FRAMING FOR CREATIVITY:
THE IMPACT OF FRAMING A TASK FOR GAINS AND LOSSES ON RISK PERCEPTIONS AND CREATIVE PERFORMANCE

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ABSTRACT

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This study examined the role of context in an individual's creative performance on a task. 231 undergraduate students participated in a lab experiment to assess the role of taks framing on creative performance. A modified version of Antes and Mumford (2010)'s creativity in-basket was used, with either a gain or loss-framed manipulation. It was hypothesized that a mediated moderation would occur where self-efficacy moderated the mediation of risk perceptions on the impact of framing on creative performance. However, the results indicated that while framing predicted both risk and creativity, risk was not correlated with creativity, and thus no mediation occurred. A number of explanations are provided for these findings.

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Introduction

In an era where organizational competitiveness is often determined by intellectual capital, organizations have placed increased emphasis on the unique and creative ideas their employees can bring to the table. Organizations in industries such as information technology, medicine, and engineering are competing with each other for the brightest minds and newest innovations. Consequently, researchers have emphasized that the selection of individuals with strong creative skills as well as the encouragement of creativity in the workplace are key components in an organization's success and survival. Recently, researchers (e.g., Gong, Huang, & Farh, 2009) have begun to demonstrate a link between creativity and job performance (see Gilson, 2008 and Mumford, 2003 for more discussion of the need for more of this research in the literature).

While creative ability is now considered crucial to performance and success, organizations are searching for alternate ways to encourage creative performance in their employees. Various theories in the literature describe how employees are often reluctant to be creative at work, fearing that they may be ridiculed or having concerns that their ideas will not be of adequate caliber for the task at hand (Csikszentmihalyi, 1996; Sternberg & Lubart, 1995). As a result, organizations need to consider ways to curb such fears as well as increase employee confidence in being creative at work. The proposed study examines one type of strategy, the effect of how a task is framed on individual creative performance.

The following sections describe the nature of creativity and its distinction from relevant constructs such as innovation and intelligence, and follow with a discussion of individual and contextual antecedents of creativity. The role of perceptions of risk in creative behavior is

described, as well as the potential for manipulating perceived risk via framing. The influence of self-efficacy on risk perceptions and their combined effect on creative performance will also be discussed. Finally, a model of framing for creativity is proposed, along with the hypothesized model for the proposed study.

Background on Creativity

While creativity is often easy to recognize once it is encountered, it is a difficult phenomena to define. A variety of studies have pointed to the lack of consensus on a definition for creativity (e.g., Amabile, 1983a; Hennessey & Amabile, 2010; Meusburger, 2009). The following section attempts to focus on some of the main similarities between creativity definitions, delineate the major areas of disagreement across definitions, and distinguish creativity between other conceptually similar constructs.

Definitions of creativity. Mumford (2003) notes that "we [creativity researchers] seem to have reached a general agreement that creativity involves the production of novel, useful products (p.110)". While there seems to be a consensus in the literature of what the construct entails at a general level, there is little agreement over the specifics related to creativity. In fact, Meusburger (2009) suggests that the sheer number of different definitions for the construct may add up to more than one hundred. Definitions of creativity tend to use one of three foci: the creative process, creative persons, or creative products (Amabile, 1983a; Shalley & Zhou, 2008; Hennessey & Amabile, 2010; Oldham & Cummings, 1996). Shalley & Zhou (2008) emphasize the creative process and define creativity as an engagement in problem solving through reflection and action, seeking feedback, experimenting, and discussing new ways to do

things (p.4)". This definition focuses on the behaviors exhibited in creativity and what makes individuals have more or less creative outcomes across situations and tasks.

Hennessey & Amabile (2010) focus on the on creative ability across individuals, treating creativity as "a relatively enduring and largely stable personality trait (p.573)". Thus, according to the creative persons emphasis, certain individuals may be more creative than others.

The creative products definition looks at the outcomes of creative problem-solving much in the way that work samples are measured to understand job performance. Hennessey & Amabile (2010) note that "creativity is seen as a fleeting and largely situation-dependent state (p.572)". Creative products are thus considered a type of performance under this definition, and the degree to which the individual demonstrates creative performance is the main focus of study.

While each of these three views of creatively is useful, the main focus on this paper is on the decisions involved in the creative process and on the individual creative performance. Creative abilities are also discussed in order to provide a context for understanding differences in the quality of creative products; however, the goal of this paper is to understand the factors influencing creative thought processes and creative performance in a work relevant task.

Researchers have identified various dimensions that constitute a creative product. These dimensions include fluency, or the number of creative ideas an individual generates; flexibility, the number of categories each idea spans; originality or novelty, the uniqueness of each idea (Shalley & Zhou, 2008); and the practicality or appropriateness of each idea (Amabile, 1983a). In organizational psychology, most definitions of creativity involve novelty and appropriateness, or utility, of ideas (e.g., Amabile, 1983a; Shalley & Zhou, 2008; Barron, 1955;

Mumford, 2003; Shalley, 1991). Barron (1955) explains that a given product is creative if it meets two criteria: it is uncommon within its task domain and it must be adaptive to the constraints that exist.

Thus, creativity involves the generation of novel and practical ideas. Creativity can function both as an individual skill, with certain individuals being more proficient in the generation of creative products than others, as well as a within-person type of performance, with certain situations leading to greater creative performance than others, regardless of skill. The present study examines the latter type of creativity, specifically an operationalization of creative performance that incorporates both novelty and appropriateness of a solution into a problem-solving scenario.

Creativity vs. innovation. Creativity has often been confused with the construct of innovation. Creativity is conceptually related but distinct from innovation. Innovation has been defined as "the successful implementation of creative ideas within an organization" (Amabile, et al., 1996, p. 1155). Specifically, innovation involves two processes: the generation of creative ideas, and the implementation of these ideas (West & Farr, 1990; Anderson, de Dreu, & Nijstad, 2004; Hülsheger, Anderson, & Salgado, 2009; Amabile, et al., 1996). The former of these processes is essentially the same as the process foci of creativity research. Amabile and colleagues (1996) explain that creativity is "a necessary but not sufficient condition" for innovation (p.1155). Both steps are equally important to innovation; without sufficiently creative ideas, there would be no progress. Similarly, without effective implementation, the innovative idea fails to have an impact (Klein & Knight, 2000).

Miron, Erez, and Naveh (2004) empirically demonstrated this distinction, showing that while creativity can lead to innovation, initiative is also required for organizational innovation to occur. As a result, a person can act creatively without necessarily being innovative. Therefore, it is important to recognize that while the creativity literature can be readily applied to innovation, one must be cautious when generalizing innovation findings to creativity.

Creativity and intelligence. Another construct that has often been confused with creativity is intelligence. In the past, creativity has occasionally been dismissed as simply the demonstration of cognitive ability. Amabile (1983a) notes that while intelligence and creativity are related, they are separate constructs. Research has provided evidence for an interaction between IQ and creativity (for more detail, see Barron, 1961; Getzels & Jackson, 1962; and Wallach, 1971), where individuals with low IQ were not creative, but no relationship existed between the two variables at high levels of IQ. Amabile explains that while intelligence is necessary for creative performance, it is not sufficient for creativity to occur.

Guilford (1950) also distinguishes between creativity and intelligence, focusing on the role of each in creative persons. He notes that while the two seem conceptually related, the construct of intelligence was originally aimed at an individual's ability to perform well in school, as measured mainly by reading and math assessments. As a result, tests of intelligence have measured the same types of dimensions, most of which have little or nothing to do with creative performance. Guilford argues that creativity cannot be measured using multiple choice items; instead, open-ended prompts are necessary for assessing creative ability. Consequently, many of the measures of IQ would provide little insight on creativity. The next

section describes the various abilities and traits that have been studied for their impacts on creativity.

Individual Differences and Creativity

Research indicates that people who are highly creative tend to share similar characteristics. A number of different personality and other trait factors have been tied to creative performance, including openness to experience (e.g., Batey, Chamorro-Premuzic, & Furnam, 2010; Leung & Chiu, 2008), extraversion (e.g., Stafford, Ng, Moore, & Bard, 2010), conscientiousness (e.g., Batey, et al., 2010; Moon, Kamdar, Mayer, & Takeuchi, 2008), self-efficacy (e.g., Chong & Ma, 2010; Gong, Huang, & Farth, 2009), learning goal orientation (e.g., Gong, Huang, & Farh, 2009; Simmons & Ren, 2009), duty and achievement striving (e.g., Moon, Kamdar, Mayer, & Takeuchi, 2008), polychronicity (e.g., Madjar & Oldham, 2006; Chong & Mah, 2010), and intelligence (e.g., Batey, et al., 2010). This type of research argues that these characteristics of people tend to lead to consistently better quality creative products at a higher rate than the general population (Barron, 1955; Guilford, 1950).

Personality. Perhaps the most commonly studied individual difference characteristic in creativity research has been personality. A wide range of traits have been associated with heightened creative performance, (see Scratchley & Hakstian, 2001 for more detail). Shalley and Zhou (2009) list some of personality factors that lead to creative performance, including "…self-confidence, aggressiveness, flexibility, self-acceptance, sensitivity, introversion, and intuitiveness (p.8)". Other traits that have been suggested to relate to creativity include "…rebelliousness, disorderliness,…exhibitionism, …independence of judgment, freedom of expression, and novelty of construction and insight (Barron, 1955, p.485)".

Guilford (1950) was among the first to focus on personality characteristics associated with creative performance, explaining that creative people are those who exhibit creative behaviors that include "inventing, designing, contriving, composing, and planning (p.444)". Guilford lists a number of hypothesized factors that relate to creative performance including sensitivity to problems; fluency, the ability to produce many creative ideas in a short timespan; novelty, the ability to generate uncommon ideas and solutions; flexibility of mind, the ability of the individual to switch between mindsets when generating creative solutions; synthesizing ability, ability to combine ideas into a gestalt; analyzing ability, the ability to break ideas down into their components; reorganization/redefinition, the ability to transform ideas or processes; complexity, the ability to incorporate a variety of interrelated ideas; and evaluation; the ability to determine which ideas are most appropriate for the situation or problem. According to Guilford, for a person to demonstrate creative performance, he or she should be highly skilled in each of the aforementioned areas.

While a number of traits in the "Big Five" have been linked to creative performance (e.g., Leung & Chiu, 2008; Batey, et al., 2010; Moon et al., 2008), there is debate within the literature regarding which specific traits are the best predictors of creative performance. Recently, researchers (Batey, et al., 2010; Moon, et al., 2008) have concluded that the subdimensions of specific factors within the Big Five are better predictors than their overall dimensions. These researchers explain that within one dimension of personality, certain subdimensions may suppress each other's effects on creative performance, thus resulting in no overall effect of that personality dimension.

For example, Batey and colleagues (2010) found that certain traits within the Big Five were related to self-reported creativity, as measured using the Runco Ideational Behavior Scale (RIBS), a self-report measure of creative behavior. Results indicated that of the Big Five, openness to experience and conscientiousness were the best predictors of creativity, with openness being positively related to self-rated creativity and conscientiousness functioning as a negative predictor. However, when the researchers looked at sub-facets of each type of personality, rather than for each of the five overall factors, a different predictive pattern emerged. Angry hostility (part of the neuroticism scale), aesthetics (openness to experience), and ideas (openness to experience) were all positive predictors of creativity, while vulnerability (neuroticism) and deliberation (conscientiousness) both negatively predicted creativity. Furthermore, the combined facets of angry hostility, vulnerability, aesthetics, actions (openness to experience), ideas, competence (conscientiousness), and deliberation explained more overall variance than intelligence, the Big Five, and gender combined, accounting for 35% (as compared to 29%). The researchers suggest that angry hostility, ideas, and deliberation are all indicators of disinhibition of impulses, which may be an important part of idea generation and sharing, two processes that lead to creative performance.

The conflicting relationship between these facets and creative performance may explain the lack of congruence with the relationship between the Big Five and creativity; overall neuroticism may have been unrelated to creativity because its facets (angry hostility and vulnerability, among others) are oppositely related to creativity, thus resulting in a suppression effect. Similarly, three facets of openness to experience predicted creativity in conflicting ways: aesthetics, ideas, and actions (negative, nonsignificant prediction), and two facets of

conscientiousness may have resulted in some suppression: competence (positive, nonsignificant prediction) and deliberation. However, it must be noted that given the self-report nature of the researchers' measure of creativity, it is not clear whether a similar relationship would be found with actual indicators of creative behavior.

Moon and colleagues (2008) also found that facets of personality predict creative performance better than overall traits do. The researchers found that taking charge, an innovative citizenship behavior, was predicted by duty (positively) and achievement striving (negatively), both facets of conscientiousness. However, when the researchers replaced these facets with overall conscientiousness in a predictive model in two studies, they found little or no prediction of taking charge. The researchers conclude that a suppression effect must have taken place, noting that the relationship between duty and taking charge may have been masked by the strong correlation between duty and achievement striving. As a result, it may be more beneficial to focus on facets of the Big Five rather than the five overall personality traits when trying to predict creative performance.

Personality factors have also been studied as potential moderators of creative behavior. For example, openness to experience has been demonstrated to moderate the relationship between multicultural experience and creative behavior (Leung and Chiu, 2008). Similarly, extroversion moderates the influence of mood on creative problem-solving (Stafford et al., 2010). Given these findings, it seems that the interaction of context and personality factors may be more useful in explaining creative behavior than by looking at either context or personality alone.

Creative self-efficacy. Outside of the Big Five, one of the most researched individual-level qualities related to creativity is self-efficacy. Creative self-efficacy involves the individual's confidence in his or her own overall creative abilities (Tierney & Farmer, 2002; Carmeli & Schaubroeck, 2007; Chong & Ma, 2010; Gong, Huang, & Farth, 2009).

Tierney and Farmer (2002) explain that creative self-efficacy is important for creative performance because it influences the individual's persistence and coping when he or she encounters challenges. The researchers examined the relationship between creative self-efficacy and creative performance, the latter rated by supervisors, in two industry samples. They found that creative self-efficacy interacted with general job self-efficacy to predict creative performance Participants who had low creative self-efficacy did not benefit from job self-efficacy in their creative performance; however, those who had both high job and high creative self-efficacy had high ratings of creative performance. The addition of creative self-efficacy to the regression analyses for both samples resulted in a small effect; creative self-efficacy explained 1 and 6 percent of additional variance in the samples (the first sample was predominantly blue-collar and the second was white-collar workers). Furthermore, the interaction between the two types of self-efficacy was only significant in the white collar sample, explaining 5 percent of additional variance.

A number of other studies have demonstrated the relationship between creative self-efficacy and creative performance (e.g., Carmeli & Schaubroeck, 2007; Gong, Huang, & Farh, 2009). Carmeli and Schaubroeck (2007), in a study of two Israeli organizations, found that creative self-efficacy mediated the relationship between expectations of creative performance and self-reported creative work involvement. Gong and colleagues (Gong, Huang, & Farh,

2009) conducted a study of insurance agents to examine the relationship between goal orientation, transformational leadership, creative self-efficacy, and supervisor-rated creative performance. They found that creative self-efficacy mediated both the relationship between learning goal orientation and creative performance *and* the influence of transformational leadership on creative performance.

Overall, the literature indicates that creative self-efficacy is positively related to creative performance. Specifically, the majority of the aforementioned studies point to the role of creative self-efficacy as a mediator between various individual and contextual antecedents and creative performance outcomes.

Goal orientation. Individual goal orientation has also been linked to creativity. Studies have found that learning (or mastery) goal orientation leads to increased innovation (Janssen & Van Yperen, 2004; Hirst, Knippenberg, & Zhou, 2009). In a study of perceptions of risk and creativity, Simmons and Ren (2009) found that avoidance orientation also had an influence on creative behavior such that in uncertain situations, individuals with high avoidance orientation are less likely to exhibit creativity (see "Framing Effect" section of this document for more detail on this study).

Gong and colleagues (2009) explored the role of creative self-efficacy in the relationship between goal orientation and creative performance. The researchers designed the study to involve a time lag between learning orientation and performance measures, noting that "employee learning orientation is more likely to enhance employee creativity over time, because time is needed for an employee to explore, learn, and create (p.773)". The researchers found that creative self-efficacy mediated the influence of learning orientation on creative

performance, as measured by supervisor ratings. They explained that since learning orientation involves a focus on improving one's competence in creativity, increases in competence would result in higher creative self-efficacy (as the individuals would observe that they have improved), thereby leading to higher goal-setting and creative performance.

Context and Creativity

Creative performance is not only influenced by individual differences but also by the context the individual encounters within his or her work environment. A great deal of the recent creativity research has been devoted to understanding the impact of factors such as organizational climate, reward, leader influences, group influences, and task characteristics on creativity.

Climate for creativity. An organization's climate is characterized by individual, group, or organization-level "perceptions of the work environment (West & Richter, 2008, p.213)". Workplace climate can be described along a number of different dimensions, including role stress and lack of harmony; job challenge and autonomy; leadership facilitation and support; and workgroup cooperation, friendliness, and warmth (James and James, 1989).

A number of studies have been conducted linking workplace climate dimensions and creative behavior. Amabile and colleagues (Amabile, Conti, Coon, Lazenby, & Herron, 1996) demonstrated that five dimensions of the work environment distinguish between highly creative and less creative products. The researchers labeled these dimensions as challenge, organizational encouragement, work group supports, supervisory encouragement, and organizational impediments. The researchers' findings also indicate that three of the other dimensions of climate that have been widely mentioned in the literature may be less influential

than previously thought; these include resources, work-load pressures, and freedom (autonomy).

A meta-analysis by Hunter and colleagues (Hunter, Bedell, & Mumford, 2007) provides a summary of the key findings in the literature on creativity and climate. The researchers found a robust overall effect of climate on creative outcomes across studies (Δ = .75). This effect held when studies were subdivided into those that utilized ratings for creativity and those that used objective measures (Δ = .78 and Δ = .77, respectively). However, certain types of raters did reduce the effect size of the findings, with supervisory (Δ = .55), peer (Δ = .37), and multiple source (Δ = .56) ratings resulting in smaller effect sizes than self-ratings (Δ = .97). The researchers explain that this may be due to range restriction.

Hunter and colleagues also found that certain dimensions of climate had stronger effects on creative performance than others. They found that positive interpersonal exchange, intellectual stimulation, and challenge were among the strongest dimensions affecting creative behavior. The least important dimensions for creativity (although each still had an effect on creative outcomes) were autonomy, resources, and reward orientation. The researchers conclude that "…resources and recognition are not as important as providing challenging work in an intellectually stimulating environment (p.77)". Furthermore, the researchers conclude that creative behavior is more strongly affected by individual perceptions of events than by organization-wide initiatives such as rewards.

The creativity literature has examined other contextual factors that influence creative performance outside of climate. The following sections will further explain the relationship

between creativity and rewards, leader influences, group influences, and task characteristics, followed by a discussion of possible moderators of these effects on creative performance.

Rewards. Rewards entail desirable outcomes or resources that are provided contingent on satisfactory performance within a given domain. In general, rewards are developed to encourage certain types of behavior; however, rewards contingent on creative performance can actually decrease creative behavior. The literature suggests that this occurs as a result of the rewards making extrinsic motivation salient in the place of intrinsic motivation. This perspective is consistent with the research on intrinsic motivation by Deci and colleagues (Deci & Ryan, 1985; Deci, Koestner, & Ryan, 1999) and Amabile's (1983b, 1996) assertions that rewards distract individuals away from the creativity process, which is intrinsically rewarding by itself. The research has provided most support for the notion that when individuals are intrinsically motivated to be creative (Cooper, Clasen, Silva-Jalonen, & Butler, 1999; Hunter, et al., 2007; Joussemet & Koestner, 1999), they have higher creative performance.

Hunter and colleagues (2007) demonstrated that across a variety of studies, rewards are often detrimental to creative performance. This is especially true for extrinsic rewards; individuals in the researchers' meta-analysis demonstrated greater creativity across studies when rewards were perceived as more intrinsic in nature as compared to being driven by extrinsic rewards. In a study of young gymnasts, Joussemet and Koestner (1999) provided further support for the detrimental effect of extrinsic rewards on creativity. Gymnasts who were provided rewards for a previous task drew pictures that were less creative than gymnasts who were not provided any form of extrinsic reward. Thus, rewards for creativity may function

in a way that is contrary to their purpose. Instead of encouraging creative behavior, rewards may in fact discourage creativity, as they shift the focus from internal to external motivation.

Leader influences. A number of studies have tied different types of leader behaviors to subordinate creative performance, including degree of supervisor close monitoring and control (Oldham & Cummings, 1996), encouragement (Amabile, et al., 1996), feedback (e.g., Zhou, 2003; Ziller, Behringer, & Goodchilds, 1962), leader normative expectations (Carmeli & Schaubroeck, 2007), transformational leadership (e.g., Eisenbeiss, van Knippenberg, & Boerner, 2008), leader-member exchange (Scott & Bruce, 1994), and supervisor role expectations (Scott & Bruce, 1994). For example, Amabile and colleagues (1996) found that supervisor encouragement led to higher expert ratings of creative performance on managers' projects.

Another aspect of leadership, aversive leadership, consists of "…behaviors such as intimidating subordinates and dispensing punishment (Choi et al., 2008, p.336)" Choi and colleagues (2008) found that the relationship between aversive leadership and creative performance is moderated by close monitoring, such that when aversive leaders monitor subordinates *less* closely, subordinates exhibit decreased creative performance. The researchers explain that this unexpected finding may result from a perception that aversive leaders who do not monitor subordinates are viewed as negligent.

Group influences. Individual creativity has also been found to be influenced by group characteristics and dynamics. Workgroup support for creativity has been tied to increased creative outcomes by individuals in the group (Amabile et al., 1996; Scott & Bruce, 1994; West, 1990). Positive interpersonal exchange (Hunter, et al., 2007); unsupportive climate (Choi, et al., 2008), coworker incompetence (Choi, et al., 2008), and coworker creativity (Zhou, 2003) also

impact an individual's level of creative behavior. In their meta-analysis, Hunter and colleagues (2007) found that low and moderate cohesion led to the highest levels of individual creative behavior.

Task characteristics. Not only does the context within which the creative task is performed impact performance; aspects of the task itself can influence an individual's creative performance. Research has linked task characteristics with creative behavior, including breaks, complexity (Oldham & Cummings, 1996), challenge (Amabile, et al., 1996; Hunter, et al., 2007), intellectual stimulation (Hunter et al., 2007), and task standardization (Choi, et al., 2008).

The organization of tasks over time seems to be particularly influential to creative performance. Rastogi and Sharma (2010) found that individuals exhibited more creative performance on divergent thinking tasks when they perform various tasks concurrently rather than sequentially. Beeftink, van Eerde, and Rutte (2008) discovered that individuals were more creative (measured as insight) when they were allowed to choose when to take breaks while working on a task as compared to those who were interrupted or had no breaks while working on the task. The researchers also looked at impasses, or a state of fixation where the individual is "stuck" in the problem-solving process. They found that self-initiated breaks also led to fewer impasses than did interruptions or continuous work.

Moderators of the context-creativity relationship. In addition to having a direct influence on creative performance, context and task characteristics have been found to interact with individual differences to impact creative performance. Oldham and Cummings (1996), in a study of two manufacturing facilities, found that job complexity and noncontrolling supervision both independently contributed to ratings of creativity. Furthermore, the researchers found

that a four-way interaction occurs in the prediction of both creativity ratings and patents, such that creative personality, job complexity, noncontrolling supervision, and supervisory support all influenced creativity. Participants had the most patents and highest ratings of creativity when they were high on traits related to a creative personality, had complex and challenging tasks, and had noncontrolling supervisors.

The influence of climate on creative behavior has also been found to depend on the individual's inherent creative ability. Choi, Anderson, and Veillette (2008) focused on the influence of contextual inhibitors of creativity. The researchers found that unsupportive climate, defined as '…an organizational climate that tends to disparage new ideas or is intolerant of different ways of thinking (p.336)", only had a negative effect on creative performance for people who were low on creative ability. Thus, individuals who are already highly creative may not need additional support and may be more capable of overcoming discouragement in their workplace environment when performing creative tasks. The researchers also found that for individuals low on creative ability, coworker incompetence improved creative performance. The researchers suggest that this effect may occur because these individuals may feel more confident in their abilities when they see that their peers are less competent, and they may also feel that they are less likely to be ridiculed for contributing creative ideas. Finally, Choi and colleagues found that for highly creative individuals, task standardization led to decreased creative performance. The researchers conclude that these individuals may become frustrated when they encounter constraints in their environment, thus leading to inhibited creative output.

Zhou (2003) found that when an individual was surrounded by creative coworkers, developmental feedback provided by the individual's supervisor led to increased creative performance. Furthermore, the author found that feedback was most helpful for individuals who did not have very creative personalities. Scott and Bruce (1994) also found an interaction between the peer and supervisor aspects of climate. Leader-member exchange (LMX), or the quality of the relationship between subordinates and their supervisors, was positively related to innovation, particularly when individuals believed that the organization was supportive of innovation.

Creativity and Risk

Another factor in the environment that can impact individual creative performance involves the perception of risk associated with being creative in a given task. Creativity has been conceptualized as a risky endeavor (Csikszentmihalyi, 1996; Sternberg & Lubart, 1995). By exhibiting creativity, the individual has to accept a certain degree of risk to him- or herself. Creative behaviors can be particularly risky in interpersonal terms; by sharing a creative idea, the individual risks ridicule and failure in the eyes of coworkers, supervisors, and/or clients (Csikszentmihalyi, 1996; Sternberg & Lubart, 1995). Sternberg and Lubart (1995) explain that individuals are often intimidated by the possibility that coworkers and supervisors may be resistant to change and new ideas, stating that "what is creative is new and often brings about positive change. But what is new is also strange, and what is strange can be scary, even threatening – which is why 'they' don't want to hear it (p.2)." Since proposing creative ideas often involves challenging the status quo, individuals may be reluctant to take such a leap if they are unsure how others will react.

Sternberg and Lubart (1995) propose that successful creative people often act like stockbrokers, following the rule to "buy low and sell high (p.2)". That is, creative individuals take ideas that are not currently highly valued (buying low) and work to persuade coworkers and supervisors of the true value of these investments (selling high). Like the stock market, there is a great deal of risk involved in this endeavor; individuals may not be successful in selling these ideas, and, as a result, may lose not only respect in the eyes of their peers, but also time and resources that have been spent on developing the ideas and in "selling" them.

Another way of interpreting the association between risk perceptions and creative performance comes from looking at creativity from a decision-making perspective. Williams (2002) discusses the role of self-censorship in the creative process, defined as "…the conscious choice to withhold or unconscious inhibition of one's creative ideas (p.496)". The level of self-censorship is influenced by the individual's self-esteem and interpretation of feedback on his or her creative contributions to the workplace. Therefore, certain individuals may exhibit less creativity not for lack of creative ability, but as a result of consciously choosing to self-censor their creative ideas.

The decision-making perspective suggests that individuals weigh the risks, or costs of being creative at work, with the benefits of providing new or novel ideas. This weighing process is influenced in two ways: by individual tendencies towards or away from risk-taking behavior, and by the perceived risk specific to the situation that the task occurs in. Individual propensity towards risk-taking may influence the "tipping point" at which the individual decides that the risks of being creative outweigh the benefits. When the perceptions of risk outweigh the perceptions of benefits, one would predict that the individual would not actively share his or

her own creative ideas. Individuals who display more creativity than the norm, or behave in a risk-seeking manner, tend to have a higher threshold for risk (Pankove & Kogan, 1968; Simmons & Ren, 2009; Åstebro, Jeffrey, & Adomdza, 2007; Csikszentmihalyi, 1996); that is, they are comfortable with situations where their creative efforts may have few payoffs. Alternatively, individuals who are inclined to be more risk-adverse may be less likely to display creativity at work because of fear of receiving negative feedback, and instead may self-censor their creative ideas.

Thus, creativity may come more easily for persons who are risk-seeking. The literature has confirmed this, linking creative performance to a risk-seeking personality (Pankove & Kogan, 1968; Simmons & Ren, 2009; Åstebro, Jeffrey, & Adomdza, 2007; Csikszentmihalyi, 1996). In a study of 5th graders, Pankove and Kogan (1968) found that creative performance in game tasks was related to risk taking while performing a shuffleboard task. Åstebro and colleagues (2007) conducted a study looking at factors that influenced inventors' perseverance, found that inventors were significantly more risk-seeking than the general population, in addition to being more likely to seek opportunities and having higher general self-efficacy.

While it is helpful to understand how trait-like risk-seeking influences creative behavior, an individual's exhibited creativity may also be influenced by the degree of risk presented in a given situation. Certain situations may be more or less encouraging for creativity. Csikszentmihalyi (1996) explains how situations influence creative behavior in terms of their impact on conflicting drives within the individual:

> "Each of us is born with two contradictory sets of instructions: a conservative tendency, made up of instincts for self-preservation, self aggrandizement, and saving energy, and an

> expansive tendency made up of instincts for exploring, for enjoying novelty and risk – the curiosity that leads to creativity belongs to this set….whereas the first tendency requires little encouragement or support from outside to motivate behavior, the second can wilt if it is not cultivated. If too few opportunities for curiosity are available, if too many obstacles are placed in the way of risk and exploration, the motivation to engage in creative behavior is easily extinguished (p.11)."

Edmondson (2003) describes four main types of risk that can be present in the organization: being perceived as ignorant, incompetent, negative, or disruptive. She explains that the risk of being seen as ignorant occurs when individuals ask questions or seek information. The risk of being perceived as incompetent occurs when individuals admit that they have made a mistake, ask for help, or accept "the high probability of failure that comes with experimenting (p.4)". Avoiding the risk of being perceived negatively occurs when the individual restrains him or herself from critiquing others and when he or she tries to "save face". Finally, individuals fear that they will be perceived as disruptive if they seek feedback or help. Given the risks associated with being creative in the workplace, the individual will often look to his or her environment for cues indicating whether it is safe to share creative ideas (Edmondson, 2003).

The present study focuses on this cuing function of the environment in which the creative task is presented. While risk-seeking personality has been established as an antecedent of creativity (Pankove & Kogan, 1968; Simmons & Ren, 2009; Åstebro, Jeffrey, & Adomdza, 2007; Csikszentmihalyi, 1996), the literature has yet to directly examine the relationship between situational, or state, risk-seeking and creativity. Considering the aforementioned risks

associated with being creative, it would seem that individuals may exhibit more or fewer creative behaviors, regardless of their overall creative ability, depending on the situational context. Furthermore, while organizations cannot influence trait risk-seeking of their employees after making hiring decisions, interventions aimed at influencing perceptions of risk in the situation could be a more practical way of increasing employee creative performance.

Framing Effect

One way to encourage risk-seeking behaviors such as creativity involves changing the way a situation is framed. The Cognitive Psychology, Economic Psychology, and Health Communication literatures have studied the influence of the "framing effect" on individuals' risky decision making. This research has generally found that individuals are more willing to act in a risk-seeking manner when consequences of a decision are framed in terms of losses as opposed to gains. Thus, individuals have a preference for "sure gains", but are more willing to gamble with losses (Kahneman & Tversky, 1984). When similar consequences are framed in terms of gains versus losses, people make different decisions about how to act and how much risk is appropriate. For example, when participants were asked to choose between two different programs aimed at combating an unusual disease that would kill 600 people (Tversky & Kahneman, 1981), they chose the more risk-averse option when consequences were framed as gains:

> If Program A is adopted, 200 people will be saved. (Risk-averse option)
>
> -vs.-
>
> If Program B is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved. (Risk-seeking option)

However, when the same scenario was framed as losses, participants chose the risk-seeking option more often:

If Program C is adopted, 400 people will die. (Risk-averse option)

-vs.-

If Program D is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die. (Risk-seeking option)

This phenomenon has been explained in the prospect theory literature, which has looked at gain and loss frames and their influence on risky decisions (Tversky & Kahneman, 1981; Kahneman & Tversky, 1984; Rothman, Bartels, Wlaschin, & Salovey, 2006). Prospect theory focuses on the framing of gains and losses as "prospects" that are compared based on the values of each outcome and decision weights that are applied to each prospect's probability. Tversky and Kahneman (1981) describe how the counterintuitive nature of prospect theory works, explaining that values can be plotted in an S-curve (as opposed to a line) so that an increase in outcomes from $10 to $20 is valued much higher than an increase from $110 to $120. The researchers also note that individuals give more weight to low probabilities than would be expected and much lower weight to moderate and high probabilities than logic would suggest. Overall, Tversky and Kahneman state that "…the value function is generally concave for gains, convex for losses, and steeper for losses than for gains (p.211)." Thus, by modifying the reference point of the consequences of a decision to either prime a gain or a loss, researchers can manipulate the likelihood that individuals will choose the riskier decision.

The framing effect has been replicated across a number of different contexts, including the framing of bonuses as income increases versus tax rebates (Lozza, Carrera, & Bosio, 2010);

framing of benefits of reducing salt consumption versus the costs of not reducing consumption (Van 't. Riet, Ruiter, Smerecnik, & de Vries, 2010); framing of participating in a survey follow-up (Tourangeau & Ye, 2009); framing of the potential benefits and losses related to breast self-examinations (Meyerowitz and Chaiken, 1987); and the framing of benefits of getting tested for HIV versus the costs of not getting tested (Apanovitch, McCarthy, & Salovey, 2003). It has also been applied to the group level (Milch, Weber, Appellt, Handgraaf, & Krantz, 2009) and in experience sampling using a stock investment scenario (Seo, Goldfarb, & Barrett, 2010). The effectiveness of these studies in replicating Tversky & Kahneman's original (1981) findings have been mixed (see O'Keefe & Jensen, 2007; Latimer, Salovey, & Rothman, 2007; and Kühberger, 1998), and have been attributed to differences in self-efficacy (Van't Riet, et al., 2010), affect (Seo, Goldfarb, & Barrett, 2010), approach/avoidance orientation (Carver & White, 1984), tendency towards behavioral activation versus behavioral inhibition (Mann, Sherman, & Updegraff, 2004), and regulatory fit between framed message and individual positive or negative tendency (Cesario, Grant, & Higgins, 2004).

Researchers have recently begun to apply the framing effect to behaviors beyond decisions. This research has primarily occurred in the health literature (see Rothman, et al., 2006 for a list of studies), and is focused on framing consequences of health behaviors such as screening in order to increase individuals' likelihood to perform them. While previous literature has focused mainly on the role of framing in decision-making, these health behavior studies take the framing effect study a step further to examine how framing can promote or inhibit various health related behaviors. Rothman et al. (2006) explain that the decision to use framing in such situations should be informed by whether the desired behavior is generally considered

to be risk-averse versus risk-seeking. The researchers explain that "behavior is considered a risky or safe course of action depending on the extent to which people perceive the behavior will afford an unpleasant outcome…(p.S205)". Risk-seeking behaviors occur in situations where the individual senses that an increased chance of unpleasant outcomes would result from a given action. By engaging in risk-seeking behavior such as diagnostic testing, the individual realizes that he or she may be *more* likely to be aware of unpleasant outcomes. The authors elaborate that "because of this emphasis on the behavior's ability to inform people that they are symptomatic or ill, choosing to initiate the behavior may be considered a risky decision (p.S205)."

Conversely, the decision to perform risk-averse behaviors results in a lowered chance of unpleasant outcomes in the individual's mind. For example, engaging in preventative measures would help an individual to feel that he or she is at a lowered risk for obtaining certain diseases. Rothman and colleagues explain that "choosing to adopt a prevention behavior affords people a relatively safe option. The primary risk associated with these behaviors concerns the decision not to take action (Rothman, et al., 2006, p.S205)."

The effectiveness framing depends on the type of risk-related behavior that is desired. Risk-averse, or prevention, behaviors such as sunscreen or condom use are best suited for gain framing. By focusing on what can be gained by reducing one's risk for melanoma or another disease, individuals can be persuaded to engage in preventative behaviors. Conversely, risk-seeking, or detection, behaviors such as HIV screening (which carries the risk of finding out that one has HIV) work best with loss frames because these behaviors are less likely to lead to unpleasant outcomes (Rothman, et al., 2006).

Individual differences in propensity to consider certain behaviors as risky can also affect the effectiveness of framing on behavior (Rothman, et al., 2006). For example, women who view performing breast exams on themselves as risky were more likely to respond to loss-framed brochures than those who did not perceive risk in self-examination (Meyerowitz, Wilson, & Chaiken, 1991).

This framework can be applied to creativity, given the riskiness associated with social and interpersonal outcomes of creative behaviors. Such a framework would focus on the probability of interpersonal consequences of acting creatively, such as ridicule or decreased social standing within the group. The effectiveness of such a framework would most likely depend on the degree to which employees perceive that there may be negative consequences of their creative behaviors, or risk associated with displaying creativity in a given task.

This fear of negative consequences can be considered a type of negative affect. While most research has been conducted on the role of overall negative affect on behavior, Watson and Clark (1992) provided evidence for the division of the construct into fear, sadness, hostility, and guilt. The researchers demonstrate that while there is a degree of shared variance between each type of negative affect, adequate divergent validity exists for their use as lower-order factors as well.

Lerner and Keltner (2001) looked at the impact of various negative emotions (anger and fear) on risky decision-making in a framing effect scenario from Tversky and Kanheman (1981). Lerner and Keltner found that individuals who tend to be fearful are much less likely to choose the risk-seeking option in the scenario than individuals who are chronically angry (another form of negative affect), particularly in the loss framing condition. The researchers distinguish

between two types of risk in the literature (see McDaniels, Axelrod, Cavanagh, & Slovic, 1997 and Slovic, 1987 for more information), unknown risk and dread risk, with the former being characterized by uncertain outcomes and the latter by little individual control. They found that both individuals who are chronically fearful and those in an experimentally-manipulated fearful situation were less likely to be optimistic about future unknown life risks (measures included positive events such as receiving an award and negative events such as divorcing within 7 years of marriage), as compared to individuals who were either chronically angry or in an experimentally-manipulated angry situation. Specifically, they found that fear leads to perceptions of significantly less control in the situation as well as less certainty than does anger. The researchers explain that emotion influences appraisals of the situation, whereby "…each emotion activates a predisposition to appraise future events in line with the central appraisal dimensions that triggered the emotion (p.147)", and conclude that appraisal mediates the relationship between emotions and judgment outcomes.

Previously, Lerner and Keltner (2000) demonstrated the relationship between trait emotions and risk perceptions. The researchers found that individuals who were generally more fearful were significantly more likely to perceive higher risk in a number of situations (measured by asking individuals to provide estimates of fatalities in situations such as brain cancer and floods after being provided with the number of annual fatalities for car accidents) than individuals who were chronically angry.

The evidence provided by Lerner and Keltner (2000 & 2001) suggests that the relationship between fear and perceptions of risk might also apply to creativity. If individuals are in a situation where they are fearful of risky outcomes, they may be more hesitant to

exhibit creative behavior if they perceive that creativity may lead to an increase in uncertain outcomes. Thus, if a task is framed to either highlight or diminish the possible negative consequences of creativity, it should influence individual perceptions of risk and the individual's decision to exhibit creative behavior in the task.

Very little research in the creativity literature has examined framing effects. Researchers using framing to influence creativity have mainly focused on other contextual factors such as leadership styles (e.g., Hunter, Bedell-Avers, & Mumford, 2009). For example, Hunter and colleagues (2009) used framing to cue different leadership styles, including ideological, pragmatic or charismatic types of leadership. The researchers found that strategies individuals developed in a virtual leadership scenario exhibited more creativity under ideological goal framing condition as compared to the latter two conditions, thus providing evidence that framing manipulations can have an impact on creative performance.

To the author's knowledge, the only study that has looked at the specific role of framing and behavior on a creative task is Simmons and Ren (2009). The study involved the framing of a creative in-basket task for high versus low risk by providing participants with different explanations for how they would be compensated for participation in the study. Participants in the high risk condition were told that they would only be rewarded extra credit for participation if judges deemed their responses as adequately creative. In the low risk condition, participants were told that they would receive extra credit regardless of their performance on the creative task. Thus, participants either viewed creative behavior as a risky or non-risky behavior. Note that the researchers' manipulation is gain-framed; increased creativity leads to a desired outcome, thus encouraging the individual to behave in a risk-averse manner to gain extra

credit. Simmons and Ren found that framing of task consequences had a significant impact on creative performance, with participants demonstrating higher creative performance in the high risk condition. Furthermore, the researchers found that goal avoidance orientation moderated this effect such that individuals who were low on goal avoidance orientation performed much better in the high risk condition than individuals who were high on avoidance orientation. No difference existed between the groups in the low risk condition. However, the researchers' operationalization of framing seemed to impact motivation to perform (since it was related to participant outcomes of participation) rather than solely task-specific outcomes.

Note that the Simmons and Ren study confounds risk with framing. While the authors discuss prospect theory and gain and loss framing in the theoretical development of their study, they neglect to examine the impact of loss framing in a high-risk situation on creative performance. Since only the high-risk condition is gain-framed, it is not possible to separate out the influences of the gain frame and the degree of risk on participant creative performance. As a result, more research is needed on the impact of framing on creativity in order to establish the relationship between framing and creativity. A study by Friedman and Foster (2001) begins to draw this distinction between focus on gains and losses through its manipulation of regulatory focus.

Friedman & Fòrster (2001)

Friedman and Fòrster demonstrate the relationship between regulatory focus, an individual's motivation towards either a nurturing-related promotion goal versus a security-related prevention goal (Higgins, 1997), and creative performance. Regulatory focus theory states that individuals behave differently depending on whether their goals are focused on

promoting desired consequences versus preventing undesired consequences (Higgins, 1997). The function of prevention and promotion focus in Friedman and Fòrster's (2001) study seems very similar to the function of gain- and loss-framed messages in the prospect or framing effect literatures. Both regulatory focus and framing involve a focus on either positive or negative outcomes of action and the risk inherent in action.

Friedman & Fòrster apply regulatory focus theory to creative behavior, noting that since a promotion focus can lead to riskier behavior, individuals with a risk-seeking focus may be more likely to be creative as compared to when they have a more risk-adverse, prevention focus. In a series of five experiments, the researchers tested the effects of regulatory focus. They manipulated "focus" via a paper maze task with an image of a mouse where there is either an image of cheese at the end of the maze (promotion condition) or an image of an owl above the maze (prevention condition). The researchers demonstrate that this manipulation of regulatory focus impacted behavior on various creative tasks, including the Snowy Pictures Test (a visual insight task; Friedman & Fòrster, 2000), a task where participants list as many uses for a brick as they can think of, and the Gestalt Completion Test (another visual insight task; Ekstrom, French, Harman, & Dermen, 1976). In each of the five experiments, participants demonstrated greater creativity when the promotion rather than the prevention cue was presented.

The researchers also examined whether individual trait-based regulatory focus inclination (trait-based promotion versus prevention) affected creative performance. They found that individuals who spent a shorter amount of time devising three promotion goals as

compared to creating three prevention goals demonstrated greater insight on the Gestalt Completion Task.

Friedman and Fòrster provide suggestions for how regulatory focus can influence creativity. The researchers manipulated when the cues were presented in a memorization task, and found that cues only had an impact on recognition of words when they were presented after memorization occurred. The researchers conclude that regulatory focus cues "trigger a 'riskier' processing style (p.1007)", and thus did not influence retrieval processing when they were presented before memorization. However, the researchers offer little elaboration on what they mean by risky processing style or how it operates. In another experiment involving word-fragment completion as part of the same study, Friedman and Fòrster conclude that regulatory focus influences creativity via retrieval blocking, such that when a prevention cue is presented, individuals may encounter more interference of past experiences.

Friedman and Fòrster's experiments provide a first step to understanding the impact of situational cuing factors such as framing on an individual's creative behavior. Their findings suggest that individuals are more likely to be creative when they are motivated by promotion rather than prevention goals. However, there are also a number of limitations to this research. The researchers do not demonstrate the relevance of regulatory focus to creative behavior in the workplace. Friedman and Fòrster, like many other authors in the creative literature, measure creativity using fairly simple tasks that isolate and allow for direct assessment of factors such as individual insight and novelty. However, in the workplace, creativity is messy: it involves not only insight and novelty, but also practicality, efficiency, and a number of other factors (e.g., Amabile, 1983; Shalley & Zhou, 2008; Barron, 1955; Mumford, 2003; Shalley,

1991). As a result, it is unknown whether these effects would extend to a more complicated creative task in a real work environment.

Hypothesized Model

The present paper builds on the work of Friedman and Fòrster (2001) to address three main gaps in the creativity literature: a) the need for establishing further empirical evidence of the influence of framing on creativity, b) the need for additional empirical evidence establishing the relationship between perceived risk and creativity, and c) the need for more studies examining creative performance on more complex, work-relevant tasks. Regarding the former gap, while the relationship between framing and creative performance has been examined in the literature (Friedman & Fòrster, 2001; Simmons & Ren, 2009), the manipulation of framing in past studies warrants further review. Specifically, Friedman and Fòrster manipulated regulatory focus using images in a maze task that was unrelated to their dependent variables. Simmons and Ren's framing manipulation, while relevant to outcomes of the creativity task, was focused on rewards that would follow successful creative performance in the simulation task to the participant. These rewards, while contingent on task performance, were unrelated to the task itself (extra credit), and thus may not fully relate to creative performance in a way that task-specific framing would in a work environment. Furthermore, Simmons and Ren use a gain focus but do not have a loss-framed condition. The researchers only looked at gain framing of high risk versus framing of low risk and their influences on creative performance. As a result, the proposed study aims to extend the relationship between framing and creative performance by manipulating gain *and* loss goals via framing that is directly related to the measures that will be used for assessing creativity.

The proposed study also focuses on the mechanisms through which framing influences creative performance. One of the key limitations of Friedman and Fὸrster's (2001) experiments is the lack of any explanatory processes in the relationship between regulatory focus and creativity. While the researchers did theorize that retrieval blocking may mediate this relationship, they did not explicitly test it as a mediator. Simmons and Ren (2009) did demonstrate an influence of risk on creative behavior; however, the researchers manipulated framing for risk. The researchers' lack of a loss-framed risky condition makes it difficult to understand how much creativity an individual would demonstrate if creative behavior is tied to high risk regardless of framing condition. The present study seeks to examine the role of two different processes, self-efficacy and the individual's perception of risk, through which framing of gains and losses are expected to influence creativity.

Finally, the present paper aims to build on the work of Friedman and Fὸrster (2001) by extending their study to creative behaviors that are more relevant to an organizational context. Given that creativity is often necessary for solving everyday organizational problems, the present study measures creative behavior on a problem-solving in-basket. A handful of studies in the literature have utilized in-baskets to study creativity, including an in-basket simulating the role of a high school principal (Antes & Mumford, 2010) and an in-basket simulating the role of a personnel director (Shalley, 1991).

Conceptual Model. At its simplest level, the model proposed in this study predicts that framing will influence individuals' creative performance in a similar way to that demonstrated by Friedman and Fὸrster (2001) and Simmons and Ren (2009). Two processes are proposed to influence this relationship: perception of risk and self-efficacy. It is expected that framing will

affect risk in such a way that impacts performance on the creative task. A number of different perspectives have been used in framing research to adapt it to different purposes, such as in the health decision-making, prospect theory, regulatory focus literatures (See "Framing Effect" section of this paper for more detail). However, the health decision-making literature is the only of these to explicitly state that framing influences individuals' behavior via risk perceptions. Thus, this study will follow a similar conceptualization of framing as is used in health communication literature.

Furthermore, this study will also explore the role of self-efficacy and its relationship to creative performance. While past research has tied general creative self-efficacy to creative performance (e.g., Tierney & Farmer, 2002; Carmeli & Schaubroeck, 2007; Chong & Ma, 2010; Gong, Huang, & Farth, 2009), the current study will look at task-specific self-efficacy and its relationship with creative performance. Task-specific self-efficacy involves the individual's belief that he or she will be successful in performing the task. It is related to creative self-efficacy in this study because the purpose of the task is to be as creative as possible, and thus the individual is acting as a result of his or her perceptions of ability to succeed at being creative in the task.

This study will take an exploratory perspective on the role of self-efficacy in the model. While self-efficacy has traditionally led to increased creativity in the literature, the role of framing and risk perceptions in this study may alter its relationship with creative performance. It is anticipated that self-efficacy will function as a moderator of the relationship between framing and perceptions of risk.

Thus, the study will test the overall model illustrated in Figure 1.

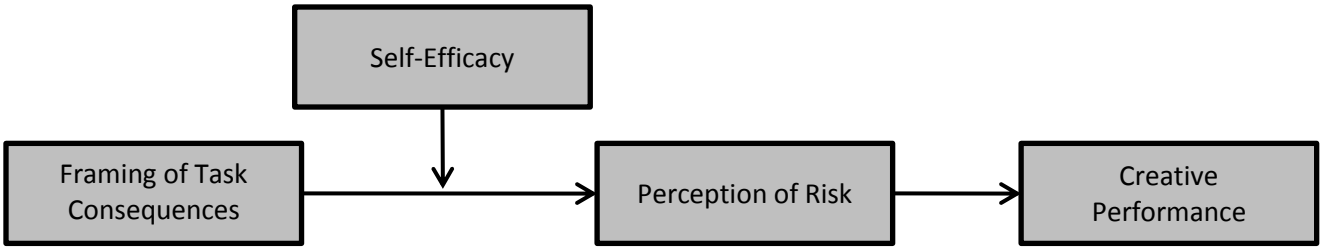

Figure 1. *Overall Hypothesized Model*.

The model states that the framing of consequences of being creative in a given task will lead to changes in the individual's perception of risk associated with being creative in the task. At the same time, self-efficacy will interact with framing to influence perceptions of risk. Perception of risk, in turn, will influence the individual's creative performance in the task; when the individual perceives that the task is risky, he or she will be less willing to exhibit creative ideas, for fear of negative consequences. When the individual perceives the task to be less risky, the individual will behave in a more risk-seeking manner, demonstrating more creativity on the task.

Message framing and creative behavior. Given Simmons and Ren's (2009) and Friedman and Fòrster's (2001) findings that framing and regulatory focus influence creative performance, it is expected that by providing cues that are related to an individual's performance on the outcome measure, the individual will increase his/her performance when presented with relevant loss-framed messages. A number of studies have demonstrated that for situations where outcomes of an action may be ambiguous, individuals are more easily persuaded by loss- than gain-framed messaging (e.g., Block & Keller, 1995; Schneider et al., 2001; see Massman & Ford, in press, for more discussion). Given the ambiguous nature of the outcomes of engaging in creative behaviors, individuals should be more willing to demonstrate creativity when a loss frame is presented as compared to a gain frame. While creativity may

still occur under a gain frame, it is expected that a loss frame will be much more compelling when outcomes are tied to the creative task.

Hypothesis 1. Message framing will influence creative behavior, such that loss-framed messages will lead to higher performance than gain-framed messages on a creative task.

Risk perceptions as a mediator. In addition to influencing self-efficacy, the framing of task-relevant outcomes will also influence an individual's affective perceptions of fear of negative consequences, or risk, in the scenario. Friedman and Fὸrster (2001) discuss regulatory focus cues as an indicator of situations where risk-aversion (prevention focus) or risk-seeking (promotion focus) behaviors may be appropriate. However, the researchers did not measure perceptions of risk to see whether this is in fact the mechanism through which framing effects influence behavior. Similarly, the prospect theory literature, although it also implies that individuals are making implicit judgments of whether risk-seeking or risk-adverse behavior is appropriate, also neglects to examine whether individuals actually perceive differences in risk when messages are framed differently. The creativity literature notes that risk-seeking individuals are more creative (Pankove & Kogan, 1968; Simmons & Ren, 2009; Åstebro, et al., 2007; Csikszentmihalyi, 1996). Since we know that loss framing encourages risk-seeking behavior, it seems logical that risk perceptions would mediate the relationship between framing and creative performance.

Given the importance of the assumption that risk perceptions change as a result of framing, the proposed study will measure perceived risk to assess its influence on creativity and its relationship with framing. It is expected that risk perception functions as a mediator in the relationship between framing and creativity. When individuals are presented with a loss frame

of the creative task, the increased focus on negative outcomes will encourage them that the task is of high risk. As a result, individuals will be more willing to exhibit high creative performance in order to avoid these negative consequences. Alternatively, in the gain-framed situation, individuals are told to focus on the positive consequences of strong performance on the creative task, thus making risk less salient and decreasing their perceptions of the riskiness of the situation. Consequently, individuals in the gain-framed situation will be less likely to exhibit creative behaviors in the task, resulting in lower creative performance.

Hypothesis 2. Risk perceptions will influence creative performance, such that perceptions of high risk (risk-seeking) will lead to higher performance than perceptions of low risk (risk-averse) on a creative task.

Hypothesis 3. Message framing will influence perceptions of risk, such that loss-framed messages will lead to perceptions of high risk and gain-framed messages will lead to perceptions of low risk in the environment.

Hypothesis 4. Message framing will influence creative behavior in the task via perception of risk, such that loss-framed messages will lead to perceptions of higher risk and higher creative performance and gain-framed messages will lead to perceptions of lower risk and lower creative performance.

Self-efficacy as a moderator. The literature has established a relationship between self-efficacy and creativity (e.g., Chong & Ma, 2010; Gong, Huang, & Farth, 2009; Tierney & Farmer, 2002); when individuals experience high creative self-efficacy, they have the confidence necessary to feel comfortable exhibiting more creativity in their tasks and thus demonstrate higher creative performance. While the literature has generally examined general creative self-

efficacy and its relation to creative performance, this study will focus on task-specific self-efficacy. It is anticipated that this will have a similar effect on creative performance as creative self-efficacy, as the proposed task is centered around creativity. In this study, self-efficacy will refer to the degree to which the individual believes that he or she can devise a creative, successful solution to the scenario presented in the task.

Additionally, framing has been linked to self-efficacy (Massman & Ford, in press). Massman and Ford found that when a task is framed in terms of potential gains, an individual is more likely to feel that he or she has the necessary skills and abilities to perform well on the task. Alternatively, when the task is framed in terms of losses that might result, the individual experiences low self-efficacy. As a result, it is anticipated that part of the effect of framing on creative performance will be influenced by self-efficacy in one's ability to perform on the creative task.

To date, the literature has neglected to examine the relationship between self-efficacy and risk perceptions. While intuitively it seems that increased self-efficacy would lead to decreased perceptions of risk, the influence of an interaction between framing and self-efficacy on risk perceptions is unknown. Given Massman and Ford's findings, it seems that gain framing would lead to increased self-efficacy. However, there seems to be a paradox in that both loss framing and high self-efficacy have been linked to creativity in the literature, but loss framing has been tied to decreased self-efficacy.

Although self-efficacy has traditionally been positively related to performance in the literature (e.g., Stajkovic & Luthans, 1998), it is expected to be negatively related to creative performance in the proposed study. A number of studies have suggested that self-efficacy may

not always be positively related to performance (e.g., Vancouver & Kendall, 2006; Vancouver, Thompson, Tischner, & Putka, 2002; Schmidt & DeShon, 2010). Recent research by Schmidt and DeShon (2010) substantiates the assertion that for tasks where an individual's level of performance is ambiguous, self-efficacy is negatively related to performance. The negative relationship between self-efficacy and performance in certain situations has also been attributed to a form of overconfidence, where the individual is so confident in his or her own ability to perform well that certain preparatory activities may be considered unnecessary. Conversely, individuals with low self-efficacy may feel the pressure to work harder at the task, and thus may achieve heightened performance.

Given the ambiguous nature of a creative task (i.e., the individual does not know which specific solutions will be considered creative), it is possible that when a task is framed in terms of losses (and thus a lack of focus on what would be an adequately creative solution)) and the individual has high self-efficacy, he or she may be less likely to perceive risk in the situation because the individual would be confident that he or she has the skills necessary to complete it successfully. However, when a task is framed in terms of losses and the individual has low self-efficacy, he or she may perceive the task as more risky because of the increased focus on losses and low confidence in his or her ability to complete the task successfully. It is not expected that the impact of self-efficacy on risk will differ in the gain framed situation, as gain framing should make the task seem more achievable. As a result, this study will explore the interaction between framing and self-efficacy in the influence of risk perceptions.

Hypothesis 5. Message framing will interact with self-efficacy to predict risk perceptions, such that for loss-framed messages, individuals with low self-efficacy will perceive higher

risk than individuals with high self-efficacy and that for gain-framed messages, self-efficacy level will not impact risk perceptions.

Methods

Participants

231 Psychology students at Michigan State University were recruited via bonus credits for participating in the Human Participation in Research (HPR) system as part of their courses. Participants were told that the study involves investigating mechanisms involved in problem-solving. Data was collected during the Summer and Fall 2011 semesters (n = 56 and 175, respectively). Each lab session involved up to 8 participants, each of which was working independently on the experimental task at a computer. There were up to 5 lab sessions held per day, depending on level of participant enrollment. The experimenter explained the task to all participants in the session simultaneously, handed out packets with the background information to the task, and instructed the participants to complete all questions on the computer in front of them. After each participant finished the task, he or she was given a final sheet of paper with the manipulation check question, and was then provided a debrief form describing the purpose of the study and providing the experimenter's contact information.

Procedure

Prior to arrival at the experimental site, individuals filled out an online battery of control measures (see Appendix A). Upon arriving at the experimental site, participants were presented with the in-basket task and framing manipulation (see Appendix B).

Task. Participants will participate in a creativity in-basket task based on the task used by Antes and Mumford (2010). They developed an ill-defined educational problem that necessitates creative thinking based on work by Scott, Lonergan, and Mumford (2005). The in-basket involves a scenario where the participant imagines being in the role of a new principal at

a high school that has traditionally performed well, but has experienced decreased attendance and test scores in recent months. Participants are provided with a series of summaries of focus group discussions that have been conducted with parents, teachers, administrators, and students at the school, along with exercises from a consulting firm that has been hired to help implement change. Participants will be asked to work through a series of written exercises provided by the consulting firm, including a "Think Deeply" exercise (the framing manipulation) and an exercise asking questions about the participant expectations of the proposal task (the self-efficacy and perceived risk measures). Finally, participants will be asked to write out their proposed solution to the principal's problem (the measure of creative performance). Individuals will be directed to "write a creative proposal for the School Board concerning your solution to the high school's problem", and to create a plan that is "as creative as possible".

Framing manipulation. At the beginning of each response packet, participants were provided with one of two framing manipulation exercises, based on which condition they were in. Participants were assigned to manipulation condition by experimental session. While true random assignment of all participants to conditions would have been optimal, since there were multiple individuals in one room, it was optimal to ensure that each individual was part of the same condition in case any questions were asked that involved clarifying the framing instructions. As a result, the decision was made to alternate each session according to their order between the gain and loss conditions. Overall, 112 participants (48.1%) were in the gain condition and 120 (51.5%) were in the loss condition.

Gain- and loss-framed messages were distributed throughout the scenario materials to make framing more salient. In the memo at the beginning of the scenario, participants were be

told that their goal is to impress the School Board and "…ultimately get the opportunity to stay on permanently as Principal of Woodland" (gain) or "…ultimately avoid being fired as Principal of Woodland" (loss).

Following this memo, participants completed a "Think Deeply" exercise that helped them to process the framing that was provided to them. In the gain framing condition, participants were asked to consider "the possible gains that could occur as a result of putting yourself out there to the School board in your solution to their problem". They were also asked to list 5 of the most significant gains that could occur as an outcome "if your proposal is successful and you become hired permanently as Principal of Woodland". In the loss framing condition, participants were asked to consider "the possible losses that could occur as a result of putting yourself out there to the School Board in your solution to the problem". They were also asked to list 5 of the most significant losses that could occur "if your proposal is unsuccessful and you become fired as Principal of Woodland".

Finally, participants were reminded of the framing message in the instructions for the creative proposal task. In the gain framing condition, participants were reminded that they should understand "the positive outcomes your plan should focus on achieving", and were told that their goal is "to maximize the gains you listed in Exercise 1 and to be hired permanently as Principal of Woodland". Conversely, in the loss framing condition, participants were informed that they should understand "the negative outcomes your plan should focus on avoiding", and were told that their goal is "to minimize the losses you listed in Exercise 1 and to avoid being fired as Principal of Woodland" (loss). (See Appendix B for the exercises.)

Participant Identification Code. Participants were asked to provide the same identifier code during the pre-lab questionnaire and during the lab study to combine their data. The code instructions were as follows:

> To combine the following data with your responses to the problem-solving task, we need you to provide an identifier that only you will know. In the space below, please enter the first two digits of your middle name (or last name if you do not have a middle name), the first letter of the street you live on, and the last three digits of your phone number. This 6-digit code will be used to link your data from both parts of the study but will ensure that your responses are confidential.

Overall, 329 pre-lab questionnaires were completed online. However, among these, at least two individuals filled out the questionnaire twice (n=4 total), providing identical identifiers. For each of these participants, the first case was kept and data from the second questionnaire was discarded. Since the questionnaires only contained information about control variables, this is not anticipated to affect any of the other analyses beyond the control step.

245 individuals participated in the lab portion of the study; however, seven of these cases were dropped due to the participants not following the correct protocol in the lab (e.g., talking to each other about their responses, returning to the computer and retyping their response after seeing the debrief form). Another 7 of these participants' data was used for the pilot study. Both the pilot and discarded data was used to train raters. Subtracting out these cases, there were 231 participants who were part of the lab study, or a return rate of 70.2% from those who filled out the initial online questionnaire.

While participants were given identical instructions each time they were asked to fill out their identifier code, a few participants struggled to replicate their own codes. As a result, only 199 cases (86.1%) of the 231 lab participants were perfect matches using the code. However, another 15 cases (6.5%) were matched according to the final three digits, 8 (3.5%) were matched based on the first three letters, and one case (0.4%) transposed two of the digits. The 8 remaining participants (3.5%) did not have a clear match between questionnaire and lab data codes. As a result, 223 total participants were used for the final model analyses.

Measures

Control variables. Cognitive ability (self-report of SAT/ACT scores), goal orientation, and creative self-efficacy were measured to be used as controls in the study. Cognitive ability was measured via the individual's self-report of SAT and/or ACT scores. Since most participants provided an ACT score (rather than an SAT score), ACT scores were used as a proxy for cognitive ability wherever available. For participants who only provided an SAT score, each score was converted to its ACT counterpart (using Slatalla, 2007). Thus, the cognitive ability variable was based on ACT score.

Goal orientation was measured using a modified 13-item scale similar to the scale used by Simmons and Ren (2010; originally from Brett & VandeWalle, 1999). Sample items include "I am willing to select a challenging assignment that I can learn a lot from", "I like to show that I can perform better than my classmates", and "I prefer to avoid situations at school where I might perform poorly". Items on the goal orientation variable were separated into three groups based on the original scale (Brett & VandeWalle, 1999): learn orientation (α = 0.89),

prove orientation (α = 0.86), and avoid orientation (α = 0.79). Thus, each participant received three goal orientation scores.

Creative self-efficacy was measured using a modification of Carmeli and Schaubroeck's (2007) 8-item measure of creative self-efficacy (α = 0.95). Sample items include "In general, I think that I can obtain outcomes that are important to me in a creative way" and "I believe that I can succeed at most any creative endeavor to which I set my mind".

Framing Condition. Framing condition was coded as a dummy variable, with 0 representing the gain frame condition and 1 representing the loss frame condition.

Self-Efficacy. Before completing the proposal task, participants indicated the degree of task-specific self-efficacy they anticipated for the task. While general creative self-efficacy may also influence creative performance on the task, the uniqueness of the task for participants made it difficult to assume that creative self-efficacy would generalize to this situation. Instead, the measure that was used is a modification of the task specific self-efficacy scale used in Massman and Ford (in press; modified from Quinones, 1995) and includes 7 items (α = 0.92). Sample items include "I feel confident in my ability to perform this task effectively" and "I doubt that my performance will be very creative on the task in this scenario". Participants rated each item on a 7 point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7).

Risk. Before completing the proposal task, participants were asked to indicate the degree of risk they perceived in the situation using a measure developed for this study. The measure focused on social aspects of risk, including others' evaluations of the participant's performance on the proposal task as well as evaluations of the participant's competence. A

series of 7 items were developed to test risk (α = 0.78). Sample items include "The School Board will fire the Principal if the proposal is not creative enough", "Members of the school board will lose respect for the Principal if the proposal does not meet their standards", and "The School Board could think they made a mistake hiring the Principal after reading the proposal". Participants rated each item on a 7 point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7).

Creative performance. Creative performance was measured based on participants' solutions provided in the proposal section of their packets. A panel of two judges (comprised of Organizational Psychology graduate students) assessed the creativity of each final solution along three dimensions (Quality, Originality, and Elegance) based on Antes and Mumford (2010) and Besemer and O'Quin (1999). Definitions of each dimension were those used in Antes and Mumford (2010). *Quality* was defined "as a complete, coherent, and useful solution". *Originality* was defined "as a novel, unexpected, elaborated solution", and *Elegance* was defined "as a solution that flow[s]…together where the pieces fit together in a well-designed and clever fashion". Benchmark rating scales identical to those used by Antes and Mumford (2010; based on Redmond, Mumford, & Teach 1993) were used for judge assessments of high, medium, and low levels of creative performance (see Appendix B).

Two undergraduate research assistants volunteered to serve as judges to help code the creativity responses. Before providing the aforementioned ratings, judges attended a training session similar to the program used by Antes and Mumford (2010). The judges participated in two 2-hour training sessions (using the pilot and discarded data) to orient them to the creativity measure and rating scales. Judges learned about the problem and the definitions of quality,

originality, and elegance, and used these scales to assess a set of sample problem solutions. Judges were then taught to use a form (see Appendix C for form and Appendix D for rating tips) to provide ratings for each of the three creativity dimensions that were as objective as possible. Judges then met and compared ratings, and discussed any divergence of ratings. At the end of the training, 100% of the judges' ratings on each dimension of creativity (quality, originality, and elegance) were within 1 point of each other for each of the 10 responses rated.

Following training, the judges were given two packets of participant responses to rate and two packets for recording their ratings. The responses were presented in the packets in a random order, and the order of packets was counterbalanced across the raters so that one judge rated the first packet and then the second, while the other started with the second and then moved on to the first packet. Judges were blind to both the study hypotheses and the framing condition of each response they rated.

Antes and Mumford (2010) noted interrater agreement coefficients of .81, .79, and .76 for ratings of quality, originality, and elegance (respectively) after training. These three dimensions were anticipated to be positively correlated; Antes and Mumford found quality scores were related to originality (r=.55) and elegance (r=.45), and originality scores positively related to elegance scores (r=.56). Reliabilities for creativity ratings between the two raters in the present study were high (α = .79 for Quality, α = .82 for Originality, and α =.70 for Elegance). As a result, scores for each dimension of creativity were averaged across the two raters, thus leaving one quality, originality, and elegance score for each participant. Since each of the three creativity dimensions were highly correlated ($r_{quality,\ originality}$=.84, p<.01; $r_{quality,\ elegance}$=.83,

$p<.01$; $r_{originality,\ elegance}=.77$, $p<.01$), they were averaged to create an overall creativity score for each participant ($\alpha=.93$).

Manipulation Check. The "Think Deeply" responses in the task were used as a proxy for manipulation check, since they required that the participant list five outcomes related to the manipulation prompt. Of the participants' responses, 221 (95.7%) provided responses that would match outcomes related to the respective gain or loss frame in the manipulation. The remaining 10 participants (4.3%) provided responses that were somewhat irrelevant to the manipulation frame (e.g., using this space of the task materials to begin outlining their proposal for solving the situation). Since none of these responses demonstrated that participants misunderstood the manipulation, all of the cases were retained for analyses.

Analyses. The hypothesized model was tested using hierarchical regression analyses. The model tested a moderated mediation using self-efficacy and perception of risk, respectively. Moderation and mediation was tested using the analyses for mediation suggested by Baron and Kenny (1986).

Results

The means, standard deviations, reliabilities, and zero-order correlations for the study variables are displayed in Table 1. Based on these correlations, it is evident that a number of relationships have emerged among the study variables. First and foremost, the dependent variable, creativity, is significantly correlated with only two variables: cognitive ability and framing condition.

Since the other four controls (creative self-efficacy, learning goal orientation, prove goal orientation, and avoid goal orientation) were not significantly related to creativity, they were excluded from all further analyses. As a result, only cognitive ability was used as a control in the analyses for this study.

Risk was positively correlated with framing, avoid orientation, and cognitive ability. Thus, individuals who viewed the task as risky were more likely to be in the loss condition, have a high avoidance goal orientation, and were high on cognitive ability. Risk was negatively correlated with self-efficacy. This indicates that individuals who were high on self-efficacy were less likely to see the task as risky.

Risk perceptions were not significantly correlated with creativity. This lack of a relationship between the two variables suggests that risk will not function as a mediator in the relationship between framing and creative performance; for this to occur, risk would need to be correlated with creativity.

Table 1

Means, Standard Deviations, and Intercorrelations of Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Framing	--	--	--								
2. Creative Self-Efficacy	4.84	1.31	-0.02	(0.95)							
3. Learn Goal Orientation	5.12	1.21	0.07	0.60**	(0.89)						
4. Prove Goal Orientation	4.67	1.33	0.05	0.28**	0.43**	(0.86)					
5. Avoid Goal Orientation	3.94	1.18	-0.05	-0.18**	-0.26**	0.19**	(0.79)				
6. Self-Efficacy	4.90	1.39	-0.13	0.26**	0.08	-0.00	-0.21**	(0.92)			
7. Risk	4.24	1.20	0.27**	-0.07	0.00	0.06	0.18**	-0.25**	(0.78)		
8. Cognitive Ability	25.11	3.93	0.04	-0.03	0.02	0.14	0.18*	-0.26**	0.25**	--	
9. Creativity (overall)	2.74	1.04	0.15*	-0.06	-0.01	0.02	0.04	0.01	0.11	0.27**	(0.93)

Note. N=218-231. Reliability coefficients (alphas) shown along the diagonal.

Framing condition was dummy coded, such that 0= gain frame and 1 = loss frame. Risk perceptions were coded with risk increasing as participant responses increased in value; thus, a higher risk number indicates that the individual assigned a higher risk to the task.

*$p < .05$. ** $p < .01$.

With the exception of framing condition (which was dummy coded), all variables were centered prior to analyses. Analyses were conducted using hierarchical regressions to test a moderated mediation model, as described by Preacher, Rucker, and Hayes (2007) under their second model. Results of all regressions are displayed in Table 3. To test Hypothesis 1, a linear regression analysis was conducted to examine the impact of framing condition on creativity, with creativity as the dependent variable, cognitive ability (the control) entered in the first block, and framing in the second block. Both blocks of the analyses were significant, demonstrating that even after controlling for cognitive ability (β=.26, $p<.01$, adjusted R^2=.07), participants in the loss condition were more likely to be creative (β=.17, $p<.05$, ΔR^2=.03). Thus, there is support for Hypothesis 1, that loss framing leads to increased creative performance.

Hypothesis 2 was tested using regression to determine the impact of risk perceptions on creativity. In the analyses, creativity was the dependent variable, cognitive ability was entered in the first block, and risk was added in the second. Results indicated that after taking the control into account (β=.26, $p<.01$, adjusted R^2=.07), risk perceptions did not predict creativity (β=.04, $p>.05$, ΔR^2=.00). Thus, there was no support for Hypothesis 2, which stated that increased perceptions of risk would lead to higher creativity on the task.

To test Hypothesis 3, which stated that framing condition will impact risk perceptions, risk was identified as the dependent variable, cognitive ability was entered in the first block, and framing in the second. Both blocks of the analyses were significant, indicating that even after taking the control into account (β=.24, $p<.01$, adjusted R^2=.06), framing predicted risk

perceptions (β=.24, p<.01, ΔR^2=.06) such that loss framing led to increased perceptions of risk. Thus, the findings support Hypothesis 3.

Table 2
Regression Results

	H1 Dependent Variable Model (Creativity)				
Step	*β*	*SE*	*t*	R^2_{adj}	ΔR^2
1. (Constant)	.04	.07	.51	.07	
Cognitive Ability	.26	.02	3.90**		
2. (Constant)	-.14	.10	-1.41	.09	.03*
Framing	.17	.14	2.45*		
	H2 Dependent Variable Model (Creativity)				
Step	*β*	*SE*	*t*	R^2_{adj}	ΔR^2
1. (Constant)	.04	.07	.51	.07	
Cognitive Ability	.26	.02	3.67**		
2. (Constant)	.03	.07	.50	.07	.00
Risk	.04	.06	.60		
	H3 Dependent Variable Model (Risk)				
Step	*β*	*SE*	*t*	R^2_{adj}	ΔR^2
1. (Constant)	.02	.08	.27	.06	
Cognitive Ability	.24	.02	3.56**		
2. (Constant)	-.28	.12	-2.43*	.11	.06**
Framing	.24	.16	3.65**		
	H5 Moderation Model (Creativity)				
Step	*β*	*SE*	*t*	R^2_{adj}	ΔR^2
1. (Constant)	.04	.07	.51	.07	
Cognitive Ability	.27	.02	3.86**		
2. (Constant)	-.14	.10	-1.41	.10	.03*
Framing	.17	.14	2.52*		
Self-Efficacy	.11	.07	1.14		
3. (Constant)	-.15	.10	-1.54	.11	.00
Framing X Self-Efficacy	-.09	.10	-.91		

*$p < .05$. ** $p < .01$.

Hypothesis 4, which predicted that risk would mediate the impact of framing condition on creativity, could not be tested, as the correlation table demonstrates that risk and creativity

were unrelated in the study and a condition for mediation was not satisfied (see results for Hypothesis 2).

Because Hypothesis 2 did not receive any support in the results, we can also say that the results did not support Hypothesis 4, which predicted that risk mediates the impact of framing on creativity. Instead, the results demonstrate that while framing impacts risk perceptions, it also impacts creativity directly.

Hypothesis 5, that self-efficacy would moderate the impact of framing on risk, was tested using risk perceptions as the dependent variable, cognitive ability in the first block, the main effects in the second block (framing and self-efficacy), and the interaction term in the third block. Results indicated that the first two blocks were significant, but the third was not. Thus, after taking the control into account (β=.27, $p<.01$, adjusted R^2=.07), framing predicted creativity (β=.17, $p<.05$, ΔR^2=.03); however, self-efficacy did not (β=.11, $p>.05$). The results of the third block demonstrated that the interaction term of self-efficacy and framing did not predict creativity (β=-.09, $p>.05$, ΔR^2=.00). Thus, the results do not provide support for Hypothesis 5; self-efficacy does not moderate the relationship between framing and risk.

Discussion

The goals of the present study were to address three gaps in the creativity literature: the limited amount of evidence linking framing to creative performance, a lack of evidence demonstrating the relationship between risk and creativity, and a need for more studies using creativity measures with high external validity. Ultimately, the findings from this paper address the first and third gap, but fail to add evidence linking risk and creativity.

The results of the present study were mixed. As anticipated, the study results indicated that framing predicts risk perceptions and creativity, such that loss framing leads to greater perceived risk and higher creative performance on the task. Cognitive ability also predicted risk perceptions and creativity; however, analyses demonstrated that framing impacted both variables above and beyond the impact of cognitive ability. A number of the unanticipated findings included the result that risk was unrelated to creativity and thus could not function as a mediator in the relationship between framing and creative performance. Additionally, self-efficacy did not function as a moderator of the relationship between framing and risk.

The findings provide a number of contributions to the creativity literature. The results of this study confirmed that framing of a task can impact creativity. To the author's knowledge, this is one of the few studies to demonstrate that loss framing leads to increased creativity. This study found that participants in a loss-framed condition demonstrated higher creative performance in an in-basket task than those in a gain-framed condition. In fact, previous studies that have examined creativity and framing concluded that gain framing led to increased creative performance (Friedman & Fòrster, 2001; Simmons & Ren, 2009). The inconsistency of the present study's findings with those in the literature can be explained by the

operationalization of task framing in previous studies. In the case of Simmons and Ren (2009), framing was confounded with risk and the authors did not have a loss condition in their experiment. Friedman and Fòrster (2001) manipulated framing in a way that was unrelated to the consequences of the creativity task. Thus, this study is unique in its linking of a creative task to framing that poses gain or loss outcomes related directly to the participants' ability to succeed in the task. As a result, the present study adds to the creativity literature by demonstrating that framing a creativity task impacts creative performance on the task, such that loss framing leads to higher creativity.

This finding of loss framing impacting creativity more than gain framing may be understood by looking at the literature on creativity and rewards. Research has demonstrated that creativity benefits most from intrinsic motivation (e.g., Cooper et al., 1999; Hunter, et al., 2007; Joussemet & Koestner, 1999). Furthermore, the literature states that extrinsic rewards can decrease creativity (Hunte, et al., 2007; Joussemet & Koestner, 1999). As a result, the gain frame condition may have placed too much focus on rewards that the principal would reap in the scenario if his/her proposal were successful. Consequently, this might have led the loss frame condition (which did not discuss rewards) to higher levels of creative performance.

The present study also contributes to the creativity literature by measuring creativity with a complex task that has high face validity, a rarity in the literature. Since only a handful of studies have used such tasks to measure creativity in the past (Antes & Mumford, 2010; Shalley, 1991; Simmons & Ren, 2009), this study utilized an in-basket task involving a hypothetical scenario (originally from Antes & Mumford, 2010) to assess creativity. The variability in creative performance on the task in the results demonstrates the utility of this method in

studying creativity. Creativity is a complex, multidimensional construct (e.g., Amabile, 1983a; Barron, 1955; Mumford, 2003; Shalley & Zhou, 2008) that is difficult to measure using tasks that are close-ended (e.g., Guilford, 1950). As a result, this study contributes to the literature by providing evidence of the utility of a relatively easy-to-use measure for creativity.

The results also contribute to the literature on framing. To the author's knowledge, none of the studies on the framing effect (using prospect theory or regulatory focus) examine the impact of gain and loss framing on risk perceptions. Although the majority of theories in these literatures are based on the assumption that gain and loss framing have an impact on an individual's ability to engage in risky behaviors, they do not test how framing impacts the degree to which the individual perceives that risk exists. The closest the literature comes to this is by examining the impact of framing on emotions such as anger and fear (Lerner & Keltner, 2001) and Johnson and Tversky's (1983; cited in Lerner & Keltner, 2000) "Perception of Risk Questionnaire", which measures perceived number of deaths in response to a series of disastrous events. The present study is the first to examine the degree of risk participants anticipated would exist in a task. As a result, this study adds to the literature by providing empirical evidence that framing impacts the extent to which a participant perceives that a scenario will be risky, with loss framing leading to perceptions of heightened risk.

The study aimed to provide empirical evidence linking risk perceptions to creative performance. While these two constructs have been linked together in theory (Csikszentmihalyi, 1996; Sternberg & Lubart, 1995) and some empirical evidence has been found for this link (Simmons & Ren, 2009), the present study failed to find a relationship

between risk perceptions and creative performance. Possible reasons for these findings will be described later in this section.

The specific model proposed in this paper attempted to explain how framing impacts creativity. The model posited that framing impacts risk perceptions, as moderated by self-efficacy, and thereby impacts creative performance, arguing that loss framing would increase risk perceptions, ultimately leading to increased creativity because creativity is a risk-seeking behavior. However, the study's results did not support this model. While framing did impact both risk perceptions and creativity in the hypothesized directions, risk and creativity were unrelated. Thus, we can conclude that this study does not provide evidence for risk as a mediator of the relationship between task framing and creative performance.

There are a number of explanations for why risk may have not been related to creativity in the study results. This study is among the first to examine the relationship between risk and creativity. As a result, the author was unable to find an existing measure of perceived risk to use. While the measure used in this study had strong reliability, it is possible that the measure used did not fully cover the construct of perceived risk. Items in the risk measure focused solely on participants' impression of risks for the principal in the scenario. However, in their responses to the "think deeply" prompt in the task, many participants listed outcomes unrelated to the principal that could be conceived as risks, such as outcomes relevant to students, teachers, and the district as a whole (see Table 3 for examples). As a result, it is possible that there may be two types of risks to participants; those to the actor him- or herself, and those to the wider community in this scenario. Since only the former was measured in the

risk measure, it is possible that participants' perceptions of the other type of risk may have had a stronger impact on creativity.

To test this hypothesis, the "Think Deeply" responses were recoded into dummy variables, one for each of the five outcome responses, and then averaged across each participant. The analyses were run once more, using this new variable in the place of risk, to see if it functioned as a better proxy for risk. However, the analyses did not result in a relationship between the new risk measure and creativity. This may be due to the fact that the new measure did not examine the degree to which participants saw each outcome they listed as a risk (an outcome may have been listed, but some participants may have seen it as very likely, while others saw it as not likely at all). Thus, we cannot conclude from the results of this study that creativity and risk perceptions are related.

Another explanation for the lack of a relationship between risk and creativity may be a function of the type of task used to measure creativity in this study. Since the task involved a scenario that the participants had never actually participated in before (being a principal in a failing high school), it is possible that the risk that participants tied to scenario outcomes had little to do with their own propensity to be creative in the task. If participants did not feel that the risk was a personal one to themselves (i.e., they understood that the task was part of a fictional scenario), they may not have felt the impact of this risk very strongly when completing the task. However, in a real scenario where the risks impact the actor directly, it is possible that risk has a stronger relationship with that actor's likelihood to display creative performance in order to avoid unpleasant outcomes. Thus, the face validity of the task may have attenuated the effects of risk on creativity.

Table 3.
Examples of Outcomes Listed in the "Think Deeply" Task.

	Self-Focused Outcomes	Other-Focused Outcomes
Gain Frame Condition	• Gain the respect of the teachers and students • A pay raise • Potential new placement in career (perhaps doing the same thing for another school) • State/national recognition • Fulfillment in my career • I was (sic) able to make a difference and help the school get back to what it used to be. • I have the great feeling that I made a difference on many students lives and that they would go on to college and make something of themselves and not dropout • I would have the honor of creating this school and would be remembered as the person who was able to help it get back up • I would feel satisfied with my doings, knowing that I learned everything I needed to know from my education, to make a difference in the future education of peoples (sic) lives • My job will be better if I am working for a better school	• Test scores improve • Students become more involved in extracurricular activities • School funding increases • Students and teachers will enjoy coming to school • Assurance for the future of the school and its students • I was (sic) able to make many different groups of people (students, teachers, administrators, and parents) get along and compromise to help make this school better • Teachers will be able to discuss problems at school without being afraid of sharing their own opinions. • Parents will be able to have a way for their students to get to school in time and have an after school job. • Students will enjoy coming to school to participate in school work and extracurricular activities. • Teachers will have time to teach what they want to teach while getting the curriculum done that the state mandates.

Table 3 (cont'd).

	Self-Focused Outcomes	Other-Focused Outcomes
Loss Frame Condition	• My job will be gone • Difficult to find another job • Become demoted to another position • Loss of income • Bad reputation among community • Will be known in the entire community for being responsible for Woodland's downfall. • People associated with me will be questioned from nosy community members as to why I was fired. • Will feel ashamed and embarrassed for failing. • Teachers and faculty are disappointed in me and my performance • Your family would also suffer from the loss	• A good learning environment for students will be lost • Employees could lose jobs • Parent support will be lost • Money will be lost • School would shut down, because the position might be hard to fill • More students will drop out. • The school will continue to get no funding and more programs would be cut. • Test scores will continue to decrease. • The students do not get a better education • Teachers could protest/ quit

Another explanation for these unexpected findings may be that a suppression effect occurred in the data. Cognitive ability and self-efficacy were negatively correlated with each other, and both were significantly correlated with risk. As a result, it is possible that self-efficacy may have suppressed the impact of risk on creativity. The regression analyses to test hypothesis 2 were conducted again with the addition of self-efficacy as a control in the first step (using self-efficacy and cognitive ability as controls) to test this theory. However, even after taking self-efficacy into account, risk perceptions did not significantly contribute to the prediction of creative performance.

Finally, risk may have been unrelated to creativity in the study results because the risk items were not focused on the risks of being creative. While the majority of items in the risk measure referenced the relevance of creativity to proposal outcomes, none of them addressed the risk of creativity itself. Thus, the measure dwelled on general risks rather than risks that the participant associated with creativity per se. The creativity literature states that creative ideas are risky because they challenge the status quo. While items on the risk measure attempted to cover a variety of risks associated with being creative, the measure may have confounded a creative proposal with a successful one, thus failing to separate out participants' perceived risks of the proposal in general from being creative on the proposal (the latter of which was of concern in this study).

The study also failed to provide evidence for self-efficacy as a moderator of the relationship between framing and perceived risk. Again, it is possible that the measure used for self-efficacy did not fully encapsulate the construct. However, without a strong measure of risk, it is difficult to know what the role of self-efficacy is in the model. Research has linked self-

efficacy to framing (Van't Riet, et al., 2010) and creativity (e.g., Chong & Ma, 2010; Gong, et al., 2009; Tierney & Farmer, 2002), so these results are somewhat surprising, given that self-efficacy is significantly negatively correlated with risk perceptions in the data. However, the study found that self-efficacy is unrelated to both framing and creativity. Therefore, we can conclude that the framing of this task did not impact participants' own perceptions of their ability to complete the task.

Another explanation for the lack of impact of self-efficacy on risk may be that while the self-efficacy measure was self-referent for participants, the risk measure was not, focusing instead on the principal. Participants may have separated themselves from the role of the principal, thus leaving little opportunity for an interaction to occur between their own self-efficacy in the task and risks to the principal.

Finally, the study results also pointed to cognitive ability as a major predictor of both risk perceptions and creativity. While creativity has been linked to intelligence in the past (e.g., Amabile 1973a), it was not anticipated that cognitive ability would affect creative performance because the literature states that at high levels of IQ (which can be assumed at a University), there is no relationship between cognitive ability and creativity (Barron, 1961; Getzels & Jackson, 1962; Wallach, 1971). However, this finding is not surprising, as cognitive ability has often been considered *the* predictor for a variety of areas of performance (e.g., Hunter, 1986). Furthermore, once this effect was controlled for, framing still predicted risk perceptions and creative performance, demonstrating that creativity requires more than just intelligence.

One reason for the strong link between cognitive ability and creative performance in the results may be due to the type of creative task that was chosen. Since the in-basket involved

reading a variety of materials, thinking critically about these, and then writing a creative response to the situation, it can be concluded that the task would require at least a moderate level of verbal intelligence. In fact, the third dimension of creativity that was measured was eloquence of the solution, which may have been strongly impacted by verbal writing ability. Thus, it makes sense that cognitive ability (as measured by ACT scores) would predict creative performance on this task.

Another explanation for this link may involve similar processes functioning for both cognitive ability and framing. High creative performance typically involves intensive thinking and processing, thus requiring a high level of focus. Similarly, a loss frame would involve the allocation of increased cognitive resources and attention to the impact of failing at a task. Since achieving a high score on the ACT exam also involves a high level of focus, it is possible that the positive correlations between cognitive ability and both framing and creative performance in the results are a result of the variables' underlying linkages with effective allocation of cognitive and attentional resources.

Limitations

A number of other constraints may have impacted the results of this study. While the two raters were trained and had high interrater reliability, the creativity ratings were still ultimately subjective. The Antes and Mumford (2010) creativity in-basket was chosen because of its realism (in fact, a few participants commented after their session that this sounds exactly what their own high schools had gone through); however, it is possible that there may have still been some bias in the judges' ratings (e.g., halo or leniency biases, biases in variance across ratings). If such biases were similar for both raters, averaging across raters would not have

corrected for them in the study results. As a result, a stronger method may have been to combine more than one measure of creativity, adding a more objective measure to compare findings between the two and reduce the influence of biases.

Another limitation to the study involves its use of a hypothetical scenario in the task. Because participants were not actually in the situation of being hired as a principal in a failing school, perception of risk may not have been relevant enough to participants to influence their performance on the task. As a result, this study may have benefitted from using a more self-referent task, where participants could actually "feel" the impact of risks connected to the framing of the task.

Finally, the operationalization of framing used in this study may have benefitted from more elaboration. This study focused on a very general gain/loss frame, leaving most of the interpretation of *what* was to gain or lose up to the participants (hence the variety of responses for the "Think Deeply" prompt). However, given that even the simple framing used in this study had an impact on both risk perceptions and creative performance in the results, it can be assumed that the present results are a conservative estimate of the relationship that could occur if a stronger framing manipulation were presented.

Implications

Traditionally, the creativity literature has looked at how to identify individuals who are high on creative ability, via personality traits and other abilities (e.g., Batey, et al., 2010; Moon,et al., 2008; Scratchley & Hakstian, 2001; Shalley & Zhou, 2009). However, the present study demonstrates that regardless of the degree to which an individual is creative, modifications to the individual's work environment can increase his or her creativity. The

implications of these findings are that organizations can look beyond selecting for creativity and instead work to maximize the creativity in the employees they already have.

To encourage increased creative performance, managers may need to frame tasks in terms of losses. While this may seem counter-intuitive, the results of this study demonstrate that a focus on avoiding negative outcomes for a situation help people to perform more creatively than focusing on positive outcomes. A closer examination of some of the most innovative periods of history helps to explain this finding.

History demonstrates that competition has fueled creativity. The space race was defined by the United States focusing on not losing out to the USSR in the competition to get man outside of the earth's orbit. Similarly, some of the greatest advents in recent technology have been fueled by fears of losing customers, for example, the current race to build better e-readers and tablets. By focusing on *why* organizations need to stay competitive (e.g., avoid risk of lost sales, etc), leaders can drive innovation in the workplace.

Leaders presenting such a frame would most likely need to elaborate on the terms of losses or gains that would occur as a consequence of performance in the task. A better understanding on how people perceive risk in creative tasks may help to narrow down the most effective way to frame losses for enhanced creative performance.

Future Research Directions

While the present study was unable to explain how framing influences creativity, it did demonstrate that the two constructs are linked. Future research should examine what types of framing are most effective for creative performance, and look for moderators of this relationship; perhaps under certain circumstances, loss framing is not optimal. A better

understanding of the boundaries of this relationship would help practitioners provide actionable advice to leaders.

While this study found that framing predicts creative performance, the experiment design did not allow for an understanding of the degree to which the enhanced effect of loss framing lasts on creativity. Cross-sectional or longitudinal research designs could help to establish how long the effect of framing lasts and how strong it is. Furthermore, this study was unable to describe to what extent within-individual changes occur in creative performance as a result of framing. Future research should consider using and pre- and post-test design, perhaps over multiple iterations, to demonstrate the degree to which an individual's creativity is impacted by framing and for how long this impact lasts. Findings from such studies could help leaders understand how often they need to deliver framed messages and how much of a change to expect as a result of framing on creative performance.

Further research needs to be conducted to explain the process through which framing impacts creativity. If risk is not found to be a mediator of this relationship, perhaps there are other variables that need to be added to the research design. At the moment, it is not possible to conclude why framing impacted creative performance in this study. A better understanding of possible mediators in this relationship would help practitioners understand the process that is operating when creative tasks are presented to employees.

While Antes and Mumford (2010)'s creativity task proved useful to measuring creative performance in this study, the measure has yet to be validated. One potential next step in this research could be to validate this measure and compare its practical utility to those of other creativity measures. Since this particular study demonstrated that there was little difference

between the three subdimensions of creativity on the measure, perhaps modifying these or collapsing them in the future would be more useful to understanding creative performance. Another important consideration that this study was unable to address is the degree to which creative performance can be distinguished from performance in general. Many aspects of the creativity measure used in this study (for example, the subdimension of quality) seem very similar to what would be a measure of general performance. Once such a measure of creativity is validated, it would be possible to conduct further research to determine the discriminant validity between creativity and other performance measures.

Looking back on the proposal responses and on the judge training process, it seems that more research could be done to set the standard for the degree to which an individual's creativity is considered creative. While some participants contributed extremely original ideas in this study, others displayed some creativity, but their responses were not extremely unique. The raters struggled during the training process with deciding how much originality qualified as creative. To the author's knowledge, this issue has not been addressed in the creativity literature; while the literature discusses dimensions involved in creativity, it does not distinguish between situations where a high level of creativity (i.e., high creativity standards) would be optimal from those where even small amounts of creative thinking would suffice. One way to address this issue in future research involving in-basket tasks and similar scenarios would be to develop behaviorally anchored rating scales (BARS; see Schwab, Heneman, & DeCotiis, 1975 for more information on BARS) that provide examples of what creativity "looks like" at each level of performance, thus clarifying to raters the standard for creativity in the task.

Finally, the finding that loss framing leads to increased creative performance is worth noting. It is possible that these findings may generalize to other types of workplace performance as well. Currently, the framing literature focuses on specific health-related behaviors, and provides little guidance for what impact framing may have on the quality of performance. However, given the impact of framing on creative performance and the ease with which framing manipulations can be provided within the workplace, findings linking framing effects to other types of performance would be of high utility to leaders. As a result, future research should examine whether loss framing impacts other types of performance as well.

APPENDICES

Appendix A: *Control Measures*

Instructions: Before we can schedule your participation in the problem-solving study, we need you to answer a few questions. Please answer each of the following as honestly as possible.

Please indicate the degree to which you agree with each of the following items (1=Strongly Disagree, 7=Strongly Agree).

1. I will be able to achieve most of the goals that I have set for myself in a creative way.
2. When facing difficult tasks, I am certain that I will accomplish them creatively.
3. In general, I think that I can obtain outcomes that are important to me in a creative way.
4. I believe I can succeed at most any creative endeavor to which I set my mind.
5. I will be able to overcome many challenges creatively.
6. I am confident that I can perform creatively on many different tasks.
7. Compared to other people, I can do most tasks very creatively.
8. Even when things are tough, I can perform quite creatively.

Please indicate the degree to which you agree with each of the following items (1=Strongly Disagree, 7=Strongly Agree).

1. I am willing to select a challenging assignment that I can learn a lot from.
2. I often look for opportunities to develop new skills and knowledge.
3. I enjoy challenging and difficult tasks where I'll learn new skills.
4. For me, development of my ability is important enough to take risks.
5. I prefer to work in situations that require a high level of ability and talent.
6. I like to show that I can perform better than my classmates.
7. I try to figure out what it takes to prove my ability to others at school.
8. I enjoy it when others at school are aware of how well I am doing.

9. I prefer to work on projects where I can prove my ability to others.
10. I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others.
11. Avoiding a show of low ability is more important to me than learning a new skill.
12. I'm concerned about taking on a task at work if my performance would reveal that I had low ability.
13. I prefer to avoid situations at school where I might perform poorly.

What was your overall score on the SAT (or ACT)? If you have taken either test more than once, please report your highest score.

SAT score _____

ACT score _____

Appendix B: Modified Antes & Mumford (2010) Materials

Problem Background

You have just been temporarily appointed the Principal of Woodland High School for the next six months. Woodland is located in a suburban area just outside of St. Louis, Missouri. The school was first opened in 1949, and a major expansion and renovation of the school was completed in 1995. Current enrollment is approximately 1,400 students with about 400 freshmen, 375 sophomores, and just over 300 students in each of the junior and senior classes. The teacher to student ratio is about 1 to 28, and teacher salaries are right at the state average. The last principal has retired after 25 years. Woodland was at one time the best high school in the region, and all the other schools attempted to imitate its outstanding programs. Unfortunately, the school has been steadily declining over the last decade. The school district has recruited you because you were seen as a key player in revitalizing your former school in a neighboring community. You have been informed by the school board and the superintendent that Woodland is in need of some major changes, and they expect you to present a proposal for improving Woodland in **six weeks**.

There are several obvious weaknesses at Woodland such as falling test scores on the required state exam and declining student attendance. In fact, the test scores were so low this year that an article was recently published in the city newspaper reporting Woodland's poor performance as compared to other schools in the district. Even though the school has only been in session for a short while, you quickly begin to share the concerns of the school board. You notice that more and more students are not attending school, and even teachers have

been calling in sick at an alarming rate. You have grown to like the students and teachers at the school, but you sense the frustration in the air.

In an effort to develop a plan for the school and to get ready for your proposal to the school board, you have done the following two things thus far:

1.) Conducted Focus Group Meetings
You have conducted focus group meetings with school administrators, teachers, students, and parents in hopes to uncover the underlying problems at Woodland.

2.) Enlisted the Help of a Consulting Team
You have hired an educational consulting team to assist you so that you can meet your deadline.

The following pages contain the notes that you took at the focus group meetings. After your notes, you will find the information that the consulting firm has provided you for working through the process of writing your proposal.

Instructions: Read through your notes from the focus group meetings to familiarize yourself with the problem. Next, move on to the consulting firm's memo and the packet that they have provided you.

Focus Group Meeting: Administrative Staff

Attendance: Jonathon Baylor- Assistant Principal (5 years at Woodland)
Carol Major- Assistant Principal (8 years at Woodland)
Margaret Foster- Dean (7 years at Woodland)
Janet Baer- Guidance Counselor (3 years at Woodland)
Robert Earlham- Guidance Counselor (12 years at Woodland)

The Concerns of Administrative Staff:

- Test Scores and Grades
  - Scores on the State Education Assessment Exam have been declining steadily for several years.
  - SAT scores are the lowest in the state.
  - The average GPA for all grade-levels has declined more in the last 2 years than in the last 10 combined.
  - The number of students who failed last year doubled over the previous year.
- Discipline
  - Students are disrespectful to teachers, administrators, and other students.
  - Students are bringing inappropriate things to school.
  - Students refuse to follow the dress code.
  - Number of students in detention is ridiculous.
  - Students do not follow rules.
  - Students do not care about getting to school or class on time.
- Funding
  - Funding is going to be decreased if the state test scores do not go up.
  - Too many requirements are placed by the state on how the money is to be spent.
  - School does not have the money to keep up with the extra programs that other schools are doing.
  - Dropout rate is highest in the region. State withdraws funding for each dropout.
- College Admission
  - The number of students continuing on to college has declined steadily over the last 5 years.
  - College representatives have stopped coming to Woodland to talk with students.
- Teacher Turnover
  - Teachers are leaving the school to teach at other schools.
  - It is almost impossible to recruit new teachers to come to Woodland.

Focus Group Meeting: Teachers

Attendance:

Julia Nygard, History	Carmella Angels, Psychology	Clair Tammaro, Government
Allan Grayless, P.E.	Kelly Schmidt, Psychology	Nick Fillam, Math
Lorrie Currey, English	Jami Segal, Technology	Tasha Star, English
Kurt Munyon, Biology	Sandra Hibbler, Math	Fernando Rafter, History
Jason McCleskey, Math	Eric Barlett, P.E.	Kathryn Eisenhower, Biology
Tyler Fuson, Economics	Robert Fry, English	Michael Lasko, Psychics
Carla Frame, Music	Marie Dissardo, Spanish	Lisa Straight, French

The Concerns of Teachers:

- Curriculum
    - There are not enough days in the school year to teach everything that teachers are supposed to teach.
    - They do not get to teach what they want to teach.
    - They have to follow the curriculum so tightly that they cannot spend extra time on what the students find interesting.
- Paperwork
    - Teachers do not like turning in their lesson plans every week.
    - Writing lessons plans in the format that is required is too time consuming.
    - Keeping up the required paperwork takes too much time.
    - Filing the paperwork for sponsoring student organizations is too lengthy.
- Resources (Time, Money, & Supplies)
    - Being required to go to weekly PTA meeting is excessive.
    - It is not fair that teachers have to use their planning period for hall duty and cafeteria duty.
    - Weekly staff meetings cover topics that are irrelevant to most teachers, but they all have to sit through the whole thing.
    - Teachers do not have enough money to use for field trips and to buy supplies.
- Problems with Students
    - Class size is too large in the required courses.
    - The students are always tardy and they miss class too often.
    - The student's are being more disrespectful and discipline problems have never been this bad. Plus, nothing seems to happen to them when they are sent to the office.
    - The students are turning in poor quality work; if they turn it in at all.
    - Teacher's hate it when a student does very little work and then they are scolded for failing those students.
    - The students bring food and drinks into class and it is distracting.
    - Students are not bringing their materials to class, and the dress code is not be enforced by the principal.

Focus Group Meeting: Students

Attendance: 10 Freshman, 15 Sophomores, 14 Juniors, 12 Seniors

The Concerns of Students:

- School Environment
  - Students complain that they cannot get to their jobs on time after school.
  - School starts too early, and students cannot get enough sleep after they get home from work.
  - After school detention is too long.
  - The dress code is too strict.
  - A student's car was broken into and his radio was stolen, and no one got into trouble.
  - Certain students are disruptive in class and are keeping students from learning.
  - Parking lot is not big enough; they can never find a spot, and then they are late to class.
- Lunch
  - Lunch is too short; by the time students get their food it is time to go back to class, and they end up being late.
  - Lunchtime is too late in the day, and students get into trouble if they bring food into class.
  - The cafeteria is too crowded.
  - The cafeteria food is not good.
  - Other schools get to have music playing during lunchtime.
- Classes & Teachers
  - Classes are dull. Classes are mostly lecture.
  - There are no field trips; students think school is not fun at all.
  - There are too many required courses so they cannot take ones they want.
  - The classes they have to take are not relevant to anything in the real world.
  - If a student fails just one required class, they have to repeat the whole year and cannot graduate on time.
  - Teachers are too strict on rules. If students are even a few seconds late to class, they get a detention.
- Extracurricular Activities
  - Some of the band instruments are unplayable.
  - The football equipment is outdated.
  - The baseball field and basketball courts are in bad shape.
  - Students do not see the point in getting involved in extracurricular activities. They say they are stupid, and it is better just to work.
  - The teachers will not sponsor student groups.
  - There is not enough money to start student groups.
  - The last principal banded pep rallies because of an incident of bad behavior at the last one.

Focus Group Meeting: Parents

Attendance: 8 Freshmen parents, 12 Sophomore parents, 10 Junior parents, and 8 Senior parents

The Concerns of Parents:

- Treatment of Students
    - Parents say the teachers do not care about their kids.
    - Some parents are told by their kids that the teachers are rude to them.
    - Some parents complain the teachers do not treat their student fairly.
    - Teachers are too strict on the students.
    - Parents complain of their student being bullied by other students; they say no one does anything about it.
- Students' Learning
    - The teachers are not doing anything to help students get to college.
    - The teachers are always failing students, so classes must be too hard.
    - Some parents say that there are not enough advanced classes to challenge their students.
    - The other schools have special programs (e.g. laptops for students) but Woodland does not have anything like this.
    - The teachers are not doing a good job of getting the students interested.
    - The teachers are doing something wrong because the SAT scores are so low.
    - Parents are angry that the gym was remodeled, but the textbooks are outdated and falling apart.
- School Environment
    - The school looks trashy all of the time.
    - Students are being exposed to bad influences at school.
    - Some students do not feel safe at school.
    - There should be metal detectors in the school so bad students cannot harm the other students.
    - There should be drug sniffing dogs and locker checks in the school all the time so that drugs will not be brought to school.
    - Busses are in bad condition.
- Inconveniencies
    - Bus1 es run too early.
    - The teachers give students detentions, and then they cannot get to work on time.
    - School should start sooner so students can be dropped off on the parent's way to work.
    - School should start later because some parents cannot get students there on time.

Response Packet

** GAIN CONDITION*

Premier Educational Consulting
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www.premiered.com

MEMO

To: Principal of Woodland High School

From: Consulting Team

Subject: Proposal Writing Exercises

The following pages contain exercises that will help you to solve the problem that faces Woodland High School. The consulting firm has a strong history of success assisting educational leaders using the information that is provided to you in these exercises.

The first exercise entitled "Think Deeply" was developed from our philosophy that thinking intently about a particular time will put you into the appropriate mindset for solving difficult problems. This strategy has proven very effective, and it is very important that you give careful attention to it before you continue on to the next portion of the materials.

After the "Think Deeply" exercise, the packet contains another exercise with questions designed to help you consider the various components of the problem.

After completing these exercises, you will be asked to write a creative proposal for the school board. We have provided some points to keep in mind while writing your proposal. Your goal is to impress the School Board and **ultimately get the opportunity to stay on permanently as Principal of Woodland**. Please contact the firm if you need any assistance in the future.

EXERCISE 1: THINK DEEPLY

Instructions: Your decisions as the principal of Woodland High School can have lasting consequences on its success. Think deeply about **the possible gains** that could occur as a result of putting yourself out there to the School Board in your solution to their problem. Please fill in the space below with your thoughts.

LIST OUTCOMES

Instructions: List 5 of the most significant **gains** that could occur if your proposal is successful and you become hired permanently as Principal of Woodland.

1.
2.
3.
4.
5.

** LOSS CONDITION*

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MEMO

To: Principal of Woodland High School

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After the "Think Deeply" exercise, the packet contains another exercise with questions designed to help you consider the various components of the problem.

After completing these exercises, you will be asked to write a creative proposal for the School Board. We have provided some points to keep in mind while writing your proposal. Your goal is to impress the School Board and **ultimately avoid being fired as Principal of Woodland**. Please contact the firm if you need any assistance in the future.

EXERCISE 1: THINK DEEPLY

Instructions: Your decisions as the principal of Woodland High School can have lasting consequences on its success. Think deeply about **the possible losses** that could occur as a result of putting yourself out there to the School Board in your solution to their problem. Please fill in the space below with your thoughts.

LIST OUTCOMES

Instructions: List 5 of the most significant **losses** that could occur if your proposal is unsuccessful and you become fired as Principal of Woodland.

1.
2.
3.
4.
5.

**Both conditions*

EXERCISE 2: PROPOSAL PROCESS QUESTIONS

Instructions: In a moment, you will be asked to provide a creative proposal for the School Board concerning your solution to the high school's problem. Before completing this, we need you to fill out a few questions about your feeling about the proposal task.

To what extent do you agree with each of the following statements about the proposal task you are about to complete? (1 = Strongly Disagree, 7 = Strongly Agree)

1. I feel confident in my ability to perform this task effectively.
2. I think I can eventually reach a high level of performance on the task in this scenario.
3. I am confident that my solution to this task will be sufficiently creative.
4. I don't feel that I am as capable to perform the task as other people.
5. On average, other people are probably much more capable of performing this task creatively than I am.
6. I am not confident that I can perform this task successfully.
7. I doubt that my performance will be very creative on the task in this scenario.

To what extent do you agree with each of the following statements about the Principal's situation? (1 = Strongly Disagree, 7 = Strongly Agree)

School Board reactions

1. The School Board will fire the Principal if the proposal is not creative enough.
2. The School Board will not permanently hire the Principal if they think the ideas in the proposal are silly or impractical.
3. Members of the School Board will lose respect for the Principal if the proposal does not meet their standards.

4. Members of the School Board might look down on me the Principal after reading the proposal.
5. The School Board could think they made a mistake in hiring the Principal after reading the proposal.
6. The School Board might think that the Principal could make the situation worse as a result of this proposal.

*Gain Condition

PROPOSAL WRITE-UP

Instructions: Now that you have completed each of the exercises, you should have a better understanding the positive outcomes your plan should focus on achieving. Write a creative proposal for the School Board concerning your solution to the high school's problem. Your proposal should be at least 5 sentences long.

Remember:

- Your goal is to maximize the **gains** you listed in Exercise 1 to be hired permanently as Principal of Woodland .
- Your plan should be as creative as possible.
- Your proposal must flow coherently.
- Not only must your proposal contain the important information, but it must also be convincing to the School Board.

Loss Condition

PROPOSAL WRITE-UP

Instructions: Now that you have completed each of the exercises, you should have a better understanding of the negative outcomes your plan should focus on avoiding. Write a creative proposal for the School Board concerning your solution to the high school's problem. Your proposal should be at least 5 sentences long.

Remember:

- Your goal is to minimize the **losses** you listed in Exercise 1 and to avoid being fired as Principal of Woodland.
- Your plan should be as creative as possible.
- Your proposal must flow coherently.
- Not only must your proposal contain the important information, but it must also be convincing to the School Board.

Appendix C: *Creativity Rating Form modified from Antes & Mumford (2010) Materials*

Participant Code: _____

Directions: Answer each item under each of the three quality dimensions at a time. Rate each item by placing an "X" in the box that best fits that item. Once you have rated all three items for a dimension, provide an overall score between 1 and 5 (1 = "Poor", 3 = "Average", 5 = "Excellent").

Dimension 1		Rating			Overall Score	Notes
		No	Somewhat	Yes		
Quality	**Completeness:** Did the participant understand the critical issues? Did the participant fully address the most relevant information at hand?					
	Coherence: Is the response coherent? Is it well thought out and logical?					
	Usefulness: Is the response feasible and appropriate for addressing the problem?					
Dimension 2		Rating			Overall Score	Notes
		No	Somewhat	Yes		
Originality	**Novel:** Did the participant approach the problem in a new and innovative way?					
	Unexpected: Was the approach to the problem imaginative and unpredictable?					
	Elaborative: Did the participant provide a rich answer? Can the plan be easily visualized?					
Dimension 3		Rating			Overall Score	Notes
		No	Somewhat	Yes		
Elegance	**Flow:** Do all of the parts of the plan fit together smoothly? Does it flow seamlessly?					
	Refinement: Is the plan easy to follow and well refined? Is the solution focused so that it uses a minimal number of elements to operate?					
	Clever: Is the plan well-designed and cleverly put together?					

Appendix D: *Tips Provided During Rater Training*

General Tips:

When reading each proposal:

- Circle each suggestion.
- Underline the participant's justification for the suggestion.

Once you've finished reading:

- Rate the proposal on the three dimensions of creativity (quality, originality, and elegance) using the rating form provided to you.

This task typically takes about 5-10 minutes to complete per proposal.

Tips for Using the Rating Form:

Begin with answering each of the items for each dimension of creativity.

- For example, you'd start with completeness, coherence, and usefulness for Quality
- Put an "X" in the box that you think best fits where the proposal lies on each dimension (No, Somewhat, or Yes)

When answering the items, read the questions to yourself and look back at the proposal to remember.

- Do NOT answer based on the heading alone (e.g., "completeness")
- Do NOT answer without going back to the proposal first (do not rely on your memory!)
- Remember that you need to be able to justify each of your ratings!

Once you've finished rating each item under a dimension, you may give an overall score to the dimension.

- Scores range from 1 to 5, with 1 meaning “Poor”, 3 meaning “Average”, and 5 meaning “Excellent”
- Look back over your ratings for each of the 3 items under this dimension to help inform your overall score. Think about how well this person did overall on this creativity dimension.

REFERENCES

References

Amabile, T. M (1983a). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45*(2), 357-376.

Amabile, T. M. (1983b). *The social psychology of creativity.* New York: Springer-Verlag.

Amabile, T. M. (1996). *Creativity in context.* Boulder, CO: Westview.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal, 39*(5), 1154-1184.

Anderson, N., de Dreu, C. K. W., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior, 25*, 147-173.

Antes, A. L. & Mumford, M. D. (2010). Effects of time frame on creative thought: Process versus problem-solving effects. *Creativity Research Journal, 21*(2), 166-182.

Apanovitch, A. M., McCarthy, D., & Salovey, P. (2003). Using message framing to motivate HIV testing among low-income, ethnic minority women. *Health Psychology, 22*, 60–67.

Åstebro, T., Jeffrey, S. A., & Adomdza, G. K. (2007). Inventor perseverance after being told to quit: The role of cognitive biases. *Journal of Behavioral Decision Making, 20*, 253-272.

Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Barren, F. (1961). Creative vision and expression in writing and painting. In *Conference on the Creative Person.* Berkeley: University of California, Institute of Personality Assessment of Research.

Barron, F. (1955). The disposition toward originality. *Journal of Abnormal and Social Psychology, 51*, 478-485.

Batey, M., Chamorro-Premuzic, T., & Furnam, A. (2010). Individual differences in ideational behavior: Can the Big Five and psychometric intelligence predict creativity scores? *Creativity Research Journal, 22*(1), 90-97.

Beeftink, F., van Eerde, W., & Rutte, C. G. (2008). The effect of interruptions and break son insight and impasses: Do you need a break right now?

Besemer, S. P., & O'Quin, K. (1999). Confirming the three factor creative product analysis matrix model in an American sample. *Creativity Research Journal, 12*, 287–296.

Block, L. G. & Keller, P. A. (1995). When to accentuate the negative: The effects of perceived efficacy and message framing on intentions to perform a health-related behavior. *Journal of Marketing Research, 32(*2), 192-203.

Brett, J. F. & VandeWalle, D. (1999). Goal orientation and goal content as predictors of performance in a training program. *Journal of Applied Psychology, 84*(6), 863–873.

Carmeli, A. & Schaubroeck, J. (2007). The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly, 18*, 35-48.

Carver, C. S. & White, M. (1984). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment. *Journal of Personality and Social Psychology, 67*, 319-333.

Cesario, J., Grant, H., & Higgins, E. T. (2004). Regulatory fit and persuasion: Transfer from "feeling right". *Journal of Personality and Social Psychology, 67,* 319-313.

Choi, J. N., Anderson, T. A., & Veillette, A. (2008). Contextual inhibitors of employee creativity in organizations: The insulating role of creative ability. *Group & Organization Management, 34*(3), 330-357.

Chong, E. & Mah, X.. (2010). The influence of individual factors, supervision and work environment on creative self-efficacy. *Creativity and Innovation Management, 19*(3), 233-247.

Cooper, B. L., Clasen, P., Silva-Jalonen, D. E., & Butler, M. C. (1999). Creative performance on an in-basket exercise: Effects of inoculation against extrinsic reward. *Journal of Managerial Psychology, 14*(1), 39-57.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention.* New York: Harper Perennial.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*, 627–668.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Edmondson, A. C. (2003). Managing the risk of learning: Psychological safety in work teams. In West, M. (Ed.), *International Handbook of Organizational Teamwork.* London: Blackwell.

Eisenbeiss, S. A., van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: Integrating team climate principles. *Journal of Applied Psychology, 93*(6), 1438-14466.

Ekstrom, R. B., French, J. W., Harman, H. H., & Dermen, D. (1976). *Manual for Kit of Factor-Referenced Cognitive Tests.* Princeton, NJ: Educational Testing Service.

Friedman, R. S. & Fὸrster, J. (2000). The effects of approach and avoidance motor actions on the elements of creative insight. *Journal of Personality and Social Psychology, 79*, 477-492.

Friedman, R. S. & Fὸrster, J . (2001). The effects of promotion and prevention cues on creativity. *Journal of Personality and Social Psychology, 81*(6), 1001-1013.

Getzels, J., & Jackson, P. (1962). *Creativity and Intelligence: Explorations with Gifted Students.* New York: Wiley. Gilson, L. L. (2008). Why be creative: A review of the practical outcomes associated with creativity at the individual, group, and organizational levels. In Zhou, J. & Shalley, C. E. (Eds.), *Handbook of Organizational Creativity* (pp.303-322). New York: Lawrence Earlbaum Associates.

Gong, Y., Huang, J. C., & Farh, J. L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal, 52*(4), 765-778.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5*(9), 444-454.

Hennessey, B. A. & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology, 61*, 569-598.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280-1300.

Hirst, G., Knippenberg, D. V., & Zhou, J. (2009). A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal, 52*(2), 280-293.

Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology, 94*(5), 1128-1145.

Hunter, J. E. (1986). Cognitive ability, cognitive aptitudes, job knowledge, and job performance. *Journal of Vocational Behavior, 29*(3), 340-362.

Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for creativity: A quantitative review. *Creativity Research Journal, 19*(1), 69-90.

Hunter, S. T., Bedell-Avers, K. E., & Mumford, M. D. (2009). Impact of situational framing and complexity on charismatic, ideological and pragmatic leaders: Investigation using a computer simulation. *The Leadership Quarterly, 20*, 383-404.

James, L. A. & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology, 74*(5), 739-751.

Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal, 47*, 368–384.

Johnson, E.J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology, 45*, 20-31.

Joussemet, M. & Koestner, R. (1999). Effect of expected rewards on children's creativity. *Creativity Research Journal, 12*(4), 231-239.

Kahneman, D. & Tversky, A. (1984). Choices, values, and frames. *American Psychologist, 39*(4), 341-350.

Klein, K. J. & Knight, A. P. (2005). Innovation implementation. *Current Directions in Psychological Science, 14*(5), 243-246.

Kühberger, A. (1998). The influence of framing on risky decisions: A meta-analysis. *Organizational Behavior and Human Decision Processes, 75*(1), 23-55.

Latimer, A. E., Salovey, P., & Rothman, A. J. (2007). The effectiveness of gain-framed messages for encouraging disease prevention behavior: Is all hope lost? *Journal of Health Communication, 12*(7), 645-649.

Leung, A. K. Y. & Chiu, C. (2008). Interactive effects of multicultural experiences and openness to experience on creative potential. *Creativity Research Journal, 20*(4), 376-382.

Lerner, J. S. & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & Emotion, 14*(4), 473-493.

Lerner, J. S. & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology, 81*(1), 146-159.

Lozza, E., Carrera, S., & Bosio, A. C. (2010). Perceptions and outcomes of a fiscal bonus: Framing effects on evaluations and usage intentions. *Journal of Economic Psychology, 31,* 400-404.

Madjar, N. & Oldham, G. R. (2006). Task rotation and polychronicity: Effects on individuals' creativity. *Human Performance, 19*(2), 117-131.

Mann, T., Sherman, D., & Updegraff, J. (2004). Dispositional motivations and message framing: A test of the congruency hypothesis in college students. *Health Psychology, 23*, 330-334.

Massman, A. J. & Ford, J. K. (*in press)*. Do words matter in training?: The effects of gain and loss-framed training and labeling on motivation, self-efficacy, and performance.

McDaniels, T. L., Axelrod, L. J., Cavanagh, N. S., & Slovic, P. (1997). Perception of ecological risk to water environments. *Risk Analysis, 17*, 341-352.

Meusburger, Peter (2009). "Milieus of Creativity: The Role of Places, Environments and Spatial Contexts". In Meusburger, P., Funke, J. and Wunder, E. (Eds.). *Milieus of Creativity: An Interdisciplinary Approach to Spatiality of Creativity* (pp.97-154). Springer.

Meyerowitz, B. E., Wilson, D. K., & Chaiken, S. (1991). Loss-framed messages increase breast self-examination for women who perceive risk. *Paper presented at the Annual Convention of the American Psychological Society,* June, Washington, D.C.

Milch, K. F., Weber, E. U., Appelt, K. C., Handgraaf, M. J. J., & Krantz, D. H. (2009). From individual preference construction to group decisions: Framing effects and group processes. *Organizational Behavior and Human Decision Processes, 108,* 242-255.

Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior, 25*, 175-199.

Moon, H., Kamdar, D., Mayer, D. M., & Takeuchi, R. (2008). Me or we? The role of personality and justice as other-centered antecedents to innovative citizenship behaviors within organizations. *Journal of Applied Psychology, 93*(1), 84-94.

Mumford, M. D. (2003). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal, 15*(2), 107-120.

Muthén, L. K., & Muthén, B. O. (2006). *Mplus 4.0* [Computer software]. Los Angeles, CA: Muthén & Muthén.

O'Keefe, D. J. & Jensen, J. D. (2007). The relative persuasiveness of gain-framed loss-framed messages for encouraging disease prevention behaviors: A meta-analytic review. *Journal of Health Communication, 12,* 623-644.

Oldham, G. R. & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal, 39*(3), 607-634.

Pankove,E. & Kogan, N. (1968). Creative ability and risk-taking in elementary school children. *Journal of Personality, 36*(3), 420-439.

Quionones, M. A. (1995). Pretraining context effects: Training assignment as feedback. *Journal of Applied Psychology*, *80*(2), 226-238.

Rank, J., Pace, V. L., & Frese, M. (2004). Three avenues for future research on creativity, innovation, and initiative. *Applied Psychology: An International Review, 53*(4), 518-528.

Rastogi, D. & Sharma, N. K. (2010). Creativity under concurrent and sequential task conditions. *Creativity Research Journal, 22*(2), 139-150.

Redmond, M. R., Mumford, M. D., & Teach, R. J. (1993). Putting creativity to work: Leader influences on subordinate creativity. *Organizational Behavior and Human Decision Processes, 55*, 120–151.

Rothman, A. J., Bartels, R. D., Wlaschin, J., & Salovey, P. (2006). The strategic use of gain- and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of communication, 56,* S202-S220.

Schmidt, A. M. & DeShon, R. P. (2010). The moderating effects of performance ambiguity on the relationship between self-efficacy and performance. *Journal of Applied Psychology, 95*(5), 572-581.

Schneider, T. R., Salovey, P., Apanovitch, A. M., Pizarro, J., McCarthy, D., Zullo, J., et al. (2001). The effects of message framing and ethnic targeting on mammography use among low-income women. *Health Psychology, 20,* 256-266.

Schwab, D. P., Heneman, H. G., & Decotiis, T. A. (1975). Behaviorally anchored rating scales: A review of the literature. *Personnel Psychology, 28*, 549-562.

Scott, S. G. & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *The Academy of Management Journal, 37*(3), 580-607.

Scott, G. M., Lonergan, D. C., & Mumford, M. D. (2005). Contractual combination: Alternative knowledge structures, alternative heuristics. *Creativity Research Journal, 17*, 79–98.

Scratchley, L. S. & Hakstian, A. R. (2001). The measurement and prediction of managerial creativity. *Creativity Research Journal, 13*(3), 367-384.

Seo, M.G., Goldfarb, B., & Barrett, L. F. (2010). Affect and the framing effect within individuals over time: Risk taking in a dynamic investment simulation. *Academy of Management Journal, 53*(2), 411-431.

Shalley, C. E. & Zhou, J. (2008). Organizational creativity research: A historical overview. In Zhou, J. & Shalley, C. E. (Eds.), *Handbook of Organizational Creativity* (pp. 3-31). New York: Lawrence Erlbaum Associates.

Slovic, P. (1987). Perception of risk. *Science, 236,* 280-285.

Simmons, A. L. & Ren, R. (2009). The influence of goal orientation and risk on creativity. *Creativity Research Journal, 21*(4), 400-408.

Slatalla, M. (2007, November 4). ACT vs. SAT. *The New York Times.* Retrieved from http://www.nytimes.com/2007/11/04/education/edlife/guidance.html?_r=2&pagewanted=all.

Stafford, L. D., Ng, W., Moore, R. A., & Bard, K. A. (2010). Bolder, happier, smarter: The role of extraversion in positive mood and cognition. *Personality and Individual Differences, 48*, 827-832.

Stajkovic, A. D. & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin, 124,* 240-261.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity.* New York: Free Press.

Tierney, P. & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal, 45*(6), 1137-1148.

Tourangeau, R. & Ye, C. (2009). The framing of the survey request and panel attrition. *Public Opinion Quarterly, 73*(2), 338-348.

Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*, 453-458.

Vancouver, J. B., & Kendall, L. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology, 91*, 1146-1153.

Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology, 87,* 506-516.

Van 't. Riet, J., Ruiter, R. A., Smerecnik, C., & de Vries, H. (2010). Examining the influence of self-efficacy on message-framing effects: Reducing salt consumption in the general population. *Basic and Applied Social Psychology, 32*(2), 165-172.

Wallach, M. (1971). *The Creativity-Intelligence Distinction.* Morristown, N.J.: General Learning Press.

Watson, D. & Clark, L. A. (1992). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality and Social Psychology, 62*(3), 489-505.

West, M. A. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and Creativity at Work: Psychological and Organizational Strategies*. Chichester: Wiley.

West, M. A., & Farr, J. L. (1990). Innovation at work. In M. A. West & J. L. Farr (Eds.), *Innovation and Creativity at Work: Psychological and Organizational Strategies* (pp. 3-13). Chicester, England: Wiley.

West, M. A. & Richter, A. W. (2008). Climates and cultures for innovation and creativity at work. In Zhou, J. & Shalley, C. E. (Eds.), *Handbook of Organizational Creativity* (pp.211-236). New York: Lawrence Earlbaum Associates.

Williams, S. D. (2002). Self-esteem and the self-censorship of creative ideas. *Personnel Review, 31*(4), 495-503.

Zhou, J. (2003). When the presence of creative coworkers is related to creativity: Role of supervisor close monitoring, developmental feedback, and creative personality. *Journal of Applied Psychology, 88*(3), 413-422.

Ziller, R. C., Behringer, R. D., & Goodchilds, J. D. (1962). Group creativity under conditions of success or failure and variations in group stability. *Journal of Applied Psychology, 46*(1), 43-49.