analysis, yet, information privacy was not related to competence: a major component of intrinsic motivation (c.f. Deci & Ryan, 1985; White, 1959). The lack of an overall effect and the null relationship via competence suggests the distal effect described may be rather tenuous. Additionally, these authors used the Barron

and Kenny (1986) method to test their fully mediated model, which is problematic, as described earlier.

While not directly relevant for this review since the subjects worked on art projects (a collage making exercise), Amabile has also reported null results for intrinsic motivation as a predictor of creative performance in two different studies with multiple samples. Amabile, Hennessey, and Grossman (1986) report on three experiments exploring the effects of rewards on creative performance. Participants in the first two experiments were children, whereas participants in a third experiment were adult women. Regardless of task, in none of the three experiments were measures of intrinsic motivation related to creative performance. Additionally, Ruscio and his coauthors (1998) found trait intrinsic motivation was a significant predictor of creativity in only two of three experiments where participants were asked to work on art-like projects. Because of small samples sizes, these null effects in four of six studies may indicate a lack of power, but there are studies reporting significant negative effects as well.

Choi (2004) tested a number of variables related to creative performance. In a path analysis, extrinsic motivation was positively and significantly related to creativity intention and intrinsic motivation was negatively and significantly related to creativity intention. Additionally, intrinsic motivation and extrinsic motivation were not significantly related to one another (r = .05) suggesting a tipping effect in the analysis was unlikely (c.f. Gordon, 1968; Rozeboom, 1966). Creativity intention was a behavioral mediator proposed by Choi (2004) in the creativity process that significantly related to creative performance. Because intrinsic motivation was negatively related to creativity

intention, this suggests intrinsic motivation had a negative effect on creativity in this sample.

In another study, Zhou and George (2001) suggest individual continuance commitment, job dissatisfaction, and various support factors in the workplace combine to predict individual creative performance. In this model, job dissatisfaction is a positive predictor of creative performance when an individual feels committed to their organization via continuance commitment and is also working in a supportive environment. Job dissatisfaction under these conditions essentially acts as a trigger prompting individuals to look for ways to improve their situation. Since they do not feel they can leave, individuals look for ways to correct what is making them dissatisfied. The results reported by Zhou and George (2001) do find support for intrinsic motivation as an explanation of creative performance in that individuals who were satisfied and did not feel stuck to their job were creative when they also had useful coworker feedback, helpful and supportive coworkers, or organizational support. Yet, when individuals were dissatisfied and felt stuck to their job as opposed to satisfied and not stuck, they were also highly creative when they had useful feedback, coworkers who were helpful and supportive, or organizational support. That dissatisfaction can be intrinsically motivating is not supported by any theory of intrinsic motivation.

The work by Eisenberger and his colleagues reviewed here (Eisenberger & Aselage, 2009; Eisenberger & Rhoades, 2001) is somewhat difficult to place as either supporting or not supporting of the intrinsic motivation principle. Eisenberger's research and theory on the way rewards affect intrinsic motivation and creative performance has met great resistance from those working in the domain of intrinsic motivation (c.f. Deci,

Koestner, & Ryan, 1999; Eisenberger & Cameron, 1996, 1998; Ryan & Deci, 2000a, 2000b). The details of this debate are beyond the scope of this work. In short, Eisenberger and his colleagues (Eisenberger & Aselage, 2009; Eisenberger & Rhoades, 2001) have presented data from several samples using differing research methodologies and different measures all suggesting rewards either have a null effect or a positive effect on intrinsic motivation and creative performance rather than a negative effect. At first glance it may appear that these studies support the effect of intrinsic motivation on creativity because rewards sometimes positively affect creative performance through their effect on intrinsic motivation.

The work of Eisenberger and his coauthors requires careful consideration because, on one hand, it appears in this work that intrinsic motivation is an important mediating factor between various manipulations and environmental factors and creative performance. Yet, while using a number of measures and methods, most of the manipulations and external factors explored should be negatively related to intrinsic motivation but are not. These findings tend to oppose the general theoretical underpinnings of intrinsic motivation itself. Thus, these studies and the work of others just reviewed directly testing the intrinsic motivation principle find either null results (c.f. Alge, et al., 2006; Amabile, et al., 1986; Ruscio, et al., 1998; Shalley & Perry-Smith, 2001) or negative results (Choi, 2004; Zhou & George, 2001) linking intrinsic motivation to creativity of adults. These findings help to formulate a basic research question regarding why this might be the case for so many studies. Thus, these and other studies can be reviewed in more detail to aid new theory development.

Reinterpretation of Studies Utilizing Intrinsic Motivation as the Psychological Mechanism

A number of researchers have explored the effects of environmental factors on individual creative performance using theory relevant to intrinsic motivation as the psychological mechanism to build predictions. In many cases, these predictions do support intrinsic motivation as a psychological mechanism; however, measures of intrinsic motivation typically do not act as mediators as expected (c.f. Alge, et al, 2006; Amabile, et al., 1986; Choi, 2004; Ruscio, et al., 1998; Shalley & Perry-Smith, 2001). Explaining what could be going on that would provide similar predictions as hypotheses regarding intrinsic motivation is a way to build new theory (Lave & March, 1975). I detail several studies to uncover other potential explanations.

Authors of two studies (Shalley,1995; Shalley & Perry-Smith, 2001) specifically tested the effects of expected evaluation on individual creativity. These studies are important in terms of intrinsic motivation because a theoretical debate within the research on intrinsic motivation involved the effects of expected evaluation or expected feedback on intrinsic motivation. Under attribution hypotheses (c.f. Kruglanski, 1978), it is proposed that when individuals expect an evaluation they attribute their reason for undertaking the task to the hope of attaining a positive evaluation from the evaluator. Theory by Deci and Ryan (1985) similarly suggests expected evaluation would hurt individual self-determination. Additionally, Deci and Ryan (1985) propose an individual's belief that they can perform a task (i.e. that they feel competent) is a component of intrinsic motivation. Individuals who believe they can perform the task will be more intrinsically motivated than those that do not. If an individual expects to receive

an evaluation suggesting they are not competent then they should also have lower intrinsic motivation. In short, expecting an evaluation should hurt intrinsic motivation that then has a negative effect on creative performance.

Shalley (1995) tested the effect of expected evaluation in two experiments along with exploring the effects of creativity goals and the presence of others. In the first experiment only the presence of others and the possibility for evaluation were manipulated. There was a main effect for the presence of others, suggesting creativity is hindered by the presence of others. Contrary to theories of intrinsic motivation (Amabile, 1996; Deci & Ryan 1985, Ryan & Deci, 2000a), there were no effects for expected evaluation on creative performance.

In the second experiment, Shalley (1995) manipulated three variables: no goal versus do-your-best creativity goal, presence of others versus working alone, and expected evaluation versus no evaluation. There was a significant main effect for the do-your-best creativity goal. There was also a significant three-way interaction between the three manipulations. Shalley's own words describe this interaction best, "Comparisons among means indicated that the only significant differences were that individuals with a creativity goal who worked alone under the expectation of evaluation had significantly higher creativity than those with no creativity goal who worked alone and expected evaluation and those with no creativity goal who worked in the presence of coactors and did not expect evaluation" (Shalley, 1995: 496). These findings for expected evaluation run contrary to some work in the domain of intrinsic motivation as some studies (c.f. Amabile, 1979; Harackiewicz, Manderlink, & Sansone, 1984) reported expected evaluation lowers intrinsic motivation.

What we do not know from this research (Shalley, 1995) is exactly how individuals perceived the evaluation they expected to receive. More nuanced hypotheses by intrinsic motivation theorists suggest evaluation and feedback can be perceived by individuals as either controlling or informative (Deci & Ryan, 1985). Thus, actual perception of the type of evaluation is important. If the evaluation is expected to be controlling, then this should reduce intrinsic motivation (Deci & Ryan, 1985) whereas if the evaluation is expected to be informative then, the opposite is true. Shalley and Perry-Smith (2001) used these more detailed propositions to guide their study of expected evaluation on creative performance.

Shalley and Perry-Smith (2001) tested the effects of the expectation of a controlling or informational evaluation along with modeling on individual creative performance. There were two manipulations in this study. The first was whether or not individuals would expect to receive informational or controlling evaluations of their creative performance and the second was the effect of having a creative model, a non-creative model, or no model of a solution to the task. The hypotheses surrounding modeling are based on Bandura's (1986) social cognitive theory suggesting individuals can learn vicariously and are not discussed further.

The results for expected evaluation from Shalley and Perry-Smith (2001) would appear to support the intrinsic motivation hypothesis. The expectation of a controlling evaluation hindered creative performance when compared to the expectation of an informational evaluation. As already discussed, tests involving a measure of intrinsic motivation as a mediator of the effect of expected evaluation failed to reach significance.

The study by Shalley and Perry-Smith (2001), however, can be interpreted from another perspective than that provided by the intrinsic motivation principle. This interpretation is purely speculative but may be used to provide a different theoretical lens on which new theory can be based. As such, inspection of the manipulations of Shalley and Perry-Smith may indicate regulatory focus (Higgins, 1997) could be an alternative explanation.

Theory developed by Higgins (1997) suggests individuals perceive and respond to their environment differently based upon a concept called regulatory focus. There are two forms of regulatory focus. The first is titled promotion focus and the second is titled prevention focus. When regulating behavior to a promotion focus, individuals tend to think about the way they like to do things, they think about positive accomplishment, and look toward gaining something positive. When prevention focused, individuals tend to think about duties, they think about things they should protect and secure, and they consider the potential of losing something or making sure they do not lose it. It is important to note that prevention and promotion orientations are not the same as approach and avoidance orientations. In fact, these foci are orthogonal to one another and can be fully crossed (Higgins, 1997). As an example, someone can work diligently (i.e. approach) to keep from losing something (i.e. prevention).

Regulatory focus has been linked to creative performance and affect (Baas, et al., 2008; Idson, Liberman, & Higgins, 2000). Several studies (i.e Friedman & Förster, 2000, 2001, 2005; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008) and a meta-analysis (i.e. Baas, et al., 2008) demonstrate a link between regulatory focus and various forms of creative performance. The details of this theoretical perspective are given later but, in

short, current theory and research suggest promotion focus is linked with creative performance in a positive way and prevention focus is linked with creative performance in a negative way.

The effect of promotion and prevention focus on creative performance is important because the actual wording of the manipulations of Shalley and Perry-Smith (2001) contain promotion and prevention cues. Specifically, these authors manipulate expectation of controlling evaluations by telling participants they will receive an evaluation regarding how they should have performed. Manipulations using phrasing such as "should" are likely to prime prevention regulation by making individuals think about security and what they ought to do (Higgins, 1997). In the informational evaluation condition Shalley and Perry-Smith told individuals they would receive an evaluation detailing what it is that experts liked regarding their work (Higgins, 1997). Thus, individuals in the informational evaluation condition were promotion primed since they were cued to think about gaining a positive evaluation of their work that would also match their ideals. These manipulations were clearly effective in conveying a sense that individuals would receive controlling or informational evaluations but the way these researchers manipulated these variables and the lack of significant effects with intrinsic motivation suggests the psychological mechanism may not have been intrinsic motivation but could possibly be regulatory focus. This is not the only study that can be interpreted in terms of regulatory focus.

Zhou (2003) also utilizes intrinsic motivation as the psychological mechanism mediating the effect of external factors on creative performance of individuals at work but does not test the effect empirically. Following intrinsic motivation theory, Zhou

argues that supervisor close monitoring (James, et al., 1981; Tetrick, 1989) will make individuals feel controlled. Thus, like controlling expected evaluation, individuals should feel like they are performing their job for extrinsic reasons (i.e. satisfying their boss). On the other hand, like the controlling expected evaluation explored by Shalley and Perry-Smith (2001), supervisor close monitoring may engender a prevention focus where individuals are concerned about what they ought to do or should do versus what they like to do or ideally want to do. Closely monitored individuals could feel more security oriented and try to protect against losses (i.e. their job) as well that then might lead to lower creative performance.

In examining Zhou's (2003) complex interactions we see that the individuals with the lowest creativity, as rated by their supervisor, are also those that report experiencing close supervision by their supervisors. It is only when individuals have some additional support, either via the presence of creative coworkers or a combination of creative coworkers and their own creative personality do we see individuals overcome the prevention focus that may have been put in place by supervisor close monitoring.

Using a different theoretical perspective that does not utilize intrinsic motivation, George and Zhou (2001) also found significant negative main effects and interactions for close monitoring in a field setting. Unlike Shalley and Perry-Smith (2001), where we can directly examine the wording used, we cannot know for certain exactly what it is that supervisors are doing to cause employees to report that their supervisors are monitoring them closely. Because supervisor close monitoring might engender a prevention focus, this offers an alternative explanation to the effects proposed for intrinsic motivation.

Finally, the data provided by Zhou and George (2001), discussed earlier, can also

be interpreted in terms of prevention and promotion focus. In this study, Zhou and George found individuals who felt stuck in their jobs who were also dissatisfied were rated by their supervisors as being very creative. These individuals could have been promotion focused because they may have been considering how they would ideally like the organization to be and also what they could possibly gain by working to change their situation. These individuals were already dissatisfied and felt stuck indicating they may have nothing to lose and everything to gain by voicing their concerns and working to change the situation (Farrell, 1983; Zhou & George, 2001). While negative mood could also be viewed as an explanation of the effect of dissatisfaction on creative performance (c.f. George & Zhou, 2007), as discussed shortly, moods are associated with regulatory focus as well that could be the ultimate determinate of creative performance here (c.f. Baas, et al., 2008).

A reinterpretation of these results given above is speculative. There are other potential perspectives that could explain these results equally well. My interpretation suggests regulatory focus could potentially be a predictor of creative performance and a mediator of external factors influencing creative performance that should be explored in more detail.

"Extrinsics in Service of Intrinsics" or Achievement Motivation

Prevention and promotion focus provide a possible alternative explanation for some results that offer support for the effect of intrinsic motivation on creativity. Additionally, some research offers support for the idea that individuals have a chronic prevention or promotion focus that can be measured as a trait. While it might be

interesting to explore trait regulatory focus, there is reason to believe another variable, achievement motivation, is a significant predictor of creative performance.

While I describe achievement motivation in more detail later, in short, individuals who are high in achievement motivation approach and enjoy difficult or challenging situations, whereas those who lack a strong drive for achievement try to avoid these situations because of a preference for tasks where successful completion is more readily apparent and easily attained (Atkinson, 1957, 1978; James, 1998; James & Mazerolle, 2002). By reanalyzing some of Amabile's empirical research, I suggest it is possible that achievement motivation provides a more parsimonious perspective than the one developed. As I describe in more detail later, understanding the effect of achievement motivation is important because it could be a cause of individuals' state regulatory focus in addition to and in combination with environmental factors.

Amabile developed the intrinsic motivation principle (1996) from much of her own work but some of the more influential empirical evidence for that theoretical perspective can be explained more parsimoniously using achievement motivation. In one study Amabile and Gryskiewicz (1987) asked successful R&D employees to think about and describe situations where they were particularly creative and other situations where they felt they were not especially creative. From this, they identified a number of variables that should have been viewed as controlling (i.e. extrinsically motivating) but were instead identified by the participants as helpful. Based on this study, Amabile (1993, 1996) suggests there are many variables and constraints external to the individual that enhance individual creative performance. The majority of these external variables were historically seen as extrinsic motivators. These variables include urgency and importance

in the work itself, some forms of rewards, evaluation, rigid status structures, competition, external goals, task structure, and so on (c.f. Amabile, 1996: 120). To overcome this theoretical hiccup, Amabile labeled these variables as extrinsics in service of intrinsics.

Amabile's development of extrinsics in service of intrinsics was based considerably on a sample of R&D employees (Amabile & Gryskiewicz, 1987). This sample of successful R&D employees, however, is not likely representative of the more general working population. Instead, R&D employees are typically more intelligent, driven, and educated than employees from the average working population. Some research suggests intelligence and scholastic achievement are positively and significantly related to achievement motivation (James, 1998). Therefore, we might then expect this sample of R&D employees to be rather achievement motivated. Thus, external variables, given as extrinsics in service of intrinsics (Amabile, 1993, 1996), and the effect they have on creative performance could have been driven by the way high achievement motivated individuals perceived and used them as cues to the importance of various projects as well as cues to their own competence (c.f. Epstein & Harackiewicz, 1992; Harackiewicz, Abrahams, & Wageman, 1987; Harackiewicz, Sansone, & Manderlink, 1985; Tauer & Harackiewicz, 1999).

While not all R&D employees will be high achievement motivators, it is difficult to pursue the extended and challenging education necessary in the sciences to become an R&D employee or to seek out a career in a field for employment where many daily tasks and functions fail to produce positive results (c.f. James, 1998) without some moderate to high level of achievement motivation. The long work hours, a strict status structure that one can strive to move up, external competition, rewards, and other external factors

would all have been viewed as positive by achievement motivated individuals (James, 1998) and could have likely helped drive their performance and view that these variables aided their creativity. It is likely that this sample lacks individuals low on achievement motivation. The nature of low achievement motivation is given more attention shortly, but the point is that those who lack moderate to high levels of achievement motivation may not view extrinsic constraints in the same way. Those low in achievement motivation are likely to see these constraints as controlling or distracting. Thus, without diversity in personality, we cannot know that these extrinsic constraints are viewed as assisting intrinsic motivation for all individuals.

The potential sample specific effects of Amabile's data (i.e. Amabile & Gryskiewicz, 1987) would indicate that achievement motivation might be a significant predictor of creativity. Two studies, however, report disconfirming evidence related to achievement motivation and creative performance. Both Zhou (1998) and Shalley and Perry-Smith (2001) report null findings with regard to achievement motivation as a predictor of creative performance. Unfortunately, achievement motivation as a self-report measure is highly susceptible to social desirability (c.f. Ellingson, Sackett, & Hough, 1999) as it seems highly unlikely that many individuals would rate themselves poorly on achievement-striving behaviors in an achievement-driven society like the U.S. or an achievement-oriented university setting and both samples were from universities in the U.S. Additionally, self-report measures can suffer from a host of other errors such as halo (c.f. Cooper, 1981), self-defeating behaviors (c.f. Baumesiter & Scher, 1988), and frame of reference (c.f. Schmit & Ryan, 1993). Neither study (i.e. Shalley & Perry-Smith, 2001; Zhou, 1998) reports means, standard deviations, or correlations with other variables

making it impossible to ascertain with any certainty that there are other causes, such as social desirability, for these null findings. But, a new measurement tool, conditional reasoning, exhibits much higher criterion-related validity (James, et al., 2005) than self-report measures. There is a conditional reasoning measure of achievement motivation (c.f. James, 1998) and achievement motivation may, as yet, be an important and undiscovered predictor of creative performance.

In summary, very few studies exploring the creativity of individuals at work or using adults in carefully designed laboratory studies emulating work environments support the intrinsic motivation principle (Amabile, 1996). Some studies have even reported null or negative findings regarding the relationship between intrinsic motivation and creativity (c.f. Alge, et al., 2006; Amabile, et al., 1986; Choi, 2004; Dewett, 2007; Ruscio, et al., 1998; Shalley & Perry-Smith 2001; Zhou & George, 2001). And a number of studies using intrinsic motivation as the psychological mechanisms could be reinterpreted using regulatory focus (i.e. Shalley, 1995; Shalley & Perry-Smith, 2001; Zhou, 2003; Zhou & George, 2001) or suggest other factors that may potentially drive creativity such as achievement motivation (Amabile & Gryskiewicz, 1987). Intrinsic motivation is likely a predictor of creative performance as originally stated by Amabile (1983a, 1983b) but the mean-weighted correlations reported here suggests the relationship is small. It seems unlikely that intrinsic motivation is the single mediator of the effect of all environmental factors on creative performance (Amabile, 1996). Motivational variables other than intrinsic motivation such as regulatory focus and achievement motivation can be linked to creative performance. Some forms of these relationships have already been tested. Some relationships have not been fully explored,

some should be replicated with other measures of creative performance, and some require the use of new measurement techniques.

Theory and Hypotheses

The proceeding literature review described a number of important anomalies in the research relevant to intrinsic motivation as it relates to creativity. When reinterpreted, the anomalies suggested areas for future research such as regulatory focus and achievement motivation that could be important in predicting creative performance for individuals at work. Using and reinterpreting anomalies from empirical research, though speculative, is a valid way to uncover different theoretical perspectives (Lave & March, 1975) but these perspectives must then be developed further. Thus, I integrated regulatory focus and achievement motivation to provide a theory that explains the creative performance of adults at work or in work-like environments.

My theory considers how achievement motivation relates to creativity and how situational factors and achievement motivation affect an individual's state regulatory focus that then affects their creative performance. In short, situational factors affect an individual's state regulatory focus and this affects creativity. Additionally, situations are differentially interpreted by achievement motivated individuals compared to those who are not achievement motivated. This differential framing then has an effect on creative performance and some of that effect works through state regulatory focus. I first discuss regulatory focus and how situations can affect regulatory focus. I then describe how achievement motivation relates to how individuals differentially frame situations and then integrate achievement motivation, situational effects, and regulatory focus. The situational variable studied is expected evaluation because of its history in past creativity

research (Shalley, 1995; Shalley & Perry-Smith, 2001) and its relevance as a controllable supervisor behavior (Mumford, et al., 2002; Shalley & Gilson, 2004). Regulatory focus and achievement motivation both working alone and together can help better explain the creative performance of adults.

Regulatory Focus

Regulatory focus theory suggests there are two different types of regulatory focus that "concentrates on self-regulation toward desired end-states" (Higgins, 1997: 1281). These different foci cause individuals to differentially attend to information in the environment, to make different selections and choices, experience different affective states, set different goals, and to exhibit differential behavior (Higgins, 1997). These foci are caused by individuals' qualitatively different desired end-states. Regulatory focus describes what kinds of behaviors individuals consider appropriate and predicts many cognitive and affective responses to situations as individuals attempt to achieve these end-states (see Higgins, 1997, Figure 1). Individuals vary in their trait level of prevention or promotion focus (c.f. Idson, et al., 2000) and regulatory focus can vary based on the situation (c.f. Idson, et al, 2000). I focus exclusively on how situations and achievement motivation alter one's state regulatory focus, not trait regulatory focus, to predict creativity.

According to Higgins (1997), individuals with a promotion focus tend to concentrate more on end-states related to their hopes, aspirations, and ideals. This means that promotion focused individuals should set goals that press their capabilities and tend to direct their attention to what they can gain. On the other hand, individuals with a prevention focus concern themselves more with end-states related to what they ought to

do or should do and focus on duties and obligations. Prevention focused individuals should then set minimal goals to ensure against loss, and direct their attention to what might be lost if they are not successful. Research testing Higgins theory suggests individuals who successfully gain something are happier when they have a promotion focus than when they have a prevention focus (Idson, et al., 2000). Additionally, individuals working on a learning task that were required to test multiple rules did better when they had a promotion focus than when they had a prevention focus (Grimm, Markman, Maddox, & Baldwin, 2008). These different foci are differentially related to creative performance as well.

Friedman and Förster (2000, 2001, 2005) were the first to develop and test theory linking regulatory focus to creativity and explored the effects of prevention and promotion focus on some aspects of creative performance. Their theory suggests that a promotion focus, because of the consideration of hopes, aspirations, and ideals of how people would like things to be, helps individuals to stretch beyond what was done in the past and to consider novel approaches that could help them attain those hopes and ideals. Promotion focused individuals see less risk and engage in more exploratory thoughts and behaviors. Promotion focused individuals engage in these kinds of thoughts and behaviors because they see these actions as ways to achieve their ideal states. Thus, engaging a task in a novel way is seen as appropriate because it may help them to achieve their ultimate goal or goals. Additionally, promotion focused individuals set maximal goals, where they strive for positive gain, and may continue to work diligently to see what they can gain whereas prevention focused individuals are more likely to quit early once a satisfactory level of performance has been attained (Crowe & Higgins, 1997).

Prevention focus, on the other hand, causes individuals to consider what it is they might lose if they do something differently from the way it was done in the past. These individuals focus more on making sure they handle their obligations and duties in a way that will be satisfactory. Prevention focused individuals do not seek exemplary performance but simply adequate performance instead. Thus, according to Friedman and Förster (2000, 2001, 2005), new approaches and methods may be judged as risky. Because prevention focused individuals have minimal goals exploration is not seen as necessary or beneficial. Exploratory behaviors and novel approaches are seen by prevention focused individuals as inappropriate. Prevention focused individuals also tend to work diligently but in a precautionary manner and take less risk, but also set minimal goals (i.e. goals for maintaining a situation rather than goals that stretch their capabilities or push boundaries). In short, prevention focused individuals do not consider or attempt to develop new processes or procedures because the status quo is working and is maintaining the preferred state whereas something new may disrupt the current state or even fail completely.

Risk and exploration avoidance for prevention focused individuals verses risk and exploration approach for promotion focused individuals indicates promotion focused individuals should be more creative than prevention focused individuals (Friedman & Förster, 2000, 2001, 2005). Creativity is inherently risky because something that is creative is different from the currently accepted standard. Additionally, the different types of goals, minimal versus maximal, and the learning and new approaches required to achieve maximal goals (Grimm, et al., 2008) indicates promotion individuals will be more creative in the pursuit of their goals than prevention focused individuals. When

individuals are oriented toward learning, which is associated with a promotion focus, they are found to be more creative (c.f. Shalley & Schoen, 2008, 2009).

Creativity Studies Using Regulatory Focus

These hypotheses have been tested in other studies but were tested with an idea generation type of task and not a complex, open-ended task that has been suggested as most appropriate for the assessment of creative performance (Amabile, 1983a, 1983b, 1996) or via self-reported creativity (Neubert, et al., 2008). Furthermore, the manipulations used in some of these studies (i.e. an experimental manipulation consisting of asking participants to complete a maze as a mouse where some had the goal of avoiding an owl whereas others had the goal of attaining a piece of cheese) are not typical of what is found in most workplace environments. However, unlike many other empirical works using idea generation tasks, experts also rated the creativity of the ideas generated in some studies (c.f. Friedman & Förster, 2000, 2001, 2005) and those who were promotion focused were more creative than those who were prevention focused based upon these expert ratings. This suggests the findings from these studies may be more likely to replicate in research using a more open-ended task, and it is notable that the more standard measure of creativity for an idea generation task (i.e. number of ideas generated) failed to obtain an effect. It would be interesting to replicate these findings using a task that better simulates a real world environment.

In a field study, Neubert and his colleagues (2008) found that a measure of work-centered promotion focus (a more state-like than trait-like measure) was positively related to self-reported creativity but these authors did not draw a link between prevention focus and creativity. In this study the prevention and promotion foci were

affected by leadership styles suggesting manager behaviors may be important in triggering either a promotion or a prevention focus (Neubert, et al., 2008). The link between regulatory focus and creative performance also has support through another research stream as well.

A recent meta-analysis that tested the link between mood and creative performance suggests many of the conflicting results reported in this area are best explained via regulatory focus theory. That positive (c.f. Amabile, Barsade, Mueller, & Staw, 2005) and negative moods (c.f. George & Zhou, 2007) have both been positively linked to creative performance has been confusing. Baas and his colleagues (2008) suggest there are three extant theories linking mood to creativity. The first, the hedonic tone hypothesis, suggests only positive moods are related to creative performance. The second, the activation hypothesis, posits that only strong moods – positive or negative – promote creativity. The third theoretical perspective, the regulatory focus hypothesis, suggests some positive and some negative moods (i.e. happy, upbeat, sad, dejected) signal a promotion focus, whereas other positive and negative moods (i.e. calm, relaxed, tense, worried) signal a prevention focus. The way moods are divided in the regulatory focus hypothesis suggests some specific moods are concurrent with and a result of one type of regulatory focus or the other.

The results of this meta-analysis support the regulatory focus hypothesis (i.e. promotion focused moods are positively related to creativity and prevention focused moods are negatively related to creativity) to a greater extent than the other two hypotheses. Thus, some moods that are indicative of a promotion focus, either positive or negative in tone, are positively related to creative performance, whereas other positive

and negative moods are indicative of a prevention focus and are negatively related to creativity. The results of this meta-analysis as reported by the authors thus provides evidence suggesting promotion focus is positively related to creativity and prevention focus is negatively related to creativity.

While already explored to some extent, regulatory focus could use more attention. Much of the research reviewed by Baas and his colleagues (2008) involved insight problems or idea generation tasks and not the kind of creative performance considered most often by management researchers. This meta-analysis did explore how mood states, as affected by various experimental manipulations, affected creativity. However, the link drawn by these authors between types of moods and creative performance is correlational and not causal. This is because both mood and creative performance are results of the experimental manipulations. This means the authors of this meta-analysis explored two outcomes related to regulatory focus and inferred that the existing relationship must be caused by regulatory focus, which may not be the case. Because of the reliance on correlational data reported across multiple studies, this meta-analysis can only suggest promotion focus is positively related and prevention focus negatively related to creative performance. Furthermore, the research of Friedman and Förster (2000, 2001, 2005) used manipulations that may not generalize to the workplace and an idea generation task and not a complex, open-ended problem-solving task. Additionally, Neubert and his colleagues (2008) utilized a self-report measure of creative performance. This indicates there are potential shortcomings to each of these works.

Based on the literature review and the works suggesting regulatory focus is related to creativity (Baas, et al., 2008; Friedman & Förster, 2000, 2001, 2005; Neubert,

et al., 2008) and the theory I have presented here, state promotion focus should be positively related to creativity and state prevention focus negatively related to creativity.

H1: Promotion focus is positively related to creativity and prevention focus is negatively related to creativity.

It should then be interesting to see if environmental factors, such as expected evaluation, do provide regulatory focus cues that then affect employee creative performance as I earlier suggested.

Expected Evaluation

Expected evaluation is an environmental variable that may affect creative performance (c.f. Shalley, 1995; Shalley & Perry-Smith, 2001). Type of expected evaluation is important for a number of reasons. It represents an immediate behavior in which mangers or even coworkers may engage (Mumford, et al., 2002; Shalley & Gilson, 2004) that is expected to have a significant direct impact on individual performance but that may also set an overall tone in the work environment that can continue to alter individual perceptions and performance (Dansereau, et al., 1975; House, 1996). Additionally, expected evaluation has been used to test the intrinsic motivation principle (Shalley & Perry-Smith, 2001). As I described earlier, effects of expected evaluation can also be described in terms of regulatory focus. By using an environmental factor that has been explored elsewhere in relation to intrinsic motivation and creative performance, I can critically test the proposed effects of regulatory focus. Furthermore, some individuals compared to others may differentially interpret types of expected evaluation and I use achievement motivation to explain this effect as originally theorized by House (1996)

after describing how expected evaluation is related to creativity and the psychological mediator of regulatory focus.

As discussed earlier, Shalley and Perry-Smith (2001) used two types of expected evaluation in an effort to manipulate task intrinsic motivation and creative performance. Some participants in their study expected to receive an evaluation that was controlling in nature. Other participants expected to receive an evaluation of an informational nature. Shalley and Perry-Smith found that individuals expecting an evaluation of an informational manner exhibited performance rated as more creative compared to those expecting a controlling evaluation.

As already noted, Shalley and Perry-Smith (2001) did not find an effect for their measure of intrinsic motivation as a mediator or moderator of the effect of expected evaluation (informational versus controlling) on creativity. The manipulations used contained wording indicative of regulatory focus cues and provided an alternative explanation of the mediating psychological variable at work. Specifically, their controlling expected evaluation condition says judges will rate the participants creativity based on how the individuals "should" have performed and that their performance would be "compared to what we wanted," whereas the informational evaluation condition suggests judges will tell participants what they "liked" and provides information to the participants indicating they will gain information about problem solving strategies that is "highly valued and will help [them] in the real world" (Shalley & Perry-Smith, 2001: 9-10). Regulatory focus theory of Higgins (1997) provides a different perspective on these manipulations.

According to regulatory focus theory (Higgins, 1997) words such as "should" and expectations placed on individuals that cause them to consider what they ought to be doing (i.e. "compared to what we wanted") will prime a prevention focus. This prevention focus, discussed earlier, will be negatively related to creativity. Even if the manipulation had avoided the use of the word "should" the expectation of a controlling evaluation would likely still engender a prevention focus. This is because someone expecting a controlling evaluation is likely to believe they will be informed of the things they have done incorrectly. Thus, their work will be guided by a desire to not make mistakes and avoid looking foolishly. As stated by Higgins, when individuals are primed to avoid mistakes they are more likely to have "a concern with protection, safety, and responsibility" (1997: 1282).

A promotion focus, on the other hand, is engendered when individuals think about what it is they would ideally like to do and the potential for gaining something positive (i.e. information on problem solving strategies that are likely to be helpful in the future). A promotion focus will be positively related to creativity. Even if the manipulations had avoided the word "liked" (a promotion focus word, see Higgins, 1997: 1282) the expectation of an informational evaluation would likely still engender a promotion focus. This is because individuals expecting an informational evaluation are likely to consider the positive gain that will result from an informational evaluation. This is because someone expecting an informational evaluation is likely to believe they will receive feedback about the positive aspects of their work and areas for future growth. Their work then is likely to be guided by a desire to demonstrate their full competence and their potential capability to push toward the next level of performance and training. When

individuals are primed to think about what it is they like and what they can gain, Higgins suggests they are more likely to have "a concern with advancement, growth, and accomplishment" (1997: 1282).

Manipulations of evaluation type, specifically controlling compared to informational, should affect creativity and this should work through the effect these expectations have on individual regulatory focus. Previous research suggests feedback itself can provide regulatory focus cues (Roney, Higgins, & Shah, 1995) and expected evaluation should work in a similar way to actual feedback. Thus, based upon theory linking regulatory focus to creative performance given above:

H2: The positive effect of expected informational evaluation and the negative effect of expected controlling evaluation on individual creative performance is mediated by regulatory focus.

Creative Motivation at Work: Achievement Motivation

Achievement motivation is a useful concept for explaining the behavior of individuals in work environments (c.f. James & Mazerolle, 2002). Creativity researchers have tried unsuccessfully to empirically link achievement motivation with creativity thus far (see Shalley & Perry-Smith, 2001; Zhou, 1998). Therefore, I define achievement motivation utilizing a framework different from that found in these past studies and link it to individual creative performance in the workplace.

Achievement motivation, or the tendency to approach difficult and challenging situations with interest, enjoyment, and a high level of confidence in the potential for success, is a resultant tendency generated by the conflict of two needs (Atkinson, 1957, 1978). Researchers and theorists in achievement motivation (Atkinson, 1957, 1978;

James, 1998; James & Mazerolle, 2002; Murray, 1938) suggest all individuals have two well developed needs which are activated by situations that engender performance pressure. These two needs are the need to achieve and the need to avoid failure (or harm avoidance; Murray, 1938). The need to achieve drives individuals to approach difficult and challenging situations whereas the need to avoid failure pushes individuals to avoid these same situations. Both needs are primed by difficult or challenging situations and this results in an approach-avoidance conflict (Atkinson, 1978; James & Mazerolle, 2002).

Mature individuals often resolve approach-avoidance conflicts engendered by performance pressure situations in a consistent manner. This consistency across many types of situations and time is what we often view as a trait (James & Mazerolle, 2002). We tend to view those individuals whose need to achieve dominates the need to avoid failure in a consistent way in performance situations as achievement motivated (AMs). When the need to avoid failure dominates the need to achieve in a consistent way we view these individuals as fear of failure oriented (FFs). Thus, the construct of achievement motivation describes a range of behaviors and cognitions that extends from individuals who are extremely achievement oriented to those that are extremely fear of failure oriented.

Though researchers often discuss the achievement motivation construct without reference to fear of failure, it is impossible to actually fully describe achievement motivated behaviors without fear of failure. This is because what we see as high versus "low achievement motivation" is the resultant tendency of one need dominating the other (Atkinson, 1957; 1978). In short, even when considering individuals who exhibit low

achievement motivation, or self-reported low achievement motivation, we are generally viewing the result of an approach-avoidance conflict where fear of failure dominates and the two cannot be divorced from one another (Atkinson, 1957; 1978; James & Mazerolle, 2002).

Discussions of traits and personality typically revolve around the extremes of the construct in question. Thus, when describing personality, those that exhibit a certain set of behaviors are often compared and contrasted with those that do not exhibit those behaviors or those that exhibit a different set of behaviors. As an example, Barrick and Mount in their influential meta-analysis of personality and job performance describe the trait of agreeableness in terms of "compliance versus hostile non-compliance" (1991: 4). Thus, agreeable individuals are expected to go along with what is being asked of them. Those that are not agreeable are expected to exhibit behaviors more extreme than simply not going along but are likely to portray outspoken, resistive behaviors. When considering achievement motivation we are also considering the opposing extremes for individuals whose need to achieve dominates their need to avoid failure compared to those individuals whose need to avoid failure dominates their need to achieve and the constellations of differing behaviors that result. However, that does not mean that only highly achievement motivated or extremely fear of failure oriented people exist.

The resultant tendency when fear of failure dominates need for achievement (or vice versa) does not indicate total domination. Individuals have the defense and coping mechanisms to justify either behavior. In some individuals the justifications behind achievement striving may be better developed or more frequently utilized than the justifications used to avoid such behaviors. The overall extent to which one set of needs

dominates the other is called a relative motive strength or RMS (see James, 1998: 132). In short, as one moves away from either extreme (either total FF or total AM), it indicates that they have more well developed and more frequently utilized justifications for defending the other set of behaviors (described below) associated with the opposite extreme. It is thus the degree to which the individual utilizes the justification mechanisms for AM or FF to rationalize their behaviors that describes their relative motive strength (for a list of justification mechanisms of achievement motivation see Table 1, James, 1998: 134 and for a list of justification mechanisms of fear of failure see Table 2, James, 1998: 137).

As discussed, individuals whose need to achieve dominates their need to avoid failure tend to approach rather than avoid achievement situations (Atkinson, 1957; 1978; James, 1998; James & Mazerolle, 2002) and this approach-avoidance conflict is resolved to a greater or lesser extent based upon the relative motive strength, or the strength of one motive over the other. Achievement situations then are those situations that are personally challenging, require skill and persistence, and are viewed as personally relevant (James & Mazerolle, 2002). While I have gone to great extent to describe how individuals differ in the relative strength that their need for achievement dominates their need to avoid failure (or vice versa), suggesting the achievement motivation construct lies on a continuum, I instead describe the extremes of this resultant tendency as is often done in descriptions of personality (c.f. Barrick & Mount, 1991). For ease of description, those whose need to achieve dominates their need to avoid failure are labeled as achievement motivators (AMs) and those whose need to avoid failure dominates their need to achieve are labeled as fear of failure oriented (FFs). Additionally, while I describe the cognitions

and behaviors of AMs and FFs separately, one set of cognitions and behaviors is primarily a reflection (i.e. the opposite) of the other. Thus, what is often true for one is not true for the other and vice versa.

AMs tend to approach and enjoy tasks that most individuals, including AMs themselves, would classify as somewhat difficult (Kuhl & Blankenship, 1979). AMs enjoy receiving information supporting the belief that they are competent (c.f. Harackiewicz, et al., 1985; Sansone, 1986) but they also persist or increase effort in the face of failure because they see effort as the way to achieve (c.f. Diener & Dweck, 1978; James, 1998; Kuhl & Blankenship, 1979). In short, AMs expect to be successful (c.f. Harackiewicz, et al., 1985) and take responsibility for their successes but also take responsibility for their failures (c.f. Dweck, 1975). AMs generally become more involved in tasks and enjoy challenges (c.f. Epstein & Harackiewicz, 1992; Harackewicz, et al., 1987; Tauer & Harackiewicz, 1999). AMs seek self-assessment and feedback. They enjoy and focus on the positive outcomes that result from success. AMs view effort and long work hours as indicators of future success and view incentives as achievement milestones (c.f. Harackiewicz, et al., 1985; James, 1998). Additionally, they tend to view their own skills and abilities as malleable (Dweck & Leggett, 1988). Thus, AMs frame difficult, challenging, or ambiguous tasks as opportunities to learn new skills, stretch and extend their abilities, but also to prove they have the capability to continue to grow and improve. This leads them to believe persistence over time affords them opportunities to learn and to gain the skills necessary to overcome various problems (James, 1998).

Conversely, fear of failure motivated individuals (FFs) experience anxiety in performance situations, often try to avoid difficult tasks (c.f. Kunl & Blankenship, 1972),

and may exhibit a considerable lack of effort when placed in difficult situations (James, 1998). FFs are more likely to avoid feedback and competence information (c.f. Harackiewicz, et al., 1985), avoid the uncertainty involved with tasks requiring effortful or persistent work, and evade long work hours (James, 1998). FFs are more likely to blame their performance on external constraints (Dweck, 1975), make "overly conservative decisions" (James, 1998: 135), and tend to avoid challenging situations that could potentially call attention to a lack of ability because they do not see their skills or abilities as changeable (Dweck & Leggett, 1988). In short, learning is still unlikely to make up for a lack of ability in the view of FFs. Rather, they see skills and abilities as fixed. Situations that require considerable or consistent effort are seen by FFs as an indication that they do not have the necessary capabilities (Dweck & Leggett, 1988) and this is shameful to them (James, 1998). They do not take responsibility for their successes or failures (Dweck, 1975). Additionally, they tend to view success as driven by situational factors as well.

FFs also frame behaviors associated with achievement striving in negative ways other than as a threat to their self-beliefs (James, 1998). Hard work and persistence on demanding tasks are considered to be stressful or unnecessarily overloading (James, 1998). Reengagement after failure is framed as compulsive and negative by FFs. This reframing provides a defense to give a lack of reengagement a positive connotation (James, 1998). FFs tend to frame achievement striving in terms of the risks involved. Thus, they would associate continued hard work with increased potential for health problems (i.e. heart attacks) and reframe less demanding tasks to associate them with positive qualities, such as a reduced risk for health problems (James, 1998).

Unfortunately, individuals often cannot accurately report their own reasoning processes and justification mechanisms (Haidt, 2001; James, 1998; James & Mazerolle, 2002; Nisbett & Wilson, 1977) thus making the measurement of achievement motivation quite difficult. Luckily, as described in the methods section, there is a new measure of achievement motivation (i.e. conditional reasoning, James, 1998) that makes testing the following theory possible.

Achievement Motivation and Creative Performance

Because AMs and FFs frame situations opposite from one another, their behaviors and attitudes toward the same tasks are quite different. When presented with a demanding, challenging, or ambiguous task, AMs and FFs not only frame the task differently but then also engage the task differently based upon their individual reasoning and this results in differential performance (James, 1998; James & Mazerolle, 2002).

Differential framing of the same situation could lead to creative performance for AMs and a lack of creative performance for FFs. FFs tend to make overly conservative (i.e. not risky) decisions not conducive to creative performance. On the other hand, AMs are more likely to make more risky (i.e. not conservative) decisions (Atkinson, 1957). AMs enjoy ambiguous and novel tasks and expect to do well whereas FFs do not (Atkinson, 1957). While risky decisions may fail, this indicates that something novel or different from the status quo is viewed in a positive way by AMs but a negative way by FFs who prefer a conservative course of action. AMs will take risks and present novel ideas, which are conducive to creativity, but FFs will rely on an overly conservative course of action not conducive to creative performance. Therefore, when making decisions or trying to solve problems presented by ambiguous situations, the kinds of

decisions made by AMs and FFs should be quite different in terms of novelty, which is one of the two major components of creativity. FFs, sticking with a conservative course of action, will not seek or present novel solutions whereas AMs will approach risk and novelty with the hope of providing a solution that demonstrates their problem solving prowess. AMs are likely to prefer solutions with a novel component because it will help them to stand apart from and above their competition and earn them the praise and positive feedback they desire.

AMs and FFs frame the information provided by their environment in different ways from one another as well. As an example, coworkers who can provide feedback on ideas, designs, process changes, etc should be viewed by AMs as helpful contemporaries. Thus, AMs use the advice of others, try to gain feedback from more individuals, and work to integrate these diverse perspectives to achieve the best solution possible. Importantly, AMs may also ignore coworker feedback and continue developing their ideas to fruition in the face of negative feedback or feedback they view as irrelevant. Their confidence in their own skills and abilities may lead them to believe they can improve an idea on their own regardless of others' opinions because they see some positive aspect of the idea that will be lost if they listen to others. Thus, AMs strive to improve situations, enjoy novel situations, have confidence in themselves, and view competent feedback in positive terms. All of these characteristics should be favorable for creativity (Amabile, 1996).

FFs are unlikely to seek feedback and do not frame suggestions by coworkers in a positive way. FFs are unlikely to present ideas that deviate from standard solutions because of the risk involved in doing so (James, 1998). New approaches will be seen as

risky and likely to fail. FFs do not approach or enjoy risk (Atkinson, 1957). FFs that do try to present solutions that deviate from the norm will take any kind of external feedback suggesting improvements or changes to their ideas as an indication that the ideas are no good and should be abandoned. The failure of FFs to present new ideas and their tendency to abandon projects early is because any feedback related to those ideas would be framed as criticism indicating a lack of ability (Dweck & Leggett, 1988; James, 1998). FFs believe that if they had the ability they would effortlessly produce perfect work the first time. Risk avoidance, inability to use feedback, and abandonment of novel ideas and projects are not conducive to creativity (Amabile, 1996).

The coworker feedback example given as the kind of information individuals receive from the environment highlights further differences between AMs and FFs and how they differentially attend to that information. First AMs are more likely to persist with new ideas whereas FFs abandon new ideas because AMs frame effort as necessary and FFs frame hard work as aversive (James, 1998) and an indication of low ability (Dweck & Leggett, 1988). Persistence is considered key for creative performance (Amabile, 1983a, 1983b, 1996). AMs will less often have their work deterred than FFs. Some ideas presented by AMs may be viewed as positive only by the AM. But once presented, the idea may be improved through feedback from trying out the solution on their own or via others' suggestions. FFs may never present the new ideas or approaches they have considered and if ideas are never presented then they cannot be developed further. In short, AMs use the information they receive from the environment to help them move forward. FFs, on the other hand, use information they receive as a checkpoint

to make sure they are not making mistakes and if they do believe they are making mistakes, they stop.

Even when forced by a situation to present ideas, FFs are more likely to stick to standard solutions and make decisions based upon what has been done in the past because this provides a defensive position. Past solutions represent methods that have been known to work. This reliance on existing solutions allows FFs to blame any failure on precedent rather than their own shortcomings (Dweck & Leggett, 1988; James, 1998). This type of situational avoidance is a coping mechanism used by FFs to protect their personal self-views that they are indeed capable individuals (James & Mazerolle, 2002).

AMs, on the other hand, are more likely to ignore precedent and attend to idiosyncrasies of the situation that are not addressed by a standard solution. This is because AMs view these challenges and difficulties presented by standard solutions as opportunities to master new and challenging problems (James & Mazerolle, 2002). This means the solutions provided by AMs, once again, will be more novel because they are ignoring precedent. Additionally, solutions including situational idiosyncrasies are also likely to be more appropriate as well because the solution is situation specific. When faced with ambiguous situations, the novel and situationally appropriate solutions presented by AMs will be considered as quite creative (Amabile, 1996; Shalley, 1995).

AMs will be more likely to view the learning often required to successfully develop a new idea in a positive way whereas FFs will see this effort negatively (James, 1998). AMs view learning and learning behaviors as challenging, necessary, and enjoyable (Dweck, 1975; Dweck & Leggett, 1988; James, 1998). FFs frame learning in terms of the negative connotation they have associated with the effort required to learn

new material. FFs view this effort as stressful and a threat to their unchangeable skills and abilities (Dweck, 1975; Dweck & Leggett, 1988; James, 1998; James & Mazerolle, 2002) whereas AMs are more learning oriented and believe their skills and situations are malleable (Dweck, 1975; Dweck & Leggett, 1988; James, 1998; James & Mazerolle, 2002). Learning orientations have been positively linked to creative performance (Gong, Huang, & Farh, 2009; Hirst, Van Knippenberg, & Zhou, 2009; Janssen & Van Yperen, 2004; Shalley & Schoen, 2008, 2009). Thus, for a number of reasons, when presented with challenging and ambiguous problems, AMs will be more creative than FFs.

H3: Those more achievement motivated will exhibit greater creativity than those more fear of failure oriented.

Achievement Motivation and Regulatory Focus

As already noted, achievement motivation is a description of the behaviors, beliefs, and experiences that result from the way individuals resolve the approach-avoidance conflict engendered by their need to achieve and their need to avoid failure made salient by certain situations with a pressure to perform. Also, as already described, regulatory focus describes the goals an individual sets when engaging a task. Regulatory focus, made up of promotion focus and prevention focus, is orthogonal to approach and avoidance described by achievement motivation. Regulatory focus can be used to describe how it is that individuals approach or avoid a task (though it is most often used to describe approach strategies). As an example, an individual can work diligently (approach) to keep from losing something (prevention). Thus, it is possible to use descriptions of approach-avoidance conflict (achievement motivation) and regulatory focus to describe how individuals engage some difficult and challenging situations.

The way AMs frame and engage difficult situations suggests they often use a promotion focus whereas when FFs frame and engage difficult situations they use a prevention focus. This is not to say that achievement motivation is the same as trait regulatory focus. Trait regulatory focus has its own line of research (c.f. Liberman, Isdon, & Higgins, 2005) and integrating regulatory focus and achievement motivation together at the trait level is beyond the scope or purpose of this paper. However, AMs and FFs likely approach and avoid situations while utilizing a number of justification mechanisms (c.f. James & Mazerolle, 2002) and regulatory focus could be one such mechanism. Differences in regulatory focus, therefore, may be a result of the different ways AMs and FFs frame challenging, difficult, or ambiguous situations.

When AMs approach a difficult or challenging task, as already discussed, they often naturally focus on what it is they might gain from that task; they see it as an opportunity (James & Mazerolle, 2002). They hope to gain information about their own competence and weak areas that need attention. Both AMs and those with a promotion focus set goals that press their capabilities. Additionally, promotion focused individuals and AMs see less risk in various situations (Atkinson, 1957; Friedman & Förster, 2000, 2001, 2005).

AMs do not have to be promotion focused when working on all tasks. The argument here is that AMs will enjoy the personal performance pressure provided by difficult and challenging tasks. Routine tasks, however, may be viewed as boring, dull, and not personally challenging (i.e. not what AMs enjoy). Without the personal challenge involved AMs could easily utilize a prevention focus if they elect to approach a task they classify as boring. They may set minimal goals or levels for achievement that represent

what they believe ought to be done or should be done. In short, they simply complete such tasks in order to fulfill felt obligations or duties indicating a prevention focus (Higgins, 1997).

FFs tend to try to avoid difficult, challenging, or ambiguous situations, but when they do approach these situations they are more likely to frame the situation with a prevention focus. FFs in difficult or challenging situations are often focused on what it is they may lose (Atkinson, 1957; James & Mazerolle, 2002). Specifically, FFs feel their abilities are fixed, effort in challenging situations indicates they lack ability, and they are thus worried about losing confidence in themselves (James, 1998; James & Mazerolle, 2002). FFs and prevention focused individuals avoid risk and see it as unnecessary. FFs tend to provide answers that support the status quo and this is done so they can justify a lack of effort, whereas prevention focused individuals support the status quo as a way to prevent losses. Both FFs and prevention focused individuals are more likely to believe the status quo is sufficient because they have set minimal goals (Higgins, 1997; Idson, et al., 2000; James, 1998).

FFs do not have to be prevention focused when working on all tasks. FFs who have confidence in their abilities may seek feedback and rewards for their performance on challenging tasks they find personally relevant (c.f. Harackiewicz, et al., 1985). This indicates there are times when FFs hope to gain knowledge and wish to demonstrate accomplishment on challenging tasks. This is likely to happen primarily for tasks where FFs have a high level of personal interest that can then draw out their thoughts of what they would ideally like to do. This, however, is unlikely to be the case for FFs experiencing the personal performance pressure provided by a career relevant task.

It is then important to understand why FFs and prevention focused individuals are engaged in the same behaviors and AMs and promotion focused individuals often do the same things. It could be that achievement motivation and regulatory focus independently describe these behaviors (a simple main effects model). On the other hand, personality drives how individuals view and interpret the world (James & Mazerolle, 2002; Stotland & Canon, 1972). AMs and FFs have different framing proclivities (James, 1998; James & Mazerolle, 2002) suggesting achievement motivation could be a cause of individual state regulatory focus. Combined with the theory above, it is suggested that FFs often frame difficult and challenging situations with a prevention focus and AMs frame these same situations with a promotion focus.

H4: Those individuals who are more fear of failure oriented are more likely to frame difficult and challenging situations with a prevention focus than are AMs and those individuals who are more achievement motivated are more likely to frame these same situations with a promotion focus compared to FFs.

Based on earlier hypotheses development, promotion focus should be positively related to creativity and prevention focus should be negatively related to creativity. Additionally, AMs should be more creative than FFs. Combined with Hypothesis 4, I suggest that regulatory focus mediates the link between achievement motivation and creativity. Regulatory focus, however, is only one way that AMs and FFs frame situations (see James, 1998, tables 1 & 2). Thus, regulatory focus will only partially mediate the link between achievement motivation and creativity.

H5: The link between achievement motivation and creative performance is partially mediated by regulatory focus.

Expected Evaluation and Achievement Motivation

Research suggests that AMs use the information they receive from feedback, evaluation via normative standards, and the expectation of feedback or evaluations differently than do FFs (Harackiewicz, et al., 1987; Harackiewicz, et al., 1985, Sansone, 1986). Specifically, AMs view a task as more important (Harackiewicz, et al., 1985), focus on the task more (Harackiewicz, et al, 1987), and use the information provided to assess their own capabilities (Sansone, 1986) when they expect an evaluation compared to FFs. These findings suggest the relationship between achievement motivation and creative performance is moderated by expected evaluation.

In terms of creative performance, the type of evaluation expected predicts different reactions for different individuals. AMs will be relatively unaffected by the type of expected evaluation. Tasks that are evaluated by others take on symbolic meaning for AMs (Harackiewicz, et al., 1985). AMs are implicitly prepared to push themselves to perform well so they can assess their capabilities, challenge themselves, and more fully enjoy the task (Atkinson, 1978; James, 1998; James & Mazerolle, 2002). The format of the evaluation, informational or controlling, matters relatively little to AMs because they have confidence in their ability to change and improve (James & Mazerolle, 2002) and hope to pinpoint future growth opportunities. AMs see even controlling feedback as an opportunity to learn.

FFs, on the other hand, will find the expectation of an evaluation aversive because the evaluation could indicate a lack of ability that is beyond their capacity for

improvement (James, 1998; James & Mazerolle, 2002). Specifically, the expectation of a controlling evaluation will be framed as most negatively for FFs. FFs are prepared to exhibit a defensive lack of effort (James, 1998) when they feel their self-evaluation of their own fixed skills and abilities are at risk (Dweck & Leggett, 1988; James, 1998). And effort is necessary for creativity (Amabile, 1983a, 1983b, 1996). Therefore, FFs expecting a controlling evaluation will exhibit the lowest levels of creativity. On the other hand, some FFs do enjoy tasks when they are confident in their ability (c.f. Harackiewicz, et al., 1985). The expectation of an informational evaluation may present FFs the opportunity to approach tasks without using as many of their avoidance justification mechanisms and coping strategies. That evaluations of an informational manner will cover what it is that evaluators liked gives FFs the chance to positively affirm the skills they see as fixed (Dweck & Leggett, 1988). FFs then expecting an informational evaluation will be more creative than FFs expecting no evaluation or a controlling evaluation.

H6a: There will be a two-way interaction between achievement motivation and expected evaluation such that those who are more achievement motivated are unaffected by evaluation type and the creative performance of these individuals will be higher when they expect an evaluation than when they do not.

H6b: Those who are more fear of failure oriented expecting a controlling evaluation will exhibit the lowest levels of creativity compared to either no

expectation of an evaluation or FFs expecting an informational evaluation.

Combining the mediation and partial mediation effects proposed in H4 and H5 with the two-way interaction proposed in H6a and H6b, the two-way interaction between achievement motivation and expected evaluation is partially mediated by regulatory focus.

H7: The effect of the two-way interaction between achievement motivation and expected evaluation on creativity is partially mediated by regulatory focus.

These hypotheses are summarized in Figure 2.

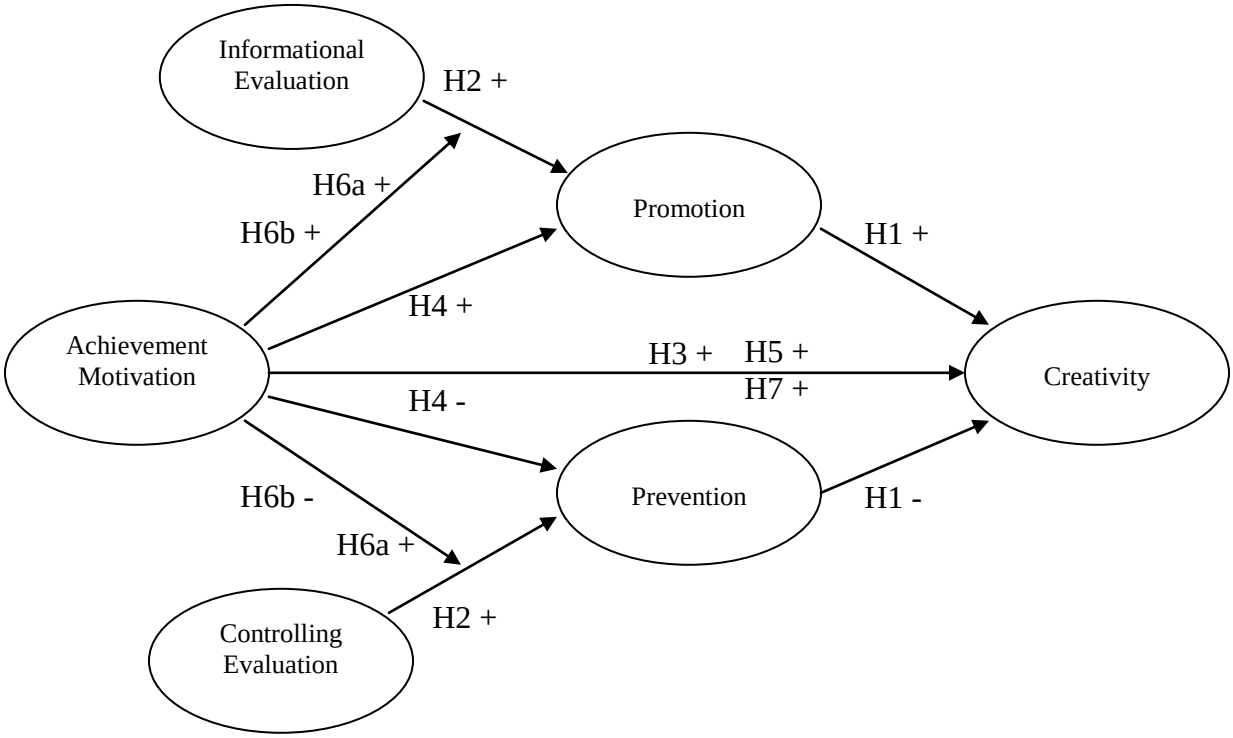

Figure 2. Summary of Hypotheses

CHAPTER 3

STUDY METHODOLOGY

Design and Procedure

The study was a between subject 3X1 experimental design that also included the measurement of several non-manipulated variables. The experimentally manipulated variable was expected evaluation. Achievement motivation was measured because it cannot be manipulated since it represents a stable personality trait. Additionally, the intervening variables and creative performance (the dependent variable) are measured variables as well. The expected evaluation manipulation had three levels: controlling expected evaluation, informational expected evaluation, or no expected evaluation. The no expected evaluation condition acted as a control condition. This study consisted of three basic parts. Participants were asked to complete the first part of the study on-line so that achievement motivation could be used as a blocking variable. The other two parts were completed in the laboratory. The first and third parts of the study consisted of questionnaires. The second part of the study was an in-basket exercise (Shalley, 1991).

Participation in the study lasted approximately one hour and thirty minutes total. Participants took approximately 45 minutes to complete the first questionnaire on-line and the laboratory portion of the study took approximately 45 minutes. This first questionnaire contained measures of achievement motivation (implicit) and control variables (i.e. achievement motivation [self-report], trait regulatory focus). Individuals in each semester were then invited to participate in the laboratory portion of the study after all participants within that semester completed the pre-task questionnaire.

Data from an unpublished study along with published distributions (see James, 1998: 143-144) indicated that, while there is variance in college populations, the average score on the achievement motivation / fear of failure measure used in this study is shifted toward the AM side of the scale. The sample distributions are typically normal in shape, but there are only a limited number of fear of failure individuals in college populations. To ensure equal numbers of individuals who were predominately fear of failure oriented were represented in each cell of the study, I was prepared to use AM/FF scores as a blocking variable; however, random assignment was adequate in ensuring the limited number of fear of failure individuals in the sample were represented in each experimental condition.

In the laboratory, the laboratory instructor provided the appropriate manipulations, and then participants worked on the memo exercise. The manipulations and survey items provided the independent variables in this study and the participant's rated performance on the in-basket exercise was the dependent measure. The task took 30 minutes to complete. The final portion of the study involved participants completing a questionnaire that consisted of measures of the intervening variables (i.e. state regulatory focus, facets of intrinsic motivation), more control variables (i.e. age, major, affect, etc), and the manipulation checks. This final task and the study debrief took approximately 15-20 minutes.

Sample and Data Collection

Undergraduate students from several courses in Organizational Behavior (2) and Principles of Management (4) were invited to participate in a research study related to their course work for research credit in their respective courses. The two Organizational

Behavior courses were taught in the spring of 2010, two of the Principles of Management Courses were taught in the summer of 2010, and the last two Principles of Management Courses were taught in the Fall of 2010. Each course could have a maximum of 75 students, meaning the total possible participant pool was 450 students. Yet, a number of the courses did not have the maximum number of students. The total participant pool was approximately 425 students. Students could fulfill their research requirement by participating in the study or via another method; therefore, not all students opted to participate in the study for their research credit.

From the various courses, two-hundred-seventy-nine students participated in the first part of the study. Of the 279 individuals who completed the first part of the study, 247 individuals participated in the second part (88.5%). There was a change in the wording for the manipulations during the running of this study. Because of this only 193 individuals are included in the final sample. A power analysis that was part of the proposal for this study suggested 200 participants would be adequate to test the theory presented.

Manipulations

Expected Evaluation

The manipulations of expected evaluation used in this study were based substantially on the manipulations used by Shalley and Perry-Smith (2001: 9-10). Their manipulations were pretested extensively. These manipulations contain wording suggestive of prevention (i.e. should) and promotion (i.e. liked) cues consistent with regulatory focus theory (Higgins, 1997). These manipulations also contained wording that could have primed a learning orientation in the informational evaluation condition or

a performance orientation in the controlling evaluation condition that could affect creative performance (c.f. Shalley & Schoen, 2008, 2009). I, therefore, modified the original manipulations, given in Appendix A, to neutralize this effect.

Additionally, these manipulations have an inherent goal. This goal is a creativity goal. Shalley and Perry-Smith (2001) asked individuals to develop creative ideas and it is the creative solutions to the memos that are evaluated. Goals for creativity have been effective in gaining greater overall creative performance (Shalley, 1991, 1995). Additional wording that allows participants to indicate goal commitment was also added to these manipulations.

Measures

Achievement Motivation

The theory developed by James (1998; James & Mazerolle, 2002) suggests individuals do have different underlying needs and motives for their behaviors but that individuals do not have ready access to them. Individuals do a poor job reporting their underlying needs and often do not understand the justification or coping mechanisms they have in place for defending their own behavior. This indicates that much of personality is implicit (Haidt, 2001). However, these implicit needs and motives guide the way individuals perceive, describe, and react to their environment. Because individuals perceive the environment differently from one another they also tend to approach and avoid certain situations differently from one another. Thus, individuals with specific need combinations are likely to approach situations that individuals with different need combinations might elect to avoid.

That individuals are consistent in their framing and use of justification mechanisms indicates their behavior is also likely consistent, thus taking on trait like properties. This externally viewed consistency is what we often refer to as personality. An important feature of the concepts developed by James and his colleagues (Bing, LeBreton, Davison, Migetz, & James, 2007; James, 1998; James & LeBreton, in press; James & Mazerolle, 2002; James, et al., 2005) is that it provides researchers with a base different from that often used in personality research along with a different set of measures that allows researchers to assess the propensity to which individuals use various justification mechanisms.

The measure of achievement motivation used here is a conditional reasoning test developed by James (1998) and was included in the on-line pre-task questionnaire. Conditional reasoning is a new personality measurement tool (James, 1998) that is difficult to fake and does not cause priming because participants believe it is an intelligence test (LeBreton, Barksdale, Robin, & James, 2007). This test consists of 16 items. Each item appears to the test taker to be a measure of inductive reasoning commonly used on standardized tests (i.e. SAT, ACT, GMAT, GRE) with which most participants are very familiar. Each question provides two or more premises and a stem. In standard inductive reasoning tests the set of premises and stem are followed with several statements about what could result based up on the propositions. The test taker selects the statement that most logically follows from the premises.

In a conditional reasoning problem, compared to a standard inductive reasoning problem, the statements test takers can endorse provide outlets for the justification mechanisms individual's use in their reasoning. In the case of achievement motivation,

one statement provides an outlet for those who are more inclined toward achievement motivation (scored with a +1), another provides an outlet for those who are more fear of failure oriented (scored with a -1), and the other three choices do not logically follow from the premises (scored with a 0) and are not frequently endorsed by participants because they do not make sense (James, 1998; James & Mazerolle, 2002). The score from this test represents the relative motive strength or the extent to which one need dominates the other and ranges from extremely fear of failure oriented to extremely achievement motivated. James (1998) suggests a scoring format for the RMS scale where those whose total score is -3 or less in raw score format are coded as -2 (full fear of failure), those with a raw score between -2 and -1 are coded as -1 (budding fear of failure), those with a raw score of 0 are coded 0 (indeterminate), those with a raw score of 1 and 2 are coded 1 (budding achievement motivation), and those who scored 3 or greater are coded as 2 (full achievement motivation). As already noted, existing data indicate samples from college populations are slightly achievement motivated. This suggests these individuals are more likely to approach difficult tasks but that they also have a well developed need to avoid failure and the supporting justification mechanisms for those behaviors (c.f. James, 1998). Appendix B provides an example problem.

Regulatory Focus

The scale used to measure state regulatory focus was a modified version of a scale developed by Neubert and his colleagues (2008). This scale was originally developed to measure regulatory focus at work. This means that the scale was targeted toward measuring an individual's more state-like regulatory focus in a work setting (example: "I concentrate on completing my work tasks correctly to increase my job security."). An

additional advantage to this scale according to Neubert and his colleagues is that, unlike previous scales (see Higgins, Friedman, Harlow, Idson, Ayduk, Taylor, 2001, Wallace, Chen, & Kanfer, 2005), it includes all six of the specific facets of regulatory focus originally conceptualized by Higgins (1997). These facets are security, oughts, and losses for prevention and gains, ideals, and achievement for promotion.

Much like the scale developed by Neubert and his colleagues (2008), the prevention and promotion items were targeted toward the memo task and were specific to the task and not a general trait measure. The scale by Neubert and his colleagues was essentially used for inspiration. Some of the items used here were modified versions of ones developed by Neubert and his colleagues; however, many of them were developed just for this study. And, like Neubert and his colleagues, the items developed here contained all six facets of regulatory focus as given by Higgins (1997). The original items from Neubert and his colleges and the study task specific items developed for this study are given in Appendix B. Individuals were asked to rate their agreement with each of the statements on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). This scale was included in the post-task questionnaire. A sample promotion focus item is, "The best way to develop successful answers to the problems presented was to take risks." A sample prevention focus item is "I tired to answer the memos in a way that would reduce threats generated by the solutions I provided."

Manipulation Checks

The manipulation check items were intended to come from Shalley and Perry-Smith (2001). Manipulation check items are given in Appendix B. The manipulation check items are covered in more detail in the results section.

Additional Measures

Several other variables were collected as well. Participants were asked to report their major, age, gender, years of work experience, and year in school (freshman, sophomore, junior, senior, other). Additionally, I utilized self-report measures of trait regulatory focus (Lockwood, Jordan, & Kunda, 2002) consisting of 16 items and achievement motivation (Mathieu, 1990) consisting of 7 items. An example achievement motivation item is, "I try very hard to improve on my previous scholastic performance" and a sample regulatory focus item is "In general, I am focused on preventing negative events in my life." Individuals were asked to rate their agreement with each of the statements on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). All items are given in Appendix B. Trait regulatory focus and explicit achievement motivation were included in the pre-task questionnaire and all other control variables were included in the post-task questionnaire.

I also measured intrinsic motivation as a control variable since it could be affected by the manipulations and related to creativity. I measured intrinsic motivation toward the in-basket exercise using 7 items developed by Shalley and Perry-Smith (2001) and 5 items developed by Tierney, Farmer, and Graen (1999), which was also used by Shin and Zhou (2003). These scales were included in the post-task questionnaire. The items by Shalley and Perry-Smith (2001) were designed to measure one's intrinsic motivation toward the experimental task, whereas the items by Tierney and her colleagues (1999) measure one's more general interest in working with new problems. The second scale (i.e. Tierney, et al., 1999) was modified slightly to fit the experimental context. Individuals were asked to rate their agreement with each of the statements on a 7-point

Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The intrinsic motivation items are included in Appendix B and a sample item from Shalley and Perry-Smith (2001) is "I thought the task was very interesting to me" and a sample item from Tierney and her coauthors (1999) is "I enjoy finding solutions to complex problems."

Additionally, it has been suggested that intrinsic motivation is actually made up of several components (Deci & Ryan, 1985). Rarely do studies report utilizing these component measures when researching the effect of external variables on creativity but this could represent a source for the limited effect found for the effect of intrinsic motivation on creativity. I, therefore, used several measures suggested to comprise intrinsic motivation. The first of these is self-determination measured via three items adapted from the work of Alge and his colleagues (2006). A sample item is "I had significant autonomy in determining how I worked on the memo task." A second facet of intrinsic motivation according to Deci and Ryan (1985) is perceived competence. This three-item measure was also adapted from a measure used by Alge and his colleagues (2006). A sample item is "I was confident in my abilities while working on the memo task." Individuals were asked to rate their agreement with each of the statements on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). These items are included in Appendix B.

Similar in nature to the concept of competence is the construct of self-efficacy. Facet measures of self-efficacy may be particularly relevant for some tasks. In this case, a measure of creative self-efficacy may relate to actual creative performance. The scale utilized here was adapted from a more trait like measure developed by Tierney and Farmer (2002). It contains three items. A sample item is "I felt that I did a good job

generating novel ideas while working on the memo task." Individuals were asked to rate their agreement with each of the statements on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). These items are included in Appendix B.

Finally, I measured state affect. Affect is suggested by some to be related to state regulatory focus (Baas et al., 2008; Neubert, et al., 2008). I measured affect using the PANAS (Watson, Clark, & Tellegen, 1988). Individuals were asked to rate how strongly they felt while working on the task. The items from this scale are given in Appendix B.

Creativity

The dependent measure in this study was the rated creativity of the solutions provided by the study participants on the in-basket exercise. Shalley (1991) developed a managerial simulation that provides study participants with a simulated role as a Human Resources (HR) manager. In this role, the participants are asked to provide solutions to complex human resources type problems. These problems are presented to the study participants in a memo format. Each memo, provided on a separate sheet of paper, states a situation from the perspective of another employee in the simulated company and ends by asking the HR manager for their guidance. Participants provided their answers to the problems presented in the bottom three fourths of the paper and could also write on the back. Participants were given three memos to answer in the thirty minute task session. Rating of the creativity of the memos was done in accordance with Amabile's (1982) consensual assessment technique. Raters use a scale to rate the creativity of each memo ranging from 1 (not at all creative) to 7 (exceptionally creative). Rater agreement was assessed via r_{wg} (James, Damaree, & Wolf, 1984) and an acceptable level of agreement was attained ($r_{wg} = 0.81$).

Results

Manipulation Checks

An analysis of the manipulation checks after the first wave of data collection in the spring of 2010 suggested the manipulations were not being properly perceived by the participants. This first caused a change in the wording of the manipulations for the second wave of data collection in the summer. An analysis of the manipulation checks after the second wave also suggested the manipulations were not being properly perceived by the participants. This caused a review of the manipulation check items. The review of the manipulation check items suggested the manipulation checks in use were not the ones used by Shalley and Perry-Smith (2001): the source of the manipulations and the intended source of the manipulation checks.

New manipulation checks were then developed and tested. A group of students from an Environment of Business Course (an introductory business course) at a local college were then asked to participate in a study for extra credit in their course. While the larger study contained three conditions of the manipulation – an expectation for no evaluation, an expectation of a controlling evaluation, and an expectation for an informational evaluation – the available sample for testing the manipulation checks was small. It was decided to check the informational evaluation condition against the controlling evaluation condition while leaving out the no evaluation condition to maximize power.

Twenty-six individuals participated in the small scale study intended to test the new manipulation check items. Twelve individuals were in the expected controlling evaluation condition and 14 individuals were in the expected informational evaluation

condition. The wording for the manipulations for this study were the same as those used in the summer of 2010. The laboratory materials were also the same except that the post-task questionnaire included the new manipulation check items. No items were removed from the post-task questionnaire.

Eight total items were developed with 4 items for controlling expected evaluation and 4 items for the informational expected evaluation. Item correlations, an EFA, and a reliability analysis suggested 3 items for each manipulation provided the best scale. The reliability for the controlling items was acceptable ($\alpha = 0.79$); however, the reliability for the informational items was marginal ($\alpha = 0.68$). Dropping one more item from the expected informational evaluation manipulation check scale would have increased the reliability slightly but it still would not have reached a traditional level of reliability. Three items per scale was determined to be the best fit and analysis was continued.

A *t*-test for the difference in means between the expected controlling evaluation group and the expected informational evaluation group suggested there was a significant difference in how these two groups responded to the expected evaluation manipulation check items. Specifically, the group-mean difference between the two groups suggested those in the expected informational evaluation condition saw the manipulation as more informational (6.143) than did those in the expected controlling evaluation condition (5.222). This difference was significant at the traditional level ($p < 0.05$). And those in the expected controlling evaluation condition saw the manipulation as more controlling (4.417) than did those in the informational condition (3.048). This difference was also significant at the traditional level ($p < 0.05$).

Based upon the results of the development of the new manipulation check items the study continued with a third wave of data collection conducted during the fall semester of 2010. Eighty-seven individuals participated in the laboratory part of this session. The reliability for the 3 controlling evaluation items retained from the manipulation check study reached traditional levels ($\alpha = 0.87$) as did the 3 informational evaluation items ($\alpha = 0.80$).

An ANOVA involving the informational expected evaluation manipulation check scales as the dependent variable and the experimental manipulations (controlling expected evaluation coded -1, no expected evaluation coded 0, and informational expected evaluation coded 1) as the independent variable suggested the manipulation of informational evaluation was effective. The informational expected evaluation group reported a statistically significantly higher mean on the informational manipulation check scale (5.798) than either the no expected evaluation group (3.365) or the controlling expected evaluation group (4.081) and both of these differences were significant beyond conventional levels of significance ($p < 0.001$). In addition, the controlling expected evaluation and no expected evaluation group means were not significantly different from one another ($p > 0.05$).

The controlling expected evaluation manipulation check scales were also analyzed using an ANOVA with the experimental condition as the independent variable and the controlling expected evaluation manipulation scale as the dependent variable. Similar to the effects described above for the informational expected evaluation scale, those in the controlling expected evaluation condition had a statistically significantly higher group mean on the controlling expected evaluation scale (5.737) than either the no

expected evaluation group (2.783) or the informational expected evaluation group (3.354). The differences between the controlling expected evaluation group mean and the other two group means was significant beyond conventional levels of significance ($p < 0.001$). In addition, the informational expected evaluation and no expected evaluation group means were not significantly different from one another ($p > 0.05$).

Of the 193 individuals in the final sample, only 87 received the final set of manipulation checks. Twenty-six individuals were retained from the first wave of data collection and these individuals came from the no expected evaluation group. There were 54 individuals in the informational expected evaluation and controlling expected evaluation groups that were dropped from the final sample since they did not receive the same manipulations as the second or third wave of data collection or the manipulation checkout group. The second and third waves of data collection and the manipulation checkout group all received the same set of manipulations. Since the manipulation checks delineated the different conditions in the third wave and the manipulation checkout group it was decided to retain all eighty individuals from the second wave of data collection in the final sample.

Analysis of Scales and Measures

Control Variables

A number of variables were measured as control variables in this study and one of those, trait regulatory focus, was also used in validation of a new measure of state regulatory focus as discussed in the next section. A confirmatory factor analysis (CFA) was conducted to assess the factor structure and quality of the trait regulatory focus scale developed by Lockwood and colleagues (2002). Initial model fit for the 18 items divided

equally into two factors (promotion and prevention) was poor ($\chi^2(134) = 339.93$, $p < 0.001$, RMSEA = 0.09, SRMR = 0.10, CFI = 0.77). This is similar to other research that has used this scale (c.f. Stam, Van Knippenberg, & Wisse 2010 for very similar fit statistics); yet, others have achieved better fit (c.f. Haws, Dholakia, & Bearden, 2010).

Modification indices from the above CFA suggested some items were cross-loading onto the opposite factor. There was no *a priori* theory for why these items might cross-load and no justification for allowing them to do so. These items were then dropped from the analysis (2 from prevention and 1 from promotion). Model fit improved substantially ($\chi^2(89) = 194.20$, $p < 0.001$, RMSEA = 0.08, SRMR = 0.7, CFI = 0.85, $\Delta \chi^2(45) = 145.73$ $p < 0.001$) but was still not quite as good as that achieved by some (Haws, et al., 2010). The 2-factor model using these 15 items was a better fit to the data than a 1-factor model ($\chi^2(90) = 541.724$, $p < 0.001$, RMSEA = 0.16, SRMR = 0.17, CFI = 0.37, $\Delta \chi^2(1) = 347.52$ $p < 0.001$); therefore, an 8-item promotion scale ($\alpha = 0.79$) and 7-item prevention scale ($\alpha = 0.77$) were used in all further analyses.

A number of scales were also used to measure intrinsic motivation (two measures of intrinsic motivation were taken with effects reported below for the scale by Tierney and her colleagues (1999) but effects for the scale by Shalley and Perry-Smith (2001) were substantially similar across all analyses) and constructs similar to intrinsic motivation such as self-determination, competence, and creative self-efficacy. Model fit for a 4-factor model was acceptable ($\chi^2(71) = 117.21$, $p < 0.001$, RMSEA = 0.06, SRMR = 0.05, CFI = 0.96). Several other models were assessed. Examples included letting the competence and self-determination items load on one factor, letting the competence and self-efficacy items load on one factor, and utilizing a 1-factor model; yet, in every case

the 4-factor model was a statistically significantly better fit to the data. Scale reliabilities were all acceptable with the exception of self-determination (intrinsic motivation, α = 0.86; competence, α = 0.78; creative self-efficacy, α = 0.84; self-determination, α = 0.52). Because of the low reliability, self-determination was used in no further analyses.

The PANAS (Watson, et al., 1988) was used to measure state affect in this study and was included in the post-task questionnaire. The wording of the PANAS can be altered to measure general affect or state affect. The instructions asked individuals to rate the items based upon how they remembered feeling while working on the memo task. A CFA suggested model fit for the PANAS was acceptable ($\chi^2(89) = 191.07$, $p < 0.001$, RMSEA = 0.08, SRMR = 0.06, CFI = 0.92) as were scale reliabilities (negative affect, α = 0.76; positive affect, α = 0.91).

The final control variable assessed was explicit achievement motivation. Haws and colleagues (2010) suggest the regulatory focus scale utilized in this study (Lockwood, et al, 2002) is best used for assessing academic performance and achievement. This suggests the measure of explicit achievement motivation should be assessed against the regulatory focus scales. In addition, some might see achievement motivation and intrinsic motivation as similar constructs suggesting that it is important to assess the factor structure of achievement motivation and intrinsic motivation as well (only the explicit measure of achievement motivation is tested here since the implicit measure of achievement motivation was not correlated with intrinsic motivation). Fit for the 4-factor model was borderline ($\chi^2(318) = 538.137$, $p < 0.001$, RMSEA = 0.07, SRMR = 0.05, CFI = 0.85) The 4-factor model was a statistically significantly better fit to the data than either 3-factor model (AM and IM together, $\Delta\chi^2(3) = 171.77$ $p < 0.001$;

promotion and AM together $\Delta \chi^2(3) = 79.31$ $p < 0.001$) and reliability for the explicit achievement motivation measure was acceptable ($\alpha = 0.70$).

State Regulatory Focus

The model presented earlier involves moderated mediation whereby the interactive effect of the experimental condition and achievement motivation were expected to work through the state regulatory focus facets of prevention and promotion. There was no existing state regulatory focus scale available to use for this study so items were developed based upon a state measure for individuals at work (Neubert, et al., 2008). Nine items were developed to represent the promotion focus and 9 items were developed to represent the prevention focus. Other than the revised manipulation checks, the state regulatory focus scale was the only scale developed specifically for this study.

Since the data from 54 participants in the first wave of data collection were not used in the final sample these individuals were instead used for scale development. Because the sample size was small, independent exploratory factor analyses (EFA) were conducted for the promotion items and prevention items. Reliabilities for the newly developed prevention scale in the first wave of data and the full sample were both acceptable ($\alpha = 0.81$, and $\alpha = 0.72$ respectively), but the reliability for the promotion scale was acceptable ($\alpha = 0.78$) in the first wave of data but not in the full sample ($\alpha = 0.67$). In addition, the promotion and prevention scales did not correlate significantly with either the proposed independent or dependent variables in the full sample.

Because the sample size was small and also because there was no dependent variable for first wave of data, 46 individuals from the full sample were randomly selected to add to the 56 individuals from the first wave of data. This was done to 1)

increase the sample size, 2) allow for assessment of item correlations with the dependent measure, and 3) to allow for a pseudo-split-half analysis where the retained prevention and promotion items could then be utilized in a confirmatory factor analysis (CFA) with the remainder of the full sample.

The sample is still somewhat small based upon the number of items (some suggest 10 observations per item though this is something of a methodological urban legend, see: Bandalos & Boehm-Kaufman, 2009), thus separate EFAs for each factor were used. Items were retained for further analysis based upon factor loadings and item correlations with the dependent measure (creative performance). Reliabilities for the prevention and promotion scales were acceptable in the first-half of the split-half data (α = 0.74, and α = 0.70 respectively). Additionally, correlations between the scales and the dependent measure approached marginal significance and a scale developed by taking the difference of prevention and promotion (one might view this as an overall regulatory focus where someone with a positive score is more promotion focused than prevention focused and someone with a negative score is more prevention focused than promotion focused) was significantly correlated with the dependent measure ($p < 0.05$).

The prevention and promotion scales did not replicate in the full sample. Reliabilities were below normally accepted levels for both scales (i.e. $\alpha < 0.70$). Additionally, zero-order correlations between the dependent measure and any facet or difference score of regulatory focus failed to reach significance. Any attempt to develop and then confirm a scale for regulatory focus was abandoned in favor of a purely exploratory approach.

All 18 items developed to measure both facets of regulatory focus were explored in more detail using both an EFA and zero-order item correlations in the full sample. Very few items correlated significantly with either the theorized predictors or with the dependent measure using traditional levels of significance ($p < 0.05$) but some were marginally significant or nearly so ($p < 0.10$). Zero-order correlations, therefore, provided little guidance and the analysis turned toward the EFA.

Conway and Huffcutt (2003) recommend utilizing a maximum likelihood extraction and an oblique rotation when conducting an EFA. With these data a maximum likelihood extraction resulted in a communality greater than one. The extraction method was then switched to principle axis factoring. While the "eigenvalues greater than one rule" suggested there were five factors, both theory and a scree plot provided support for two factors. The EFA was constrained to extract only two factors. Items were removed in an iterative fashion based upon two criteria: 1) a low communality and 2) poor factor loadings. The poor factor loadings with these data were typically evidenced by nearly equal and low loadings on both factors. Additionally, when an item was removed from the EFA it typically met both criteria just described.

The results of the EFA suggested two factors that were positively correlated ($r = 0.23$). The first factor loaded heavily on the prevention items and consisted of 8 of the original 9 items. The second factor loaded heavily on the promotion items and consisted of 4 of the original 9 items. The reliability for the prevention items met traditionally accepted levels ($\alpha = 0.73$); however, the reliability for the promotion items did not ($\alpha = 0.62$). Further attempts to improve the promotion scale failed to achieve a better result.

Finally, the trait prevention and promotion scales were used to try to assess the quality of the state prevention and promotion scales. One's behaviors or perceptions of their own behaviors and feelings can be altered substantially by situational effects (c.f. James & Mazerolle, 2002; Meyer, et al., 2010). That is to say, even though someone may have a specific preference toward methods for handling certain tasks, their preferences and attitudes about the task also depend on environmental factors. The manipulations in this study were expected to have an effect on the participants' regulatory focus. Because of this, zero-order correlations between the state and trait measures were only assessed in the control condition where there was no expected effect from various manipulations.

The correlations between the trait and state variables were small (note: these correlations are based on the control condition only, do not exactly match the correlations in the correlation table, but the effects are similar in the entire sample). The relationship between the trait and state promotion measures ($r = 0.31$) was significant ($p < 0.01$). But the relationship between the trait and state prevention measures ($r = 0.09$) was not significant ($p > 0.05$). While this initially seems problematic, and one certainly would hope for a significant relationship between both trait variables to their respective state variables, it is not unexpected. A recent (published subsequent to the data collection reported here) review critical of the various measures of trait prevention focus (Haws, et al, 2010) found an average correlation within similar facets of regulatory focus across several trait measures was small ($r = 0.13$) and similar to the correlations found here between the state and trait measures. This suggests that what constitutes the trait of regulatory focus may not be well understood or well measured (c.f. Haws, et al. 2010). And while their review is technically about trait measures, it should hold that the state

measure developed here based upon the same or similar concepts used by other researchers to develop their trait measures is likely, unfortunately, to suffer from similar flaws not known when the data collection began.

The results of the analysis regarding the state regulatory focus measure does not bode well. The state measure acted differently in different samples (the first versus the second and third waves of data collection) and did not replicate when divided into multiple parts. This, however, is the only state regulatory focus measure of its type, appears to generate results similar to other research regarding regulatory focus (c.f. Haws, et al., 2010) and was used as the best measure of state regulatory focus in this study.

Achievement Motivation

Nine individuals were excluded from all analyses utilizing implicit achievement motivation. James (1998) suggests individuals who select 5 or more illogical answers on the implicit achievement motivation measure are not paying enough attention to the test to provide an accurate measurement of their personality. All 9 of the individuals dropped from the analyses selected 5 or more illogical answers (3 missed 5, 4 missed 6, 1 missed 7, and 1 missed 8). Of the 9 who were dropped from the analysis, their scores on what they did complete of the test were somewhat uniformly distributed (2 full FF, 3 budding FF, 2 indeterminate, 1 budding AM, and 1 full AM). Finally, the average creativity score of these 9 individuals (4.07) was effectively the same as the average creativity score of the other participants (3.98).

Creativity

Creative performance of the work completed by the laboratory participants was assessed using Amabile's Consensual Assessment Technique. Multiple raters (3) with either a PhD in an organizational behavior program or with at least a year and a half of experience in a doctorial organizational behavior program, all familiar with the rating technique and the memos used to assess creativity, rated the creativity of each memo completed by each participant. Rater agreement was assessed via r_{wg} (James, et al., 1984) and an acceptable level of agreement was attained ($r_{wg} = 0.81$). The raters were all individuals external to this dissertation and blind to the hypotheses (in short, not the author or any committee member). Individual ratings for memos were then averaged for each participant to achieve an overall creativity rating for each participant. Correlations, means, and standard deviations for the variables utilized in this study are given below in Table 2.

Table 2. Means, Standard Deviations, and Correlations among Study Variables[a]

Variable	Mean	s.d.	1	2	3	4	5	6
1. Implicit Achievement Motivaiton[b]	1.26	1.22						
2. Explicit Achievement Motivation	5.05	0.82	-0.14†	(0.70)				
3. Intrinsic Motivation[c]	5.81	0.87	0.05	0.29**	(0.86)			
4. Competence	5.48	0.96	0.10	0.04	0.48**	(0.78)		
5. Creative Self-Efficacy	4.82	1.17	0.03	0.11	0.45**	0.63**	(0.84)	
6. Trait Prevention	4.29	1.09	0.00	-0.12†	-0.09	-0.1	-0.12†	(0.79)
7. Trait Promotion	5.78	0.69	-0.11	0.45**	0.20**	0.08	0.04	0.02
8. State Prevention	5.41	0.86	0.05	0.15*	0.39**	0.33**	0.29**	0.02
9. State Promotion	4.86	1.03	-0.07	0.20**	0.43**	0.26**	0.49**	-0.04
10. Negative Affect	1.26	0.37	0.01	0.13†	-0.07	-0.10	-0.13†	-0.11
11. Positive Affect	3.02	0.94	-0.03	-0.23	0.39**	0.28**	0.35**	-0.15*
12. Experimental Condition[d]	0.04	0.80	0.03	-0.05	0.06	0.12	0.14*	-0.04
13. Years of Work Experience	2.35	2.22	0.00	-0.04	0.08	0.19**	0.11	-0.06
14. Major[e]	0.34	0.47	-0.05	-0.12	-0.11	0.06	0.09	-0.02
15. Year in School[f]	3.00	0.93	0.03	0.03	0.07	0.03	0.05	-0.15*
16. Age	20.64	1.73	0.01	0.05	0.11	0.09	0.06	-0.25**
17. Creative Performance	3.98	0.76	0.16*	0.07	0.10	0.07	0.13†	0.06

Table 2. Continued

Variable	7	8	9	10	11	12	13	14	15	16
7. Trait Promotion	(0.77)									
8. State Prevention	0.10	(0.73)								
9. State Promotion	0.17*	0.27**	(0.62)							
10. Negative Affect	0.01	-0.01	0.00	(0.76)						
11. Positive Affect	0.32**	0.30**	0.37**	0.16*	(0.91)					
12. Experimental Condition[d]	-0.04	0.09	0.01	-0.07	0.08					
13. Years of Work Experience	0.02	0.14†	-0.05	-0.02	0.05	-0.01				
14. Major[e]	0.09	-0.11	-0.02	-0.13†	-0.10	0.18*	-0.05			
15. Year in School[f]	0.01	0.02	-0.09	0.03	0.03	-0.02	0.27**	-0.20**		
16. Age	0.00	0.08	-0.07	0.13†	0.06	-0.02	0.53**	-0.14*	0.67**	
17. Creative Performance	-0.13†	0.03	0.06	0.00	0.02	0.01	-0.03	-0.02	0.13†	-0.03

N = 184 for correlations with AM

N = 193 for correlations with all other variables

** $p \leq 0.01$

Table 2. Continued

[*] $p \leq 0.05$

[†] $p \leq 0.10$

[a] Internal consistency reliabilities are in parentheses on the diagonal when applicable

[b] Coded via James, 1998

[c] Measure by Tierney and colleagues, date

[d] Experimental Condition: -1 = controlling expected evaluation, 0 = no expected evaluation, 1 = informational expected evaluation

[e] Major: Management = 1, all else =0

[f] Year in School: 1 = freshman, 2 = sophomore, 3 = junior, 4 = senior, 5 = other

Hypotheses Tests

Hypothesis 1 proposed that state prevention and promotion focus are negatively and positively (respectively) related to creative performance. The relationship between neither state prevention nor state promotion and creative performance were statistically significant. These relationships remained non-significant after controlling for trait prevention and promotion and also after controlling for other variables previously found to predict creativity such as creative self-efficacy, intrinsic motivation, and competence (Note: positive and negative affect, years of work experience, major, year in school and age were also tested as control variables, had no effect, were not theoretically relevant, and are not discussed further). The model including trait regulatory focus was statistically significant as whole but the hierarchical addition of the state measures did not produce a significant change in the variance explained. Thus, hypothesis 1 was not supported. See Table 3 for more detail.

One step in testing a mediated hypothesis is assessing the link between the exogenous variable (or independent variable) and the mediating variable. State prevention and promotion were regressed on dummy codes for the experimental conditions (Cohen, et al., 2003; Pedhazur, 1997). Two dummy categories were created for this analysis. Individuals were coded with a 1 in one of the two categories if they were in the informational expected evaluation condition and 0 otherwise. In the other dummy category individuals were coded with a 1 if they were in the controlling expected evaluation condition and 0 otherwise. This essentially sets the control condition as the comparison condition for the other two conditions and is one of the possible ways used to develop dummy codes (Cohen, et al., 2003: 303-305). The effect for adding the dummy

codes representing the experimental conditions was not significant; neither state promotion focus nor state prevention were significantly affected by the manipulations. In addition, after including the trait prevention and promotion focus variables as covariates in the analysis, the effect of the laboratory manipulations still did not significantly affect the mediating state variables.

While not strictly necessary for mediation (c.f. James, et al., 2006), it is common to test for the effect of the exogenous variable (the laboratory manipulations) on the distal endogenous variable (creative performance). And this seems prudent as one typically wants the laboratory manipulations to have an effect on the outcome variable from a laboratory study. In this case, the effects of expected informational and expected controlling evaluations were not significantly related to creative performance. Thus, there was no support for Hypothesis 2: see Tables 4, 5, and 6.

Table 3. Hierarchical Regression Results for Hypothesis 1: Dependent Variables is Creative Performance

Step and Independent Variables	*B*	Total R^2	ΔR^2
No Control Variables			
Step 1:			
State Promotion	0.07		
State Prevention	0.02		
		0.01	0.01
With Control Variables			
Step 1:			
Trait Promotion	-0.23**		
Trait Prevention	0.09		
Competence	0.00		
Creative Self-Efficacy	0.11		
Intrinsic Motivation	0.07		
Explicit Achievement Motivation	0.15†		
		0.07*	0.07*
Step 2:			
State Promotion	0.01		
State Prevention	-0.04		
		0.07*	0.00

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

Table 4. Hierarchical Regression Results for Hypothesis 2: Promotion Focus is Dependent Variable and Experimental Manipulations are Dummy Coded Categorical Independent Variables

Step and Independent Variables	*B*	Total R^2	ΔR^2
No Control Variables			
Step 1:			
Controlling	0.02		
Informational	0.04		
		0.00	0.00
With Control Variables			
Step 1:			
Trait Promotion	0.10		
Trait Prevention	0.03		
Competence	-0.18*		
Creative Self-Efficacy	0.48**		
Intrinsic Motivation	0.27**		
Explicit Achievement Motivation	0.04		
		0.33**	0.33**
Step 2			
Controlling	-0.01		
Informational	-0.06		
		0.33**	0.00

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

Table 5. Hierarchical Regression Results for Hypothesis 2: Prevention Focus is Dependent Variable and Experimental Manipulations are Dummy Coded Categorical Independent Variables

Step and Independent Variables	*B*	Total R^2	ΔR^2
No Control Variables			
Step 1:			
Controlling	-0.00		
Informational	0.11		
		0.01	0.01
With Control Variables			
Step 1:			
Trait Promotion	-0.01		
Trait Prevention	0.08		
Competence	0.17†		
Creative Self-Efficacy	0.07		
Intrinsic Motivation	0.27**		
Explicit Achievement Motivation	0.06		
		0.19**	0.19**
Step 2			
Controlling	-0.01		
Informational	-0.05		
		0.20**	0.01

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

Table. 6. Hierarchical Regression Results for Hypothesis 2: Creative Performance is Dependent Variable and Experimental Manipulations are Dummy Coded Categorical Independent Variables

Step and Independent Variables	β	Total R^2	ΔR^2
No Control Variables			
Step 1:			
Controlling	0.04		
Informational	0.04		
		0.00	0.00
With Control Variables			
Step 1:			
Trait Promotion	-0.22**		
Trait Prevention	0.11		
Competence	-0.01		
Creative Self-Efficacy	0.11		
Intrinsic Motivation	0.06		
Explicit Achievement Motivation	0.15†		
		0.07*	0.07*
Step 2			
Controlling	0.05		
Informational	0.04		
		0.07*	0.00

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

Hypothesis 3 suggests those who are more achievement motivated will be more creative than those who are more fear of failure oriented. Achievement motivation was significantly related to creative performance ($p < 0.05$) as shown in the correlation table and the effect is in the expected direction. The effect for achievement motivation on creative performance was also tested after controlling for several variables previously suggested to predict creativity. The effect for achievement motivation remained after controlling for competence, intrinsic motivation, an explicit measure of achievement motivation, and creative self-efficacy. Thus, Hypothesis 3 was supported. The regression model with the control variables entered hierarchically before implicit achievement motivation is given in Table 7.

Table 7. Hierarchical Regression Results for Hypothesis 3: Creative Performance is the Dependent Variable

Step and Independent Variables	β	Total R^2	ΔR^2
Step 1:			
Explicit Achievement Motivation	0.03		
Intrinsic Motivation	0.01		
Creative Self-Efficacy	0.14		
Competence	-0.06		
		0.02	0.02
Step 2:			
Implicit Achievement Motivation	0.17*		
		0.05*	0.03*

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

Hypothesis 4 suggested that achievement motivation works through state promotion and prevention focus to affect creative performance. As discussed above, state prevention and promotion focus were not related to creative performance. Also, as can be seen in the correlation table (Table 2), achievement motivation was not statistically significantly related to either prevention or promotion focus. Thus, there was no support for Hypothesis 4.

It was suggested in hypothesis 5 that the effect of achievement motivation on creative performance was only partially mediated by promotion and prevention focus. Since promotion and prevention focus were not related to creative performance and

achievement motivation was not related to prevention or promotion focus there can be no partial mediation. There was no support for Hypothesis 5.

Hypothesis 6a and 6b suggest there was a two way interaction between the implicit achievement motivation construct and the experimental manipulations. The achievement motivation measure and dummy codes for the experimental manipulations, one for the controlling expected evaluation condition and one for the informational condition, were multiplied together to generate two interaction terms for a regression analysis (this type of coding compares one group coded with a 1 to the other groups coded in the analysis as 0). The achievement motivation measure and the two dummy codes were entered as the first step in the model and the interaction terms were entered as the second step in the model. The step involving the interaction terms was significant ($p < 0.05$). The regression weight for the interaction of achievement motivation and expected informational evaluation was marginally significant ($p < 0.10$). As a different model, control variables previously suggested to predict creative performance were entered into model hierarchically as the first step and then followed hierarchically by the above two steps. These control variables were not related to creative performance in the model and also did not affect the relationship between implicit achievement motivation on creativity or the effect of the interaction on creativity (the model without the control variables is not given but is substantially similar). Unfortunately, a regression model that presents a significant step for the interaction but that does not have significant regression weights is somewhat confusing so a different coding scheme was utilized to help clarify this effect.

Dummy coding requires the selection of a comparison group and the control group was used in the above analysis. Other comparison groups can be utilized as Cohen

and his colleagues note, “choice of the reference group is statistically but not substantively arbitrary” (Cohen, et al., 2003: 303), meaning that interpretation of effects might change based upon selection of the comparison group. A different comparison group was selected to help better illustrate the interaction between the experimental manipulations of expected evaluation and achievement motivation. Cohen and his colleagues suggest an extreme group can aid interpretation; therefore, I recoded the dummy codes such that the controlling evaluation condition was the references group rather than utilizing the control group as the reference group.

The effects for this model are given in Table 8. The step for the interaction term is significant ($p < 0.05$). This analysis suggests the slope of the regression equation for the control group and the controlling expected evaluation group, determined by differences in achievement motivation, is not significantly different from one another. However, this model does suggest the slope of the regression equation for the controlling evaluation condition is different ($p < 0.05$) from the slope for the informational evaluation condition at different levels of achievement motivation. Thus, the interaction between achievement motivation and the experimental manipulations is significant.

Table. 8. Hierarchical Regression Results for Hypotheses 6a and 6b: Creative Performance is the Dependent Variable

Step and Independent Variables	*B*	Total R^2	ΔR^2
Step 1:			
Explicit Achievement Motivation	0.03		
Intrinsic Motivation	0.01		
Creative Self-Efficacy	0.14		
Competence	-0.06		
		0.02	0.02
Step 2:			
Implicit Achievement Motivation	0.18*		
Informational	-0.01		
Control Group	0.01		
		0.05*	0.03
Step 3:			
Informational X Implicit Achievement Motivation	0.36*		
Control Group X Implicit Achievement Motivation	0.09		
		0.08*	0.03*

** $p \leq 0.01$

* $p \leq 0.05$

† $p \leq 0.10$

The interaction between achievement motivation and the experimental conditions was explored further by using a slope analysis. In this analysis I took the derivative of the regression equation with respect to achievement motivation. A plot of the slopes for the regression equation for each experimental condition and at two levels of achievement motivation (I used -2 and 2, however any level along the scale could be used as the linear slope is constant) was then generated. The plot of the regression slopes is given in Figure 3. An interpretation of the regression slopes suggests that creative performance was relatively constant and similar in the controlling expected evaluation and no expected evaluation conditions regardless of personality. Creative performance, however, was impacted substantially in the informational evaluation condition and was dependent on personality. The nature of this slope suggests the creative performance of fear of failure individuals was negatively impacted by the expectation of an informational expected evaluation whereas the creative performance of achievement motivated individuals was positively affected by the informational expected evaluation.

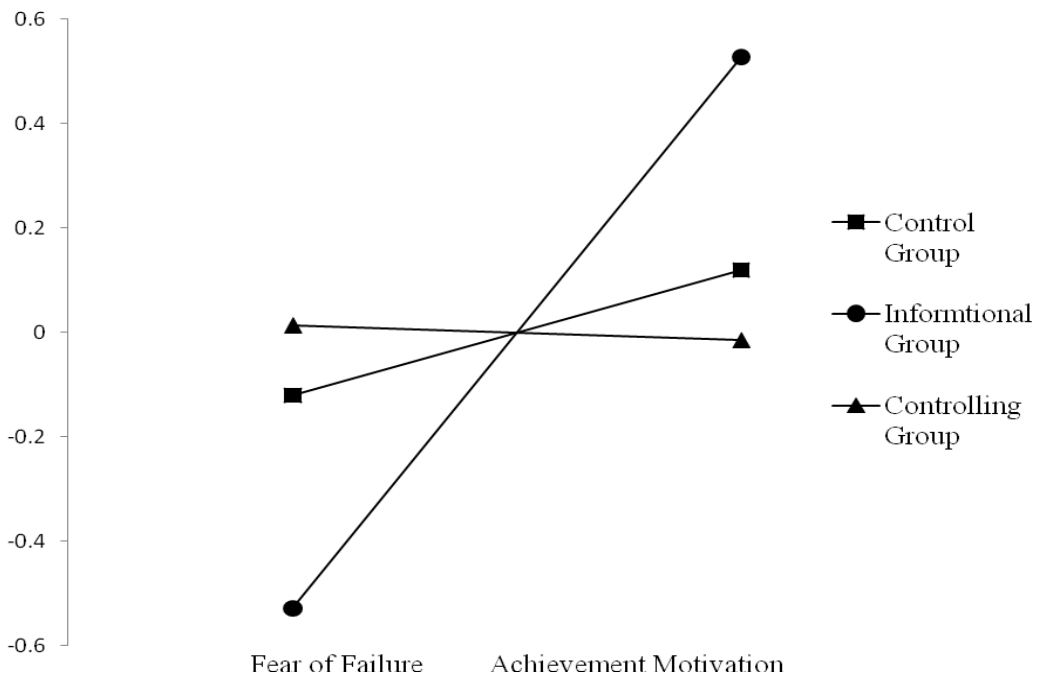

Figure 3. Plot of Regression Slopes

The overall interpretation of the interaction of achievement motivation and the experimental conditions is different than that given in Hypotheses 6a and 6b. Achievement motivated individuals were expected to perform their worst in the no expected evaluation condition. Yet, the slope analysis suggests there was no difference in the creative performance of AMs in the no evaluation or controlling expected evaluation. Instead, AMs performed their most creatively when expecting an information evaluation. Fear of failure individuals were expected to perform their worst in the controlling expected evaluation condition and possibly moderately well in the no expected evaluation and informational evaluation conditions. Instead, fear of failure individuals performed their worst in the expected informational evaluation condition. Based upon this analysis,

even though the interaction effect was significant, the form of the interaction was not what was hypothesized so there is no support for Hypotheses 6a and 6b.

Finally, Hypothesis 7 suggested the effect of the interactions between achievement motivation and the experimental manipulations on creative performance should be mediated by prevention and promotion focus. As already noted, there was no effect of state prevention and promotion focus on creative performance meaning there was no mediation effect. In short, if mediator is not significantly link with the dependent variable there is no case for mediation. The effects of the interactions on prevention and promotion focus were still tested. This was done, more or less, in an exploratory way to see if the interactions between implicit achievement motivation and the expected evaluations affected either prevention or promotion focus as proposed. These interactions did not significantly affect either prevention or promotion focus. Since these two major linkages in a mediation hypothesis were found untenable there was no reason to continue testing for partial or distal mediation. Thus, there was no support for Hypothesis 7. It is possible the lack of support for the various mediation hypotheses in this study is because of the issues regarding the scale used to measure state regulatory focus that was developed for this study.

CHAPTER 4

DISCUSSION

Description of Results

The shape of the interaction between the achievement motivation construct and the manipulations of expected evaluation was not what was predicted in the original hypotheses. The effect discovered here does have a potential explanation. Those who are more fear of failure oriented have a personality that is built up around defenses for avoiding behaviors and for placing blame for failure on others. It is not until a fear of failure individual has to take true responsibility for a failure that the anxiety and various negative aspects of a failure or potential for failure are at their maximum. In terms of the experimental conditions used in this study, one could argue that the "no evaluation," or control condition would not present a stressful environment for fear of failure individuals since they did not have to worry about evaluation. This was what was originally argued in the hypothesis development. Opposite of the original theory, the controlling condition might not be problematic for fear of failure oriented individuals because the expectation provided by the manipulation was that the raters are not particularly nice and instead are critical by nature. Fear of failure oriented individuals could blame failure here on the raters' negativity and not on their own shortcomings. Said another way, any failure here would be because the raters were expected to be overly harsh and not because the participant did poorly. If performance information were shared among the participants then one might reasonably expect all the participants to find out they had done poorly.

Opposite of the original theory, the informational condition could be the most troublesome for fear of failure individuals. Fear of failure individuals typically expect to do poorly at difficult tasks in general (Harackiewicz, et al. 1987). But in the informational condition the expectation as stated for the evaluation was that the raters should say what was nice and good about someone's work and provide helpful information on how to improve. It could be then that the fear of failure oriented individuals, since they expect to do poorly, believed the evaluation that they expected would contain veiled attempts to provide positive feedback or that these positive and helpful raters would not be able find anything positive at all on which to comment. If the performance information were shared among the participants, the fear of failure individuals would expect to see clear differences; those who had skill at the task would receive glowing evaluations but those without skill (as fear of failure individuals often see themselves) would receive feedback mostly with helpful suggestions. Here, the failure can no longer be placed on the difficult rater (as in the controlling condition) but, instead, lies with the participants own poor work and lack of skill. The lack of skill component is personally damaging to fear of failure individuals since they do not think they can gain or improve various skills and abilities. The informational evaluation condition then provides the most stressful situation for fear of failure individuals because only in this condition are they the ones who will take the blame for below average work. The arguments here are similar to concepts from attribution theory (see: Stotland & Canon, 1972) where individuals exert cognitive effort searching for the sources of their behaviors. In the informational evaluation condition, the fear of failure people expect to do poorly and do not think they can gain or improve skills. Thus, when helpful evaluators

cannot find anything nice to say there is then only one person left to take the blame. Other research has uncovered similar effects. Harackiewicz and her colleagues (1985) found that those lower in achievement motivation did not enjoy receiving even positive information on their performance.

The effect for achievement motivated individuals can also be explained. These individuals exhibited some of the highest levels of creative performance in the expected informational evaluation condition and this was expected based upon the original theory. However, they did not do equally well in the expected controlling evaluation condition, which is contrary to the original theory. The controlling expected evaluation condition provides the opportunity for feedback that achievement motivated individuals like, but one thing missing from the information given to participants about the feedback was the standard that would be used. When achievement motivated individuals expect to hear positive information it could make no difference to them if they also do or do not know the performance standard. But when in a position where the evaluation could be harsh, without knowing the performance standard the achievement motivated individuals had no way to judge for themselves if the evaluation would be relevant to them in their view or if it would be overly harsh in some way that was out of their control, which would make the evaluation irrelevant to them. Because there was no way to judge the performance standard being used, the achievement motivated individuals may have discounted the evaluation. Harackiewicz and her colleagues (1985) found that those high in achievement motivation exhibited higher performance when there was a given norm for performance thus supporting the notion that a standard is important in priming the achievement motive.

Theoretical Considerations

I included multiple measures of intrinsic motivation and variables suggested to be facets of intrinsic motivation such as self-determination and perceived competence. One possible explanation for the small correlation between intrinsic motivation and creative performance is poor measurement. By including multiple measures, some of which have not been used in laboratory studies of creativity in the published literature to date, such as perceived competence and self-determination allows one to show how the variables and concepts of this theory relate to these other factors and possibly better explain creative performance even after trying to rectify measurement issues.

It was thought that some of these variables would be difficult to tease apart. It is not clear from their descriptions or theoretical background how variables such as perceived competence and self-efficacy differ from one another conceptually. This issue is certainly relevant here for a number of variables discussed but it should not be all that surprising either. Theorists have discussed intrinsic motivation for quite some time as a large and encompassing variable that is difficult to study as a unified concept (c.f. Hidi, 2000). Yet, explorations of the link between intrinsic motivation and creativity have almost exclusively conceptualized intrinsic motivation in terms of interest and enjoyment. While interest and enjoyment do partly make up the construct of intrinsic motivation, studying only those factors may leave the field wanting for more detail.

It, however, is not clear that continuing to study creativity under the exclusive theoretical perspective of intrinsic motivation is prudent. Because intrinsic motivation is such a broad concept it may be time to try to break it down into its component parts and also explore other theoretical perspectives. Many of the facets of intrinsic motivation (i.e.

competence, interest, self-determination, satisfaction, enjoyment) have their own theoretical backgrounds divorced of an intrinsic motivation paradigm and might even differentially predict creativity as well as other outcomes (Hidi, 2000). As an example, an individual may feel very knowledgeable about some performance domain, have considerable experience, and feel quite competent (i.e. perceived competence) but could also be co-opted by an organization to engage in that performance domain even though they no longer wish to be a part of that organization for any number of reasons (i.e. low self-determination and low enjoyment) such as an overbearing supervisor or unhelpful coworkers. In this example, perceived competence and self-determination would be opposite, though both are components of intrinsic motivation (Deci & Ryan, 1985) and it is not entirely clear what this would mean for intrinsic motivation or creativity. While I do not suggest that researchers should abandon intrinsic motivation, I do suggest they consider the various facets in more detail and freely use other theoretical perspectives to describe creativity.

It is also important to note that most of the variables (all but creative self-efficacy) thought to predict creativity based upon prior research with intrinsic motivation failed to provide a significant effect in any of the analyses here. Zero-order correlations between various measures of and similar to intrinsic motivation and creative performance were small and not significant with the exception of creative self-efficacy, which was only marginally significant. While a CFA was able to tease apart these variables, they are highly correlated with one another. In addition, none of these variables were significantly related to creative performance in a regression analysis. Further *post hoc* analyses not

reported here suggested that intrinsic motivation was also not involved in any interaction effects in this study as well (see also Shalley & Perry-Smith, 2001).

Other concepts studied here are also undeniably linked. Some may see promotion focus from the regulatory focus framework as being intrinsically motivated whereas prevention focus is more extrinsically motivated. This is likely because a prevention focus relies on felt obligations and obligations are often constraints applied by others to constrict or control how or why a behavior is conducted. This, of course, does not have to be the case. Individuals can pursue tasks and activities for felt personal responsibility (Deci & Ryan, 1985; Grant, Little, & Phillips, 2007) and felt personal responsibility does not equate to extrinsic motivation but may still result in a prevention focus. Individuals my feel quite satisfied (an indicator of intrinsic motivation according to Amabile, 1996) with successful task completion even when regulating their behavior with a prevention focus (Higgins, Shah, & Friedman, 1997). Thus, intrinsic motivation is not regulatory focus. Further more, while intrinsic motivation and both state and trait promotion focus are significantly and positively correlated, intrinsic motivation and state prevention focus are significantly and positively correlated as well.

Finally, some may argue that intrinsic motivation and achievement motivation are essentially the same thing. This may stem from poor conceptualization and measurement of achievement motivation itself (James, 1998; James & Mazerolle, 2002). Regardless of the substantial issues that have plagued the study of both intrinsic and achievement motivation, achievement motivation is an individual difference variable often studied under the rubric of traits, needs, or personality (James & Mazerolle, 2002). This then indicates the phenomenon under study originates in the individual. The theory developed

here rests considerably on theory integrated and developed by James (1998; James & Mazerolle, 2002) who suggest individuals differentially frame similar objects or events. That is to say, when studying personality, we keep the "world out there" relatively constant and describe how different personality "types" respond to that stimulus.

The study of intrinsic motivation, on the other hand, comes at the study of human behavior from the other direction. Rather than keeping the "world out there" constant, intrinsic motivation theories primarily keep individual differences constant and then alter objects or events and theorize what might happen. With rare exception (see control orientations of Deci & Ryan, 1985), individual differences such as personality are ignored by theories of intrinsic motivation. Regardless of paradigmatic differences between theories of personality and theories of situations indicating significant differences between the two sets of theories and variables, intrinsic motivation and achievement motivation share some similarities.

The similarities between achievement and intrinsic motivation might indicate to some that they are simply two descriptions of the same set of behaviors. Theories of achievement motivation and intrinsic motivation both describe an individual's beliefs about their capabilities to perform (i.e. competence) and the extent to which they have control over themselves and situations (i.e. self-determination). With achievement motivation we tend to see those who have a relative motivate to achieve that overpowers their need to avoid failure as concerned with competence evaluation and a belief that they drive their own performance (i.e. a belief that effort leads to performance). However, and quite unlike theories of intrinsic motivation, theories of achievement motivation suggest those who are more inclined to achieve than to avoid failure enjoy and seek out extrinsic

rewards (i.e. pay for performance, feedback, evaluation) all of which should severely damage intrinsic motivation. In short, those that we might consider the most intrinsically motivated because of their personal standing on constructs like perceived competence and self-determination might actually be viewed as the most extrinsically motivated because of their use of external factors. Indeed, considerable research suggests those with a need for achievement versus a need to avoid failure respond quite differently to environmental stimuli (c.f. Epstein & Harackiewicz, 1992; Harackiewicz, et al, 1987; Harackiewicz, et al., 1985; Tauer & Harackiewicz, 1999) and those who are more achievement oriented respond positively to various extrinsic constraints such as competition, competence information (i.e. feedback), and rewards. Conceptualization and expected effects of intrinsic motivation and achievement motivation then are quite different.

Empirical evidence also suggests intrinsic motivation and achievement motivation are not the same. In this study, the zero-order correlation of intrinsic motivation and explicit achievement motivation was significant and of a moderate size. The correlation between intrinsic motivation and implicit achievement motivation, however, was small and not significant. Neither intrinsic motivation nor explicit achievement motivation predicted creative performance but implicit achievement motivation did. A perceived link between achievement motivation and intrinsic motivation, as both are currently conceptualized in the literature, likely stems from a surface level understanding of both concepts. At the most basic level, both individuals approaching a difficult task via either achievement motivation or intrinsic motivation likely appear to be enjoying what they are

doing. It is not until one starts to question *why* these individuals are enjoying the work do we see the differences between these constructs.

Implications

There are many implications from the work presented here. The current dominant theory of creative performance is the componential model (Amabile, 1996) and the major proposition of the componential model, the intrinsic motivation principle, has proven difficult to support (c.f. Grant & Berry, 2011). New theory and empirical research should help guide new developments in understanding, predicting, and assisting creativity in the workplace beyond that provided by the componential model.

The intrinsic motivation principle suggests intrinsic motivation is the most important variable predicting creative performance and this is true even in the workplace (Amabile, 1996; Amabile & Mueller, 2008). The literature review and mean weighted size of the relationship between intrinsic motivation and creative performance for adults at work or in work-like environments suggested this effect is small. The results of this study also found no support for intrinsic motivation as a predictor of creativity. The two studies purporting full support (i.e. Dewett, 2007; Shin & Zhou, 2003) were questioned for conceptual and methodological reasons. If intrinsic motivation is the most important variable predicting creative performance one would hope the effect would be larger. This suggests there is much left to explain about what motivates the individual creativity of adults.

I developed new theory to predict the creative performance of individuals in the workplace or work-like environments. First, this new theory suggests regulatory focus mediates the effects of outside factors on creative performance. The effect of regulatory

focus on creativity has been supported in prior research. Unfortunately, the effect of regulatory focus on creativity was not replicated here. This study relied on a new measure of state regulatory focus and this measure proved to be problematic. It seems likely that prevention and promotion focus are related to creative performance but the measurement problems in this study prevented that effect from materializing.

This theory suggests achievement motivation is an important predictor of creative performance in the workplace and that achievement motivation predicts how individuals respond to external factors like expected evaluation and how those factors affect creativity. The results of this study supported the theory that achievement motivation is a significant predictor of creativity. The results of this study also suggested that individuals frame environmental factors differently based upon their personality and that differences, specifically in achievement motivation, can explain differences in creative performance when different expectations of performance evaluation are in play. The effects from the interaction between achievement motivation and expected evaluation did not take the form of what was originally theorized. The effects, however, were able to be reevaluated in terms of the original theory.

Future Research

The research presented here suggests personality is important in predicting creative performance and that personality is also important in determining how individuals react to environmental factors. The personality variable studied here was achievement motivation conceptualized and measured as a relative motive where individuals balance an internal approach-avoidance conflict resulting from both a need to avoid failure and a need to achieve. That personality variables other than forms of

creative personality are related to creative performance, while not novel, is something that has been absent from the creativity research literature with only rare exception (c.f. George & Zhou, 2001; Shalley, Gilson, & Blum, 2009).

There are two potential and related research opportunities suggested by this finding. The first is that researchers need to consider other personality variables in their efforts to better describe creative performance of individuals at work. These variables may be important predictors on their own, as was the case with achievement motivation but they may also be important in determining how it is that individuals interpret the environment around them without having a main effect on creativity.

The second opportunity highlighted by this research is the need for organizational scientists to better understand and measure personality. While organizational scientists have warmed back up to the notion of studying personality since Barrick and Mount's (1991) meta-analysis reviving this area, the predictive validity of most measures of personality have not improved (c.f. James & Mazerolle, 2002; Morgeson, Campion, Dipboye, Hollenbeck, Murphy, & Schmitt, 2007) since Guion and Gottier's (1965) critical assessment more than four decades ago. This is at least in part because organizational scientists are still relying on self-report measures of personality constructs developed from factor analytic models (Cattell, 1947) more than six decades ago (James & Mazerolle, 2002). Without going into too much detail, these measures were essentially developed from the personality concepts of laypersons. It is also expected from any self-report measure of personality that individuals will have true insight into their reasoning processes also known as veridical perception. Considerable research suggests individuals do not have veridical perception (c.f. James & Mazerolle, 2002; Nisbett & Wilson, 1997)

and measures of self-report personality not only predict very little but do not correlate with measures of implicit personality that exhibit much higher predicative validities (James, 1998; James, et al., 2005; LeBreton, et al., 2007). This same pattern of results was repeated here in this research where the implicit and self-report measures of achievement motivation were not highly correlated (r = -0.14) with one another and implicit achievement motivation was significantly related to the outcome variable whereas the self-report measure of achievement motivation was not.

There appear to be opportunities to advance the study of individual creative performance at work though the development of better measures of personality. One measure in need of development is an implicit measure of creative personality. While creativity likely stems from cognitive differences, individuals who are creative will likely develop justification mechanisms to defend their continued development of alternative ways for accomplishing tasks and their disregard for the status quo. This suggests creative personality, while not necessarily the source of individual creativity, exists as an individual support mechanism that could be measured and used to predict individual differences in creative potential.

A potential area of concern with this research also highlights an opportunity for future research. There was a creativity goal in every condition of the laboratory experiment; yet, the theoretical description of personality used often revolved around natural proclivities for reasoning. It is possible that the strong situation provided by the creativity goal washed out some of these natural proclivities. The hypothesis developed around these natural proclivities suggesting that individuals who are more achievement motivated should be more creative than those who are more fear of failure motivated was

supported. However, this hypothesis was supported after participants had been asked to be creative. A potential area for future research could then be testing the effects of achievement motivation on creative performance when individuals are not asked to be creative. This could possibly give one a stronger position for discussing the natural proclivities of individuals compared to when they are in a strong situation like that provided by the creativity goal of the laboratory instructor.

Finally, there were substantial issues with the measure of state regulatory focus developed for and utilized in this study. A brief review of the research literature presenting laboratory studies of regulatory focus was conspicuously absent of a measure of state regulatory focus. Many studies failed to even report measures of manipulation checks or effects for those manipulation checks with respect to regulatory focus. Instead, in many of these studies, researchers provided some stimulus expected to alter regulatory focus and then measured an outcome that should be affected by differences in regulatory focus. The closest thing to a measure of state regulatory focus was a procedure that measured laboratory participants' response times to different words tied to both prevention and promotion focus. When an individual responded more quickly to the promotion focused words they were seen as promotion focused and when they responded more quickly to prevention focused words they were seen as more prevention focused. At least in the literature reviewed, this procedure was never undertaken to measure state regulatory focus as a mediating variable between a laboratory manipulation and a separate outcome. It would also be logistically difficult to use this type of a measure in a laboratory where the effect from the manipulation may not be long lasting. This suggests

a contribution could come from the development of a state measure of regulatory focus that is easy to administer.

Limitations

One limitation some are likely to see with this research is the reliance on a student sample. The fear is that students are unrepresentative of the population with which researchers hope to generalize with their research (c.f. Highhouse & Gillespie, 2009). Fortunately, there is little reason to believe that the factors explored in this research act differently in work environments with somewhat older individuals than they do in the laboratory with a student sample.

The implicit biases measured by the relative motive strength instrument of achievement motivation and fear of failure are fully developed and utilized by individuals that have reached college age (c.f. James, 1998). These biases to approach or avoid difficult or challenging situations are used by individuals in both work and school environments (James, 1998; James & Mazerolle, 2002). Differences in personality between workers and students are unlikely to prevent this work from generalizing.

The task developed by Shalley (1991) used to assess creative performance is also designed to be representative of the kinds of management problems individuals might find in the workplace. This is not a simple idea generation task (c.f. Friedman & Förster, 2000, 2001, 2005) that may only measure one part of creative performance. And, while not everyone in the sample was a management major it is often the case that some managers are not management majors either (many of the individuals enrolled in the Principles of Management Course were not management majors but required to take Principles of Management as part of their major requirements since they are likely to

work in management-like positions in the future). The problems presented in the task are complex and require effortful thought to provide creative solutions. The scenarios presented are contrived but based on realistic situations. There is little reason to believe the kind of effortful thought required in one type of job is qualitatively different from the effortful thought required by another job type or for complex tasks provided in a laboratory environment. If there are differences in effortful thought between jobs then this would represent a boundary condition that would need to be tested and would also indicate that field research conducted in one site would have the same generalizability problem as laboratory research.

Situational cues provided by the environment will be different in some cases from the manipulations provided here but the overall effect is expected to be similar. If, for instance, someone feels their intelligence is threatened and they do not view their intelligence as also being malleable, would it make a difference if the threat comes from a laboratory manipulation or the evaluation of a supervisor? The effect from the supervisor should be just as strong if not stronger than the effect found in the laboratory because the individual's livelihood is involved. While there was no main effect for the laboratory manipulations in this study, the manipulations still interacted with personality. This suggests the manipulations were effective, but because the effects could be different between laboratory and field research, this does provide an opportunity.

There is little reason to believe the effects from a carefully designed laboratory study will not generalize to working populations (Highhouse & Gillespie, 2009) and laboratory studies have a number of strengths. Because expected evaluation is manipulated we are in a stronger position to discuss causality. Without the controlled

environment of the laboratory it would be much more difficult to determine causality. In some instances laboratory studies suggest what might happen in the workplace versus what could happen. In this study, since there are effects found for the various different factors with disinterested sophomores (c.f. Highhouse & Gillespie, 2009), the expectation is that these effects exist in the workplace.

Finally, this study was a cross sectional study by design. The effects of actual evaluation and resultant feedback seeking behaviors that play out over time (Renn & Fedor, 2001) were not considered here. Future research should explore how actual evaluations and individual feedback seeking affect creativity over time. Kuhl and Blankenship (1979) suggest that with some success, FFs do eventually begin to select more difficult tasks on which to work. Yet, even though FFs may try to master more difficult tasks, this does not mean they will necessarily work to go beyond the mastery that others have achieved before them. This indicates the work of FFs may not move toward what we would consider all that creative since it should lack novelty.

Conclusion

The research reviewed and the theory developed here has major implications for the study of creativity. This research suggests the theory currently guiding much of the research on creativity, especially in the workplace, is incomplete. The theory developed, the results found, and the future research proposed here could significantly alter this paradigm. Based upon this work it is clear that there is still a considerable amount we have yet to learn about the creative performance of individuals especially those at work.

APPENDIX A: MANIPULATIONS

Expected Evaluation Manipulations

Original manipulations from Shalley and Perry-Smith (2001: 9-10) [problem words / phrases underlined].

Original Controlling

Now, you have a creativity goal, and we expect you to be creative. This is vitally important to us, and we expect you to generate creative solutions for this study. In fact, your data is needed to complete this study. Now you are going to be judged on how creative you are by experts in human resources, so they are knowledgeable and tough. These experts will critically evaluate your solutions to these problems by analyzing every thought you have in the memo and judging if it is creative or not. We will send you your score so that you know if you performed as you should have. You'll be sent your score and told how your score compared to what we wanted. Remember, you should be creative. I will be asking you later for an address where I can mail your score to you.

Original Informational

Later, experts in human resources will carefully review your solutions to these problems. We need this review as part of the study. We will provide you with a copy so that you can learn from this study, since we have their evaluations. They may tell you what they liked about your responses and/or suggest alternative approaches or improvements on what you did. I'm sure each of you will find this information useful because creative problem solving in business is highly valued and will help you in the real world. Anyone can solve problems by coming up with typical solutions, the same old thing everyone else would suggest, but the employee who is creative and offers unique

ideas stands out. So, the feedback from the evaluators will help you learn something that will be useful beyond this study and beyond the school setting. Now, remember we are interested in you trying to be creative. I will be asking you later for an address where I can mail the reviews to you.

Controlling Evaluation – This Study

Now, you have a creativity goal, and we expect you to be creative. This is vitally important to us, and we expect you to generate creative solutions for this study. In fact, your data is needed to complete this study. Now you are going to be judged on how creative you are by experts in human resources, so they are knowledgeable and tough. These experts will critically evaluate your solutions to these problems by analyzing every thought you have in the memo and judging if it is creative or not. We will give you your score so that you know if you have done as you should have. You'll be sent your score and told how your score compared to what we wanted. Remember, you should be creative. I will be asking you later for an address where I can mail your score to you.

Informational Evaluation – This Study

Later, experts in human resources will carefully review your solutions to these problems. We need this review as part of the study. We will provide you with a copy of the experts' comments, since we have their evaluations. They may tell you what they liked about your responses and/or suggest alternative approaches or improvements on what you did to help you improve. I'm sure each of you will find this information useful because creative problem solving in business is highly valued and will help you in the real world. Anyone can solve problems by coming up with typical solutions, the same old thing everyone else would suggest, but the employee who is creative and offers unique

ideas stands out. So, the feedback from the evaluators will help you. Now, remember we are interested in you trying to be creative. I will be asking you later for an address where I can mail the reviews to you.

Creativity Goal

We would like all of you to try to develop creative solutions to the problems presented in these memos. Creative solutions are solutions that are considered novel or original in nature but that are also still appropriate for the situation. In other words, as you think of new ways to solve the issues at hand, also try to keep in mind that the company portrayed must still be able to actually implement the solution.

Do you all understand what I mean by creativity?

Do you all agree to try your best at developing creative solutions to these memos?

APPENDIX B – MEASURES

Implicit Achievement Motivation Sample Question

Item from James (1998)

Studies of the stress-related causes of heart attacks led to the identification of the Type A personality. Type A persons are motivated to achieve, involved in their jobs, competitive to the point of being aggressive, and eager, wanting things completed quickly. Interestingly, these same characteristics are often used to describe the successful person in this country. It would appear that people who wish to strive to be a success should consider that they will be increasing their risk for a heart attack.

Which one of the following would most weaken the prediction that striving for success increases the likelihood of having a heart attack?

A. Recent research has shown that it is aggressiveness and impatience, rather than achievement motivation and job involvement that are primarily causes of high stress and heart attacks.

B. Studies of the Type A personality are usually based on information obtained from interviews and questionnaires.

C. Studies have shown that some people fear being successful.

D. A number of nonambitious people have heart attacks.

E. People tend to be highly ambitious during the early parts of their careers (James, 1998: 139, italics in original).

Selection (A.) is the achievement motivation outlet based on the justification mechanism suggesting AMs will have a "positive connotation of achievement striving" (James, 1998: 139).

Selection (D.) is the fear of failure outlet and is based on a wounding response. FFs agree with the notion that achievement motivation is associated with health problems. Thus, they must be provided with an outlet that provides "only minor logical damage" (James, 1998: 141) to the stem.

Regulatory Focus

Trait Control Measure

Lockwood and colleagues (2002).

1. In general, I am focused on preventing negative events in my life (prevention).
2. I am anxious that I will fall short of my responsibilities and obligations (prevention).
3. I frequently imagine how I will achieve my hopes and aspirations (promotion).
4. I often think about the person I am afraid I might become in the future (prevention).
5. I often think about the person I would ideally like to be in the future (promotion).
6. I typically focus on the success I hope to achieve in the future (promotion).
7. I often worry that I will fail to accomplish my academic goals (prevention).
8. I often think about how I will achieve academic success (promotion).
9. I often imagine myself experiencing bad things that I fear might happen to me (prevention).
10. I frequently think about how I can prevent failures in my life (prevention).
11. I am more oriented toward preventing losses than I am toward achieving gains (prevention).

12. My major goal in school right now is to achieve my academic ambitions (promotion).

13. My major goal in school right now is to avoid becoming an academic failure (prevention).

14. I see myself as someone who is primarily striving to reach my "ideal self"—to fulfill my hopes, wishes, and aspirations (promotion).

15. I see myself as someone who is primarily striving to become the self I "ought" to be—to fulfill my duties, responsibilities, and obligations (prevention).

16. In general, I am focused on achieving positive outcomes in my life (promotion).

17. I often imagine myself experiencing good things that I hope will happen to me (promotion).

18. Overall, I am more oriented toward achieving success than preventing failure (promotion).

State Measure

Original items from Neubert, et al., 2008.

1. I concentrate on completing my work tasks correctly to increase my job security (security - prevention).

2. At work I focus my attention on completing my assigned responsibilities (oughts - prevention).

3. Fulfilling my work duties is very important to me (oughts - prevention).

4. At work, I strive to live up to the responsibilities and duties given to me by others (oughts - prevention).

5. At work, I am often focused on accomplishing tasks that will support my need for security (security - prevention).

6. I do everything I can to avoid loss at work (losses - prevention).

7. Job security is an important factor for me in any job search (security - prevention).

8. I focus my attention on avoiding failure at work (losses - prevention).

9. I am very careful to avoid exposing myself to potential losses at work (losses - prevention).

10. I take chances at work to maximize my goals for advancement (gains - promotion).

11. I tend to take risks at work in order to achieve success (gains - promotion).

12. If I had an opportunity to participate on a high-risk, high-reward project I would definitely take it (gains - promotion).

13. If my job did not allow for advancement, I would likely find a new one (achievement - promotion).

14. A chance to grow is an important factor for me when looking for a job (achievement - promotion).

15. I focus on accomplishing job tasks that will further my advancement (achievement - promotion).

16. I spend a great deal of time envisioning how to fulfill my aspirations (ideals - promotion).

17. My work priorities are impacted by a clear picture of what I aspire to be (ideals - promotion).

18. At work, I am motivated by my hopes and aspirations (ideals - promotion).

Developed for this study

1. I was careful to avoid exposing the company and individuals depicted in the memos to potential losses (losses – prevention).

2. I tried to answer the memos in a way that would reduce threats generated by the solutions I provided (security – prevention).

3. Meeting responsibilities imposed by the corporate environment portrayed in the memos guided my answers to a large degree (oughts – prevention).

4. I relied significantly on the goal of preventing embarrassing outcomes that were evident in these memos (security – prevention).

5. I took chances while completing the memos to maximize the depicted company's goals (gains – promotion).

6. The best way to develop successful answers to the problems presented was to take risks (achievement – promotion).

7. I had a clear picture of what I aspired to accomplish as I worked on the memos (ideals – promotion).

8. Preventing different kinds of looses was something I considered while completing the memos (losses – prevention).

9. The potential of losing something was on my mind as I worked on the task (losses – prevention).

10. I felt things ought to be done in a specific way in the corporate environment and that was on my mind as I completed the memos (oughts – prevention).

11. As I worked on the memo task I felt an obligation to provide proper solutions (oughts – prevention).

12. The safety of the company and individuals depicted in the memos was a concern to me as I worked on the task (security – prevention).

13. The way I solved the issues in the memos provided opportunities for future growth (gains – promotion).

14. I was concerned with what the company and individuals portrayed in the memos might gain based on my solutions (gains – promotion).

15. Achievement was a major factor I considered while working on the task (achievement – promotion).

16. It would have been difficult to accomplish much without going a step beyond what might normally be expected (achievement – promotion).

17. I felt it was important to develop solutions that the individuals portrayed would like (ideals – promotion).

18. I though about developing ideal solutions to the problems presented as I worked on the memos (ideals – promotion).

Manipulation Checks

Original Expected Evaluation Items

1. I expect to receive information about what it is that experts in human resources liked about how I answered the problems in the memos. (informational evaluation)

2. Human resources experts are going to critically judge my performance on this task. (controlling evaluation)

3. I expect to receive information on how evaluators thought I should have performed on this task. (controlling evaluation)

4. Human resources experts are going to provide me an evaluation of my answers to these memos that will include information on how I could improve. (informational evaluation)

5. The solutions I provided to the memos are vitally important to the individuals running the study. (controlling evaluation)

6. I expect that the human resources experts evaluating my answers are knowledgeable and tough. (controlling evaluation)

New Expected Evaluation

1. I was told by the researcher that many people who receive the evaluations from the human resources experts find it useful (informational evaluation).

2. I was told by the researcher that employees who are able to develop creative solutions often stand out in positive ways (informational evaluation).

3. I was told by the researcher that feedback from the experts will be helpful (informational evaluation).

4. I expect to find out positive information about how I performed while working on the memo task (informational evaluation).

5. The creativity score I receive for my work today may not be as high as I would like because the researcher said that the human resources experts are tough (controlling evaluation).

6. I was told by the researcher that experts will be quite critical in comparing my work to what they wanted to see (controlling evaluation).

7. The researcher made it sound like experts who will be judging my creativity might be rather harsh (controlling evaluation).

8. I believe the feedback I receive about the memo task will be negative (controlling evaluation).

Creativity Goal

1. I was given a creativity goal while working on this task.

2. The laboratory instructor asked me to develop creative solutions to the memos.

3. I tried to develop creative solutions to the memos because I was told that creativity was expected.

Control Measures

Explicit Achievement Motivation

From Mathieu (1990)

1. I take moderate risks and stick my neck out to get ahead on my assignments.

2. I enjoy working hard as much as relaxation.

3. I do my best work when my assignments are fairly difficult.

4. I set difficult goals for myself that I attempt to accomplish.

5. I try to perform better than the other students in my class.

6. I feel the spirit of competition in most of my scholastic activities.

7. I try very hard to improve on my previous scholastic performance.

Intrinsic Motivation

Shalley & Perry-Smith (2001)

1. I really became absorbed with the task while working on it.

2. The task was very involving.

3. Working on this task was fun.

4. I though the task was very interesting to me.

5. I think the task is important and worthwhile to work on.

6. The task was pretty boring.

7. I enjoyed working on the task.

Tierney and colleagues (1999)

1. I enjoy finding solutions to complex problems.

2. I enjoy coming up with new ideas.

3. I enjoy engaging in analytical thinking.

4. I enjoy creating new procedures for tasks with which I am working.

5. I enjoy improving existing processes or products.

Perceived Competence

1. I was confident in my abilities while working on the memo task.

2. I was self-assured about my capabilities while completing the memos.

3. I had the skills necessary to complete the memos.

Self-Determination

1. I had significant autonomy in determining how I worked on the memo task.

2. I was able to decide on how I went about working on the memos.

3. I had considerable independence and freedom in working on the memos.

Creative Self-Efficacy

1. I felt that I did a good job generating novel ideas while working on the memo task.

2. I was good at finding creative ways to solve the problems presented in the memos.

3. I had confidence in my ability to solve the memos creatively.

PANAS

1. Afraid

2. Alert

3. Jittery

4. Determined

5. Irritable

6. Inspired

7. Guilty

8. Excited

9. Upset

10. Interested

11. Hostile

12. Proud

13. Ashamed

14. Enthusiastic

15. Distressed

APPENDIX C – IN BASKET EXERCISE

Below is the text of a cover sheet that participants receive as part of the in basket exercise.

K.A.L. – American Steel

K.A.L. – American Steel is a large steel company. Formed shortly after World War II, it has achieved considerable sales volume (domestic and international) and employs almost 19,000 people. Some, but not all, plants and offices are unionized. United States sales and services are carried out through four regional organizations and an international office located in Toronto, Canada. The company has officers in all principal functional fields who generate corporate policy in conjunction with the president and general managers in the regional organizations.

Pat Morgan is the Personnel Director of a regional organization. Pat is very well-liked and respected within the organization. Both supervisors and employees feel comfortable talking to Pat about their work and non-work related problems. They appear to trust Pat's professional and personal opinions. Pat reports to Jack St. John, the Vice President of Personnel at corporate. Jack gives each of the regional Personnel Director's considerable latitude in resolving issues, and is a very supportive boss.

Pat has just returned from a two week vacation. A few very different problems and issues have arisen that demand Pat's attention.

Memo 1

TO: Pat Morgan

FROM: Sue O'Leary

I need your advice. I have had an informal arrangement with one of my best employees, Janet Charmicle. Technically, everyone in the group works from 9:00 to 5:00, with some occasional overtime. For the past 6 months, Janet has worked from 9:00-3:00 in the office and then leaves to care for her elderly, mentally ailing mother. Her mother is in some sort of program/facility until 3:00PM each day and then goes home with Janet. Janet brings quite a bit of work home, and uses e-mail, phone, and fax from home to communicate with myself and her co-workers when necessary. Despite the shorter "in office hours", Janet remains the most productive and reliable member of my team. Our arrangement has worked well until recently, when some of the other employees in the group started asking for a similar arrangement. I don't want to let them do the same thing, since they have not demonstrated the commitment and diligence to warrant such unsupervised flexibility. Plus, if I made the arrangement available to all my employees there are a few who I know would abuse it – I am looking over their shoulder as it is in the office! On the other hand, if I tell Janet we can't continue to be flexible about her hours to care for her mother, I suspect that she will leave the company. What should I do? Janet is really one of my most valued employees.

Memo 2

TO: Pat Morgan

FROM: Stan Morse

I need your advice on how to deal with one of my female employees. She is a nice person and a very good worker. However, she always comes to work dressed very seductively. For example, she wears clingy, low-cut dresses, tight skirts, and see through blouses. Her appearance is distracting my male employees. They spend too much time ogling her, and not enough time doing their work. I know the company does not have a dress code, so how do I handle this situation? Please respond ASAP; the situation is affecting my department's performance!

Memo 3

TO: Pat Morgan

FROM: Fred

Someone has been stealing building materials over the weekend. I first noticed this three weeks ago when I helped a fellow load some on a Saturday. On Monday, the pile was much smaller. The next Saturday I took a count and wrote it down. Sure enough, on that Monday there were 25 less. They got away with 30 last weekend.

If you okay it, here's what I propose to do. I will come back to the yard late Saturday afternoon with a shotgun and some of my pals from the police department (who will be off duty) and stand watch. Then if we have "visitors", they will have a big surprise.

Is this all right with you, or do you have any other suggestions

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