

DO WE HAVE CREATIVE DIFFERENCES?
HOW WE CONSTRUE CREATIVITY INFLUENCES THE SALIENCE OF
NOVELTY AND USEFULNESS

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ABSTRACT

DO WE HAVE CREATIVE DIFFERENCES? HOW WE CONSTRUE CREATIVITY INFLUENCES THE SALIENCE OF NOVELTY AND USEFULNESS

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Creativity is one of the most popular buzz words being used in society and business today. Yet, how do people determine if something is creative or not? Business leaders often clamor for more creativity and creative solutions from their employees and investors shop for entrepreneurs with creative ideas, yet by what standards are they evaluating these ideas. As creativity is often defined as an idea that is both novel and useful, it is conceivable that people may be using a variety of combinations of these components in determining their own standards for creativity. Many scholars focus on creativity as a global construct, which confounds the independent contributions of novelty and usefulness. Drawing from the established theoretical conceptualizations of creativity as a product, I seek to understand how novelty and usefulness contribute to creativity judgments. Particularly, the main focus of this dissertation is what factors influence how people may prioritize novelty or usefulness in making judgments of creativity. In seeking to understand how the relationship of novelty and usefulness to creativity may be moderated, the contextual influences of psychological distance are used to begin to explore the dynamic nature of creativity judgments. Using both field and lab

experiments, I explore how framing a request for the evaluation of proposed ideas can change how novelty and usefulness combine to define creativity in practice.

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I. INTRODUCTION

Creativity is one of the most popular buzz words being used in society and business today. It has been highly touted as a cure for society's ills (Obama, 2011), a foundational requirement for innovation (Scott & Bruce, 1994; West, 2002), and even cited as a key competency in corporate leadership (IBM, 2010). If we are living in an economy driven by creativity (Florida, 2002); it could be important to know how it is that we evaluate ideas, products or people as creative. Researchers use judges to evaluate ideas, products, and people as creative, teachers attempt to stimulate and grade the creative thinking of their students, and businesses attempt to identify the next top creative talent, product, technology, or service. Yet, what goes into a consideration of whether something is creative or not?

To identify something as creative, we must first define what creativity means. Over the last few decades creativity researchers have coalesced around one consistent definition of creativity (Hennessey & Amabile, 2010; Mumford, 2003). Researchers most often define creativity as an idea, product, or process this is judged to be both novel and useful (e.g., Amabile, 1996; George, 2007; Shalley & Zhou, 2008). If creativity is most often defined as a judgment that something possesses both novelty and usefulness, then how do considerations of these factors contribute to judgments of creativity? Creativity has been most often linked with novelty (Kampylis & Valtanen, 2010), so how is usefulness brought in to these evaluations?

Creativity is in essence, a subjective value judgment; it is best measured through social evaluation (e.g., Amabile, 1996; Csikszentmihalyi, 1996). We rely on external evaluations in our empirical research (for a review see, George, 2007) and in practice (e.g., Elsbach & Kramer, 2003; Tierney & Farmer, 2004; Zhou & Oldham, 2001) to determine if something or someone is creative. While creativity describes the quintessential generative process, it is through the act of social evaluation that the results of these generative processes are deemed creative. Thus, the act of evaluation is central to any research on creativity and an important factor in understanding what we all are talking about when we refer to creativity in research and practice.

The modern era of creativity research was given a jumpstart in an American Psychological Association Presidential Address in 1950 (e.g., Mumford, 2003; Sternberg, 2006). In this address, Guilford put forward a view of creativity grounded in novelty but “under some degree of evaluative restraint” (1950: 453) to ensure the value or fitness of the creative product. This conceptualization of creativity put novelty in a prime position, limited by some consideration of the utility of the resulting idea or product. This view that creativity is primarily about novelty was reinforced in a follow-up paper on evaluating creative people that started with the sentence: “One of the most important aspects of creative thinking is originality” (Guilford, 1953: 362). There is evidence that novelty may be the prime driver of creativity judgments (Amabile, 1996; Runco & Charles, 1993), so how does usefulness fit into our conceptualization?

At some point the definition of creativity shifted from novelty bounded by some consideration of usefulness (Guilford, 1950) to researchers requiring both novelty and

usefulness in defining creativity (e.g., Feist, 1998; Zhou & Shalley, 2003) without discussion on how these factors contribute to that creativity judgment. This has the potential to cause a problem. When researchers define creativity as requiring both novelty and usefulness without specifying how this combination of both factors contributes to judgments of creativity, we lack clarity as to what it meant when something is evaluated to be creative (e.g., George, 2007; Unsworth, 2001). Yet even while researchers define creativity with the two dimensions of novelty and usefulness, most often they are measuring just overall creativity which blurs the contribution of novelty and usefulness. Thus the majority of our research does not inform us as to whether creativity is mostly about novelty or contributions of both novelty and usefulness. Defining creativity as requiring both dimensions and then measuring only overall creativity implies an assumption that both novelty and usefulness are contributing to the creativity evaluations as captured in much of our research.

Creativity research is often conducted relying on some basic assumptions about what creativity means (e.g., Litchfield, 2008; Shalley et al., 2004; Unsworth, 2001). I will look to explore several critical assumptions implied in current conceptualizations of creativity as being composed of novelty and usefulness by seeking to answer three fundamental questions about the relationship between novelty, usefulness, and overall creativity. Do novelty and usefulness equally contribute to creativity? If the effects of novelty and usefulness differ, is this relationship stable? If the relationship is not stable, what explains those differences? If the relationship of novelty and usefulness to creativity differs then these two components cannot equally contribute to judgments of creativity and stability cannot be assumed. Thus, I will seek to test whether the relationship of

novelty and usefulness to creativity may be moderated by context factors as a way to challenge these assumptions and explore when usefulness may be a factor in creativity judgments.

How we weight novelty and usefulness in making judgments of creativity may be critically important to whether specific ideas are accepted and promoted on to others. Creativity is often considered the first stage of the broader process of innovation (Scott & Bruce, 1994; West, 2002) and as organizations struggle to find a balance between novelty dominated exploration and utility focused exploitation (Smith & Tushman, 2005; Tushman & O'Reilly, 1996) this focus on the end goal of innovation may necessitate an earlier effort at generating and filtering creative ideas based on those that might fit the type of organizational innovation strategy envisioned. If a manager and his/her director are both working to support employee innovation but each judge creativity focusing primarily on different facets of creativity, they may support and promote different types of ideas. The manager may filter out those ideas lower in his/her own focal facet but extremely high in the opposite. This would leave the director with, in his/her mind, only mediocre ideas at best. This type of selective filtering that is not aligned in how the facets of creativity are prioritized can really hamper an organization's flow of innovative ideas just depending on differential weighting of facets (novelty and usefulness) occurring throughout the organization in considering what is creative.

Placing a priority on either novelty or usefulness may also be extremely valuable to entrepreneurs attempting to pitch their ideas to potential investors. An inventor who has come up with a slight new twist improving an existing product may want to engender a utility focus in others as they consider this invention. Another, who has developed a

potentially market making concept, may wish to help other investors to look more favorably and consider this idea as more creative by increasing their focus on novelty. If creativity is something we value in society and within our organizations, then how we deem something creative by balancing consideration of novelty and usefulness is important to understand.

Novelty may be a primary driver of creativity but it is necessarily bounded by usefulness (Guilford, 1950). An idea that is original or new may be entirely inappropriate and thus not considered creative. As in the following example, a classic divergent thinking task is asking participants to “name all things square”, a response of baseball (round, not square) would be very rarely reported and thus novel but would not be considered creative because it is inappropriate (Runco & Charles, 1993). “Outlandish, wild ideas can be creative but they are not necessarily so...” (George, 2007: 442), as they must to some extent be seen to create value to be creative. This type of limitation on the relationship between novelty and creativity implies that they should not be equated as synonymous constructs but rather closely related but bound by a limiting factor of utility. Yet how much does usefulness play into these judgments of creativity, if it is somehow required?

Considerations of both novelty and usefulness are thus required for an idea to be considered creative, but the contributions of these factors may not be equal. Previous research into how novelty and usefulness combine to render judgments of creativity has returned conflicting results, with Runco and Charles (1993) finding novelty to dominate this judgment, while Rietzschel, Nijstad, and Stroebe (2010) found usefulness and originality to both contribute to creativity decisions. While novelty is a consistent factor

associated with creativity, contextual factors may play a role in how strong that relationship is as well as the strength of any contribution for considerations of usefulness.

I would like to propose that evaluations of creativity are complex judgments and as such, decision making theory and research can inform us as to how in some instances creativity can be almost solely focused on novelty and in other cases novelty and usefulness both drive the judgments of creativity. In an effort to simplify decisions or judgments, people often limit the criteria considered (e.g., Simon, 1957; Tversky & Kahneman, 1974). Heuristic processing often encourages a focus on the most prominent factor, increasing the salience of this factor in reaching a decision (e.g., Fiedler, 2007; Tversky, Sattah, & Solvic, 1988). With novelty being generally considered the most prominent facet of creativity, perhaps under many circumstances, individuals may simply conflate novelty and creativity, minimizing the role of usefulness in these judgments. Perhaps contextual factors can help focus our attention towards consideration of novelty or usefulness and increase the salience of these factors in making judgments of creativity. A situation that directs one's attention to the primary factor of novelty may discount usefulness and in a situation where utility is primed then perhaps usefulness will contribute to judgments of creativity along side of novelty.

In this dissertation, I hope to explore how contextual framing may contribute to the salience of novelty and usefulness in making judgments of creativity. By testing if contextual framing can moderate the weighting of the factors in making creativity judgments, I am seeking to test the implied assumptions of a conceptual definition of creativity that requires novelty and usefulness, but does not specify their relationship and

the measurement of creativity, ignoring the contributions of these factors. As utility is most often relevant to those who are closer to a task or problem, the contextual nature of psychological distance is used as the construct I propose that may moderate the relationships of novelty and usefulness with overall creativity judgments. Psychological distance has been conceptualized as the distance one feels from a situation or task as presented in a broader context of Construal Level Theory (Liberman & Trope, 1998; Liberman, Trope, & Wakslak, 2007; Trope & Liberman, 2010). To date, Construal Level Theory has been primarily explored in a laboratory setting. I plan on utilizing a psychological distance manipulation in the field to test my hypothesis and perhaps contribute to the collective generalizability of this theoretical perspective.

In attempting to return to theoretical conceptualization of creativity as novelty bounded by usefulness and operationally capturing both dimensions, as well as overall creativity, I hope to capture implicit variation in how novelty and usefulness contribute to judgments of creativity. In doing so, I am attempting to align the theoretical, operational, and implicit definitions of creativity for researchers and practitioners alike. This research begins to answer calls for clarifying what is meant by the ‘elusive construct’ of creativity (e.g., Amabile, 1996; George, 2007; Paletz & Peng, 2008). Additionally, separating the global construct and its two components operationally, may offer a new measurement model for future creativity research and clarify how novelty and usefulness contribute to overall creativity (Zhou & Shalley, 2003). If creativity judgments are found to weigh novelty and usefulness differently across individuals and situations, the recognition of this may allow for more fine-grained research into this construct and more generalizable interventions for those in managerial practice (Kilgour & Koslow, 2009; Litchfield,

2008). As ideas, processes, and products are not deemed creative in a vacuum but must be relevant within a particular context (e.g., Amabile, 1996; Csikszentmihalyi, 1996), the contextual framing and an individual's perceptions of that context may be particularly relevant to how creativity is considered during research activities, as well as within work organizations.

While fields or domains have been considered the fundamental context through which creativity is grounded theoretically, I am seeking to explore how the weighting of novelty and usefulness may vary even within a particular domain or field. If actors in different domains weigh novelty and usefulness differently, say between art and business, this may not be surprising and these results could still fit conceptualization of creativity as stable within a specific domain (Amabile, 1996; Csikszentmihalyi, 1996). However, if within a single problem domain or organization, novelty and usefulness are weighted differently in making judgments of creativity then this may hamper organizational innovation and the traditionally assumed within domain/field contextual stability of creativity may be in question.

While this consideration of the weighting of novelty and usefulness is being examined in this dissertation from an external evaluation perspective, I believe that the salience of novelty and usefulness is an important consideration to how we not only evaluate ideas of others but also how we internally filter our own ideas before submitting them for external evaluation. I would, in the future, hope to broaden this research program to include the attentional focus on usefulness and novelty during earlier stages of the creative process.

Approaching how the dimensions of novelty and usefulness combine to define the construct of creativity needs to be addressed at three levels: theoretically/ conceptually, operationally/ measurement, and implicit/ lay usage. In the next section, I will review several traditional theoretical perspectives on creativity to establish a common foundation from which suggest a return to more flexible considerations of how novelty and usefulness combine to reach judgments of creativity in our theoretical conceptualizations and operational models. I then explore how creativity has been operationally measured historically by researchers and offer a new approach to considering both facet and global measures. Using this foundation, I attempt to align the theoretical and operational approaches with how creativity is defined in practice by considering how novelty and usefulness are weighted in contributing to creativity judgments. To explore how novelty and usefulness may be differentially prioritized within the same domain but under differing work conditions, I test how contextual framing of psychological distance from a situation may influence the weight with which novelty and usefulness contribute to judgments of creativity.

II. THEORETICAL CREATIVITY

As a socially bound construct, evaluation is a key component in process models of creativity (Amabile, 1996; Csikszentmihalyi, 1996; Campbell, 1960; Hogarth, 1980; Staw, 1990; Wallas, 1926). Focusing on how ideas¹ are evaluated as creative instead of how they are generated is a departure from the current norm of creativity research (Girotra, Terwiesch, & Ulrich, 2010), as most of the creativity research to date has been focused on creativity production or generation using measures of overall creativity (George, 2007; Shalley & Zhou, 2008; Shalley et al., 2004). Idea generation is but one phase in the creative process with other phases of problem identification and idea evaluation little researched (Shalley et al., 2004). Evaluation is critical for idea generation and creative productivity from both an internal and external perspective (Mainemelis, 2010; Runco & Smith, 1992). By first looking at how evaluation is incorporated into theoretical models of the creative process, I seek to highlight the internal individual cognitive requirement for evaluation in creative activities. I will then turn to how creative ideas or products have been evaluated as an outcome, to consider how creativity is

Creativity outputs are considered to be both tangible and intangible products. This product designation includes both actual physical products as well as intangible outputs, such as processes and ideas. I believe that creative ideas are foundational to creative products or processes. Throughout this paper, I refer to the output of the creative process as “creative ideas” with the understanding these ideas may represent a range of creative products.

externally validated. While I review how both internal and external evaluations are central to creativity and are expressions of how creativity is defined, the studies conducted in this paper focus on external evaluation. I will seek to identify when everyday implicit definitions of creativity used in evaluating the ideas of others may confound creativity theory and research that assumes a stable relationship between the dimensions of novelty and usefulness with respect to overall creativity.

Process Models of Creativity

Creativity has been conceived of as a process, as well as a characteristic of people, products or ideas (e.g., Runco, 2004). Several theoretical models of the creative process have been put forward over the years describing multiple phases in the development of creative ideas or products. As I outline several of the most influential process models, I will direct most of my efforts toward describing the evaluative (internal and external) components and highlighting how the criteria of novelty and usefulness are included in each process model. Often these process models are grounded using explicit conceptual definitions of creativity and in those cases these definitions will be reviewed.

One of the most influential process models of creativity was put forward by Wallas in his book *The Art of Thought* in 1926. While presenting a treatise on conscious and unconscious thought, Wallas developed a four stage process model of creativity. Wallas (1926: 79) outlines the successive phases of Preparation, Incubation, Illumination, and Verification as stages in developing “a new generalization or invention, or the poetical expression of a new idea”. The Preparation stage is conceived of as a time for conscious consideration of the problem at hand through an examination and analysis of the various

aspects of the problem and a gathering of available knowledge and resources. The next stage, Incubation, is described as an unconscious mental exploration of the problem and potential solutions. It is within this stage that novelty is introduced to the process through building a large variety of connections. When this Incubation process generates a potential solution, this idea is raised to the conscious awareness in a nearly instantaneous flash described by Wallas as the stage of Illumination. Once an idea has been raised to the conscious level, the individual moves to the Verification stage where “both the validity of the idea was tested, and the idea itself was reduced to exact form” (Wallas, 1926: 81). The Verification stage is described as needing discipline, attention, and conscious consideration of the original problem. It is within this Verification stage that an individual evaluates whether the idea generated through the first three processes is useful by considering if the idea meets the expectations of the prescribed problem.

Another influential process model of creativity was presented by Hogarth as part of a larger volume on the psychology of decisions entitled *Judgment and Choice* in 1980. In putting together this process model, Hogarth (1980: 111) defines creativity as “when ideas, ‘things’ or associations are produced in some new combination that is either useful or appropriate for a particular problem or purpose”. The following process model is based on the idea that “originality and appropriateness are probably the most important aspects of creativity” (Hogarth, 1980: 112). Hogarth’s model includes stages of Preparation, Production, Evaluation, and Implementation. The Preparation stage focuses on defining the problem analytically, which includes considering all of the information at hand and an exploration of any current assumptions implicit in the problem. Idea generation takes place in the Production stage, where an unconstrained mind builds a vast number of

potential solutions through making diverse associations. The consideration of an idea's novelty is encouraged as a means to fight satisficing in accepting the first solution generated (most likely a common one). Once a number of ideas are generated, a systematic examination of whether these potential solutions fit the problem previously identified is conducted. This Evaluation stage is a conscious judgment about the appropriateness of the conceived new ideas. The primary criterion to determine the appropriateness of these ideas is how well the proposed solution fits the initial problem. Hogarth's model adds a fourth step of Implementation to the process, extending this model of the creativity process beyond an individual's mind to a point where the idea is shared with others in an attempt to gain social support for the creative idea. This Implementation step implies that relevant others perform an external evaluation of the resulting creativity product in determining whether to support the product.

Amabile's texts *The Social Psychology of Creativity* (1983) and the updated version *Creativity in Context* (1996) provide a clear statement of how creativity is conceptually defined, as well as a process model of creativity. Her conceptual definition is stated as: "A product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic rather than algorithmic" (Amabile, 1996: 35). This definition identifies that creativity judgments require both components of novelty and usefulness. Amabile (1996) contends that there is a continuum of creativity from low levels of incremental improvement to common items to transformative ideas that may form new fields or even societies. Judgment is central to this definition of creativity as assessments of creativity "must, ultimately, be socially, culturally, and historically bound" (Amabile, 1996: 38).

Evaluations of novelty and usefulness must be made within some context or field which provides a comparison set for judgment. Consideration of novelty is restrained not by an expression of absolute uniqueness (singularity), but rather the relative newness or rarity of its occurrence within a particular domain and time. Usefulness is bound to the task at hand and the meaning of the particular context. Combined these two factors are described as the criteria for creativity assessments.

The second part of the definition referring to the nature of the task itself specifies that the solution to the task “is not completely straight forward” (Amabile, 1996: 35) from the perspective of the person generating the solution. Thus, a student making an advanced connection, previously put forward by another unbeknownst to the student, would be said to be acting creatively even if a society of experts hold this connection as accepted knowledge. This view holds that “...if the task is heuristic for the individual in question, then novel and appropriate solutions generated by the individual can be considered creative” (Amabile, 1996: 36). This second part of Amabile’s definition has often been left out in descriptions of creativity citing this work (e.g., George, 2007; Grant & Berry, 2011; Shalley et al., 2004). However, this part is often presumed in that if the task already had a correct solution available, there would be no need for a creative one to be generated.

The process model put forward by Amabile (1996) as part of her Componential Model of Creativity contains five steps. These steps are connected and while they are most likely to progress in order, it may be necessary to return or jump back any number of steps to revise the products of that step as the process continues. Step one is Problem

or Task Identification where a problem is either identified internally or externally as requiring the development of a creative solution. Once the problem is defined, information is gathered in the Preparation step. This information is used in the third step, Response Generation, to help develop response possibilities. This model holds that the more possibilities generated, the more likely that a novel and appropriate solution will be developed. The appropriateness of responses is considered in the fourth step, Response Validation and Communication, where potential ideas are evaluated against the assessment criteria of the initial problem. This step also includes communication, because creativity cannot be judged unless the problem solver communicates the resultant idea or produces a product to be judged. Finally, the Outcome step is a decision point where the results of step four are considered and the process is terminated (as a success or a failure) or a determination is made that progress has been made and further iterations of earlier steps are in order. Thus this model is designed not just to be linear but potentially iterative.

In 1990, Staw fleshed out an evolutionary approach to creativity by combining the description put forward by Campbell (1960) of how people develop and retain new knowledge with the process model proposed by Amabile (1983). In building this process model Staw “defines creativity as a product of variation and selective retention processes” (1990: 289). As such, this process model is broken down into two processes: Variation and Selective Retention. Variation from what is known or expected arises when a problem is discovered or presented to an individual. The identification of a problem itself may point to new options as “variety can be introduced in the very definition of the problem itself” (Staw, 1990: 293). The generation of alternative solutions is the part of

the Variation process in which a programmatic search for options is combined with a process of 'blind variation' or unconscious exploration of randomly connected options to build a number of possible solutions. The usefulness of possible solutions are considered during the Selection Retention process, where from a pool of generated ideas one or more are identified as preferred alternatives by considering the possible solutions against an internal criteria based on their potential "to solve the problem or personal affinity" (Staw, 1990: 293). The selected ideas are then tested either practically or socially. If an idea works or is accepted, it is retained. However, if all ideas are rejected, either the creative process is abandoned or must begin anew.

The final process model I will consider here is one put forward by Csikszentmihalyi (1996) in his book *Creativity: Flow and the Psychology of Discovery and Invention*. Csikszentmihalyi (1996: 25) begins his discussion of creativity by defining it as "to bring into existence something genuinely new that is valued enough to be added to the culture". Creativity is further defined as occurring "when a person...has a new idea or sees a new pattern, and when this novelty is selected by the appropriate field for inclusion into the relevant domain" (Csikszentmihalyi, 1996: 28). The person generating the idea, the domain or context the idea or product changes, and the members of the field which are the gatekeepers of what is accepted into the domain are the three main components of the System Theory of Creativity. An example of this model in organizational behavior research might be, an author (Person) conducting and writing up an experiment examining a new relationship between constructs, choosing an audience to address the findings to by way of submitting the article to a specific journal (Domain), the reviewers and editors (gatekeepers of the Field) then determine if the article has value

within that particular domain. If so determined, the article is accepted. This acceptance confers that the author's product is Creative.

From this Systems Theory, Csikszentmihalyi (1996) outlines a process model of creativity with five phases. While he holds that the process model as stated is relatively valid and simple, the linear nature as described must not be taken too literally. How in practice the creative process unfolds in reality is more complex, the phases occur in a more recursive and overlapping process, often with multiple iterations of these phases occurring before a creative idea is born. Becoming immersed in a problem either consciously or unconsciously occurs during Preparation. When a common solution is not readily apparent, creative solutions are sought. The Incubation period occurs when "ideas churn below the threshold of consciousness" (Csikszentmihalyi, 1996: 79) and unusual connections are stimulated. As common, readily available solutions were not sufficient to solve the problem, Incubation seeks new possibilities building a number of novel options. When a potential solution appears to fit the problem, that idea is raised to conscious consideration through a flash of Insight. Evaluation is then applied, as an internal process during which the individual considers whether an idea is worth pursuing by referencing her/his "internalized criteria of the domain, and the internalized opinion of the field" as a basis for considering if the idea is useful in relation to the identified problem (Csikszentmihalyi, 1996: 80). This phase of Evaluation occurs before an idea is shared with others and serves as an internal gatekeeper. Csikszentmihalyi (1996: 116) holds that to be effective at generating creative ideas through anything but luck, it is necessary to have "the ability to separate bad ideas from the good ones...to know in advance what is feasible and what will work, without having to suffer the consequences" of bad external

evaluations and rejection from the Field. The final phase of Elaboration usually takes the longest time. During this stage the idea is refined, tested and codified before being shared with others. To be considered creative, the output (idea or product) of the Elaboration phase must become accepted by the Field and have an influence on the focal Domain.

Each of these five process models of creativity outlines a set of conceptual steps or phases a person goes through in developing a potentially creative idea. These stages and the stated definition of creativity associated with them is outlined in Table 1. While the name and specific description of each phase may vary between models, there is a consistent inclusion of an internal evaluation or validation stage in the process before an idea or product is shared with others. The criteria against which ideas are evaluated share some common descriptions across these models. In general, these criteria can be framed in terms of whether the idea is a new and useful solution to the problem put forward at the beginning of the creative process. If the idea is already known (stated or produced) then it is not new and does not present an additional option to the identified problem. Likewise, if the idea does not solve the described problem or fit the needs or context then the idea is not useful. If the idea generated does not meet either of these criteria from the view point of the person generating potential solutions then most of these models indicate a failed process and either the process is restarted or abandoned.

Table 1: Summary Table of Process Models Highlighting Evaluation Stage and Creativity Definition

Model	Stages (Evaluation Stage in Bold)	Definition of Creativity
Wallas	<ul style="list-style-type: none"> • Preparation, • Incubation, • Illumination, • Verification 	"...the making of a new generalization or invention, or the poetical expression of a new idea" (1926: 79)
Hogarth	<ul style="list-style-type: none"> • Preparation • Production • Evaluation • Implementation 	"...when ideas, 'things' or associations are produced in some new combination that is either useful or appropriate for a particular problem or purpose" (1980:111)
Amabile	<ul style="list-style-type: none"> • Problem/ Task Identification, • Preparation • Response Generation • Response Validation/ Communication • Outcome 	"A product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic rather than algorithmic" (1996: 35)
Staw	<ul style="list-style-type: none"> • Variation • Selective Retention 	"...as a product of variation and selective retention processes" (1990: 289)
Csiksentmihalyi	<ul style="list-style-type: none"> • Preparation • Incubation • Insight • Evaluation • Elaboration 	"to bring into existence something genuinely new that is valued enough to be added to the culture" (1996: 25)

External Evaluation

The evaluation phases in these process models are a filtering process for determining which ideas meet the criteria for creativity within a particular context. While the evaluation phase discussed in the process models of creativity is often an internal process, many of the conceptual frameworks of creativity developed alongside these process models include an external evaluation component. Hogarth (1980) specifically includes an Implementation phase in which an idea is communicated to others in an effort to build social support (agreement that the idea is a creative solution) for the idea. Amabile's (1983, 1996) conceptual definition relies on external validation of outcomes of the creative process to ultimately determine if the solution proposed is accepted as creative. A person generating solutions may think an outcome is creative (after self

evaluating) but the idea is not truly considered creative until it is confirmed by external evaluation. This point is clearly stated by Amabile in that: “A product or response is creative to the extent that appropriate observers independently agree it is creative” (1996: 33). Staw’s (1990) model for the individual creative process is extended in the same paper to organizations, where Staw identifies that ideas must build support and approval of others to survive and ultimately be accepted within an organization. This concept that ideas are generated individually but then must pass external evaluation and build support to be socially recognized, has been put forward in other works on the relationship between creativity and innovation (Scott & Bruce, 1994, West , 2002).

Csikszentmihalyi’s (1996) Systems Model requires that an idea be accepted as creative by an external field of gatekeepers (experts) before it is considered to be creative. In judging whether an idea is new and valuable, a reference to some standard must be applied and for Csikszentmihalyi that standard is a social evaluation; as “creativity does not happen inside people’s heads, but rather in the interaction between a person’s thoughts and a sociocultural context” (1996: 22). The likelihood that an individual will develop ideas that are externally (socially) validated as creative is related to the extent to which that person internalizes the criteria used by the external system (e.g., Amabile, 1983, 1996; Csikszentmihalyi, 1996; Campbell, 1960; Staw, 1990).

Evaluation is central to the contextual nature of creativity. During early conceptualizations of creativity, a criterion problem was identified in trying to build an ultimate standard for how to assess creative people and products across all domains of human experience from arts to science (Shapiro, 1968). The grounding of creativity in a social context and evaluative process allows for the consideration of creativity as a

concept across potentially incommensurate domains. Shapiro (1968: 15) in offering a practical definition of creativity stated that:

Creativity is a potential capacity by means of which an individual may produce something original that serves to fill a gap in a particular field of human endeavour. The degree of creativity expressed can be roughly gauged by the magnitude of the effect that the product has on the field, in the sense of the changes introduced into the traditional state of knowledge or modes of expression, formerly characterizing that field.

Amabile (1996: 38) stated this contextual bounding of creativity and creativity assessments as:

...creativity assessments must ultimately, be socially, culturally, and historically bound. It is impossible to assess the novelty of a product without some knowledge of what exists in a domain at a particular time. It is impossible to assess appropriateness without some knowledge of utility or meaning in a particular context. And it is impossible for these assessments to be made—or indeed for creative products themselves to be made—in a cultural, social, or historical vacuum.

Without objective criteria to bound creativity, a reliance on social agreement has been put forward as a viable valid substitute in conceptualizations of the construct of creativity (e.g., Amabile, 1982; Csikszentmihalyi, 1996; Shapiro, 1968). This reliance on social agreement is based on the assumption that the criteria being used to externally evaluate an idea, product, or person as creative is common within a particular context. Furthermore, generalizations of creativity across contexts rest on the assumption that these criteria are similar across contexts. This commonality of criteria extends to both the relative levels of novelty and usefulness, as well as the weighting of each dimension as they are combined. While novelty and usefulness are broadly identified as the key elements of these conceptual definitions of creativity (e.g.; Amabile, 1996; George, 2007; Mumford, 2003), exactly how these dimensions are conceptually combined is unclear.

Dimensions

When Guilford refocused psychology research on the topic of creativity in his American Psychological Association Presidential address, he stressed that the novelty component of creativity be bounded “...under some degree by evaluative restraint” (1950: 453). Soon after Guilford’s call for more investigation into creativity, Stein produced this definition: “The creative work is a novel work that is accepted as tenable or useful or satisfying by a group in some point in time” (1953: 311). To broad agreement, this combination of novelty and usefulness within context has been used as a common theoretical definition for creativity research over the last few decades (Mumford, 2003). Theoretically, the definition of creativity as an output is most often stated as: an idea, product, or process that is both novel and useful (e.g., George, 2007; Runco, 2004; Shalley et al., 2004). How creativity is conceptually defined is critical to understanding what is being judged when a person, product, process, or idea is identified as creative (Kampylis & Valtanen, 2010). This theoretical definition of creativity implies that a judgment of creativity is composed of a combination of evaluations of novelty and usefulness.

The multidimensional nature of creativity, in requiring both novelty and usefulness to be present, complicates this well established theoretical definition. The requirement for both components of novelty and usefulness to be present has been stated very clearly in the literature. George stated that “...to be considered creative, ideas must be both new and seen as having the potential to create value for organizations...” (2007: 441). This requirement was stated even more strongly by Zhou & Oldham (2001: 152), who wrote

that “...both originality and usefulness are necessary conditions for an outcome to be considered creative”. Creativity is not found in ideas that are just novel or just useful; both criteria must be present for an idea to be considered creative (e.g. Amabile, 1996; George, 2007; Shalley et al., 2004). This required combination of novelty and usefulness criteria is also used by the U.S. Patent Office in considering patent applications in that “patents are provided for a new, nonobvious and useful...” invention (U.S. Patent Office, 2011).

An understanding of these two dimensions of creativity is thus necessary to fully consider how creativity is defined. A consideration of novelty was stated by Stein (1953: 311) as “the extent to which work is novel depends on the extent to which it deviates from the traditional or status quo”. Stein (1953) highlighted that for an idea to be useful it must be put forward to a group for testing and validation that the idea satisfactorily meets the group’s needs. Within organizations, the criteria of novelty and usefulness have been defined as: “Ideas are considered novel if they are unique relative to other ideas currently available in the organization. Ideas are considered useful if they have the potential for direct or indirect value to the organization, in either the short- or long-term” (Shalley et al., 2004). Novelty has been further defined as the relative originality or unusualness of a potential solution, or an idea “...which other people would be unlikely to think of” (Harrington, 1975: 438). In a paper on managerial decision making and creativity, Ford and Gioia (2000: 715) defined novelty “...as the extent to which a decision was unusual within the context of their organization...” and usefulness “...as the extent to which a decision accomplished the objectives desired...” within the context. A recent review of theoretical definitions of creativity identified the common terms associated and used

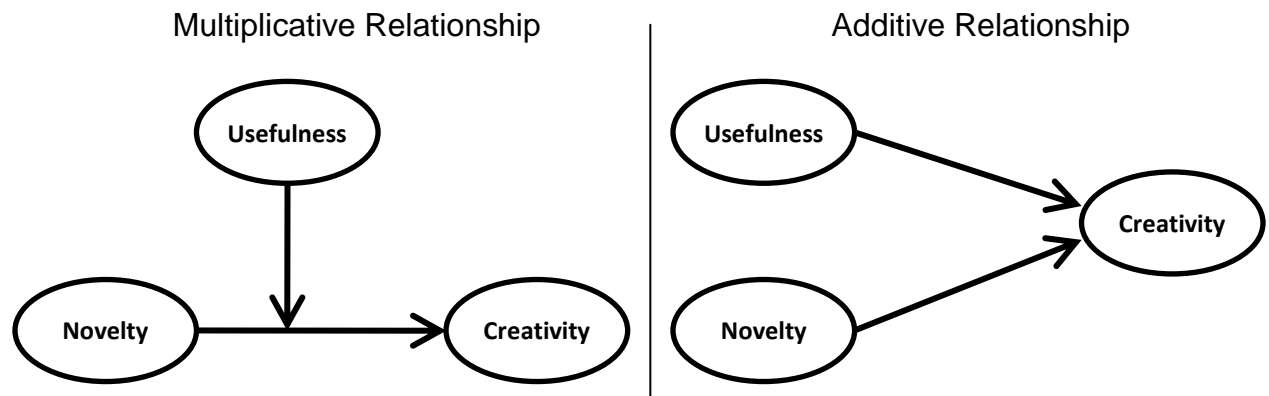
interchangeably with each facet as: 1) novel, original, new, unexpected, different, unique, and unconventional and 2) appropriate, useful, valuable, significant, effective, relevant, and functional (Kampylis & Valtanen, 2010).

While these components are clearly part of how creativity is conceptually defined, exactly how these two components of novelty and usefulness combine to render judgments of creativity is not clear at all (Litchfield, 2008). Using the most often stated definition of creativity, it would appear that evaluations of novelty and usefulness have a fixed relationship with judgments of overall creativity. Yet, exactly what form that relationship takes has not been clearly specified (Shalley & Zhou, 2008; Zhou & Shalley, 2003).

Figure 1 depicts two common theoretical models of the relationship between novelty, usefulness, and creativity. The first is a multiplicative relationship in which a moderated model is expressed. This model is often assumed when multiple components are required and none are individually sufficient for the emergence of the resultant construct (Amabile, 1996). The relationship of novelty to creativity and the relationship of usefulness to creativity depend on the co-existence of the other relationship. This multiplicative (interactional) model is the default assumed relationship between novelty and usefulness in forming creativity judgments (e.g. George, 2007; Litchfield, 2008; Plucker Beghetto, & Dow, 2004; Runco & Charles, 1993). An idea judged to not be novel or not be useful in this model would result in that idea not being judged creative. However, if both components of novelty and usefulness are present (>0) even at low levels, then creativity is expected to be present even at nominal levels. This is consistent with a view that creativity can be considered a continuous construct existing at very low

as well as extremely high levels and all points in between (e.g. Amabile, 1996; Guilford, 1950; Torrance, 1965). The second theoretical model that describes a less restrictive relationship is an additive model, in which evaluations of novelty and usefulness contribute independently to judgments of creativity (Ford & Gioia, 2000; Zhou & Shalley, 2003). This model represents separate main effects for both components on creativity as a compensatory model, but does not capture the requirement that both be present unless some sort of threshold approach is considered (Diehl & Stroebe, 1987, 1991). While this model is not as common as the multiplicative model, there is empirical support for this conceptualization of a simple main effects relationship (Paletz & Peng, 2008; Runco & Charles, 1993; Ford & Gioia, 2000).

Figure 1: Theoretical Relationships between Novelty, Usefulness, and Creativity



Assumptions

The ambiguity of how novelty and usefulness are related to overall creativity is a fundamental problem with current theoretical conceptualizations. Amabile (1996: 38) drives this point home when she wrote that, “essentially, the conceptual definition rests on assumptions about what observers are responding to when they identify a product as

highly creative”. When a researcher claims that some practical intervention or factor is related to creativity, how is creativity being defined by that researcher? Is creativity theoretically the same across different situations? If so, then a clarification of how evaluations of novelty and usefulness are combined to render a judgment of creativity should be incorporated into a refined theoretical definition of the construct (Schwab, 1980). However, this appears to be an untested assumption in that, “...theorizing and research on creativity tends to make the implicit assumption that the same causal factors will operate in a similar manner regardless of the type of creativity that occurs or that researchers are studying...” (George, 2007: 442). This implicit assumption hampers a fuller exploration and clearer understanding of creativity as a construct (Plucker et al., 2004; Unsworth, 2001).

This broad conceptual assumption often leaves discourses on creativity incommensurate as “researchers may be discussing completely different topics, or at least very different perspectives of creativity” (Plucker et al., 2004). While novelty and usefulness are common components of creativity definitions, these terms are not frequently specified and this ambiguity challenges the clarity of what theorists and researchers mean when they refer to creativity (Kampylis & Valtanen, 2010). There may be strong consensus as to the major components of creativity (e.g. Mumford, 2003; Shalley et al., 2004); however, exactly what creativity means theoretically is far from clear (e.g. George, 2007; Kampylis & Valtanen, 2010; Plucker et al., 2004; Zhou & Shalley, 2003).

I would propose that creativity can be more broadly defined as a contextually based social judgment generated from a consideration of several contextually relevant

factors most often including novelty and usefulness. This puts the definition back in-line with Guildford's (1950), of novelty bounded by other considerations. In this way novelty and usefulness are removed from a fixed relationship and are merely the strongest predictors of a creativity judgment. This definition and clarification are more flexible when it comes to defining creativity. The relationship is not built upon assumptions of equal contribution or stability, but rather allows for the exploration of what is meant by creativity in any given situation and allows for other factors to be included in the conceptual determination of creativity as well as considered operationally.

III. CREATIVITY OPERATIONALLY CONSIDERED

Now that I have considered how novelty and usefulness contribute to creativity theoretically, I would like to explore how these dimensions may be considered operationally in measuring creativity. Conceptually creativity is a paradox of wide agreement and continuing ambiguity; this paradox carries over to how creativity is most often operationalized. Creativity has been studied from multiple perspectives: from reviewing prominent creative biographies (e.g., Barron, 1968; Mackinnon, 1962; Simonton, 1975), to attempting to identify a creative personality type (Gough, 1979; Torrance & Khatena, 1970; Rimm & Davis, 1976), and assessing creative cognitive processing (Kirton, 1976; Miller, 1986). These attempts to discover a universal creative type have often struggled to build a framework consistent across contexts (Runco, 2004; Shapiro, 1968), and thus the measurement of the output of the creative process has met with more acceptance as a viable avenue for considering creativity (e.g., Amabile, 1996; Shalley & Zhou, 2008). Operationalizing creativity within its context is best achieved by measuring the output of the creative process (e.g., Guilford, 1950; O'Quin & Besemer, 1989; Sternberg, 1999).

When researchers consider creativity as an outcome, they typically conceptualize it as a product or idea that is both novel/original and useful/appropriate (e.g., Amabile, 1996; Feist & Barron, 2003; Shalley, 1991). Although there is considerable agreement on this conceptualization, many researchers struggle with defining and operationalizing creativity across contexts (e.g. Amabile & Mueller, 2008; George, 2007; Guilford, 1950;

Torrance, 2003). Creativity researchers have explored how individual differences, cognitive processes, types of motivations, and contextual factors relate to creative outcomes based primarily on subjective judgments of overall creativity (e.g., Amabile & Mueller, 2008; Shalley et al., 2004).

When Guilford (1950) refocused creativity research away from a consideration of universal standard creativity trait, comparable to measures of I.Q. and personality, to context dependent evaluations of the outcomes of the creative process, he began a process of operationalizing creativity centered on the product or ideas produced by creative activity. In developing a factorial approach to considering creativity, Guilford (1957) identified a way to operationalize the measurement of creativity through the factors of fluency, flexibility, and originality. He stated that primary mental abilities and motivation are necessary but not sufficient for creative production, while “the factors of fluency, flexibility, and originality and the like are not only necessary but, when possessed in sufficient amounts, are sufficient” (1957: 117). While these factors are associated with creativity, they are most relevant to measuring only one dimension, novelty. Guilford and coauthors (Wilson, Guilford, & Christensen, 1953) focused on the originality of ideas as the basis for his measurement of creativity even though he had earlier included a usefulness component in the model by restricting his conceptual definition of creativity to new ideas that had relevance within context (Guilford, 1950). This initial measurement model was extended to include elaboration in further descriptions of tasks used to elicit creative products (Guilford, 1967).

Torrance (1974) continued working with this measurement model and formalized a series of creativity tasks with the development of the Torrance Test of Creative

Thinking. A description of how these measures are operationalized is noted in an early work from Torrance (1965:669):

The number of relevant responses produced by a subject yields one measure of ideational fluency. The number of shifts in thinking or number of different categories of questions, causes, or consequences gives one measure of flexibility. The statistical infrequency of these questions, causes, or consequences or the extent to which the response represents a mental leap or departure from the obvious and commonplace gives one measure of originality. The detail and specificity incorporated into the questions and hypotheses provide one measure of ability to elaborate.

This operationalization of creativity put forward by Torrance to measure creative potential through examining individual responses to open-ended tasks is heavily focused on the novelty component of creativity with the only nod to usefulness being the word ‘relevant’ in the measure of fluency. This consideration of counting the breadth of ideas generated as a proxy for creativity without direct measurement of usefulness is based on a belief that the more potential ideas explored the greater the likelihood that a creative response will be generated (e.g., Campbell, 1960; Osborn, 1953; Shalley, 1991). It is also important to note that this approach to measuring creativity, while perhaps appearing objective, is based on a comparison of individual test responses to a large pool of responses provided by others who have taken the test. This norming of the data acts as a subjective societal frame for judging creativity.

Creativity has also been assessed within organizations on an individual basis by having supervisors and coworkers evaluate the creativity of other employees. Several scales have been developed to measure perceptions of employee creative behavior. Some of these recently developed scales (George & Zhou, 2001; Oldham & Cummings, 1996; Tierney, Farmer, & Graen, 1999; Scott & Bruce, 1994) ask respondents to rate the

behavior of an employee or coworker with a number of questions covering overall creativity, novelty, and usefulness to a lesser extent. These scales are based on the external perceptions of an individual's creativity using subjective judgments within the context of the organization and the specific person's job. While these scales might use items focused on both the dimensions as well as overall creativity, they are designed to be averaged into one global measure of overall creativity.

This focus on overall creativity is continued in the Consensual Assessment Technique (CAT) as proposed and refined by Amabile (1982, 1983, 1996). This method for measuring creativity operates through the agreement of several independent judges' evaluations of creativity as evidenced in products or ideas generated by individuals or groups. This approach was meant to bring theoretical and operational definitions into alignment (Amabile, 1982, 1983). Grounding the CAT is an operational definition stated as; "A product or response is creative to the extent that appropriate observers independently agree it is creative" (Amabile, 1982: 1001). This definition is based on the assumption that "although creativity in a product may be difficult to characterize in terms of specific features, it is something that people can recognize when they see it" (Amabile, 1982: 1001). Judges are asked to rate the overall creativity of a product or response and the reliability of this operationalization is based on the extent that those judging the creativity of a product or response agree in their assessment giving social validation to their combined judgment. In describing this CAT procedure, Amabile (1996) specifically recommends that judges not be given formal definitions of creativity but are intentionally left to use their own implicit criteria. While judges may statistically arrive at the same rating for a product, this technique relies "on the assumption that experts in a domain do

share creativity criteria to a reasonable degree” (Amabile, 1996: 42). This assumption is critical in that conceptually creativity is formed by combining separate evaluations of novelty and usefulness, yet these components are not considered directly in the operationalization through expert consensus of overall creativity.

Amabile (1996: 61) revised her requirement that only experts should be used as judges in stating, “the only requirement is a familiarity with the domain of endeavor in which the product was made”. This is tempered in that judges are expected to have a level of familiarity with the domain to be judged at or above the level of those whose products are being judged. This contextual framing of creativity judgments is extended using the CAT, in that judges are asked to base evaluations of creativity on a comparison of products or responses generated within the same context (Amabile, 1996). This contextual bounding allows poems written by kindergartners to be evaluated for creativity relative to other poems written by kindergartners, while judging the creativity of professional authors references a different set of comparables. While this allows creativity to be assessed across the spectrum of human experience, this technique “does not produce any kind of standardized scoring system that might allow comparisons to be made across settings” (Kaufman, Baer, & Cole, 2009: 224).

While Amabile’s (1996) description of this technique recommends exploring what judges mean when they are rating something as creative, the majority of this research is reported as only overall creativity (e.g., Dean, Hender, Rodgers, & Santanen, 2006; Hennessey & Amabile, 2010; Shalley & Zhou, 2008; Shalley et al., 2004). It is also suggested that depending on the nature of the task, other dimensions of the product might be rated, such as technical goodness or aesthetic value. These were suggested to test to

see if “judges might be rating something as ‘creative’ simply because they like it or because they find it to be technically well done” (Amabile, 1996: 43). While this is one way to approach the problem of clarifying what is meant by overall creativity, another option gaining acceptance is using multiple measures of creativity by combining CAT ratings, self-ratings, and/or supervisor evaluations with proxies for creative accomplishment through the counting of patents, publications, or awards (Fiest & Barron, 2003; Hennessey & Amabile, 2010; Plucker, 2004; Runco, 2004).

While the CAT has been extended to include measures of related constructs (Dollinger & Shafran, 2005; Brinkman, 1999), the use of this technique to measure both of creativity’s components, novelty and usefulness, is rare (Kilgour & Koslow, 2009; Reitzschel, Nijstad, & Stroebe, 2006, 2010; Zhou & Oldham, 2001; Zhou & Shalley, 2003). The Creative Product Semantic Scale (Besemer & O’Quin, 1986; O’Quin & Besemer, 1989) was designed to measure three dimensions of creativity when considering products, but its scales of Novelty, Elaboration/Synthesis, and Resolution do not map clearly onto common conceptual definitions and a recent study using a modified version of this scale found that the two factor (novelty and usefulness) model was a better fit for predicting creativity (Sullivan & Ford, 2010). Connecting the conceptual definition of novelty and usefulness evaluations forming a judgment of creativity to a similar measurement model would help to strengthen our understanding of the construct (Schwab, 1980; Unsworth, 2001). Measuring and reporting both components as well as overall creativity in the same study is not standard practice but has been used to better understand the contributions of each component to overall judgments of creativity (Ford & Gioia, 2000; Paletz & Peng, 2008; Runco & Charles, 1993; Sullivan & Ford, 2010).

The results of these few studies have supported the independent nature of the dimensions of novelty and usefulness relating to overall creativity through an independent main effects model.

A modified policy capturing study conducted by Runco and Charles, tested the relationship of originality (novelty) and appropriateness (usefulness) with creativity by having participants rate sets of ideas submitted as answers to a divergent thinking task of “list all the square things you can think of or list all the things that move on wheels”(1993: 540). These findings found consistent support for originality as a predictor of creativity, but only very limited support for a significant relationship between appropriateness and creativity. Casting doubt on the viability of multiplicative composites, only one out of fifteen cases evidenced significant support for the interaction of originality and appropriateness. In some cases, there was evidence of an inverse relationship between appropriateness and originality. However, the authors cautioned the generalization of these results “in part because ideas rather than some more concrete products (e.g. artworks) were being judged” (Runco & Charles, 1993: 545).

A study of managerial decision making by Ford and Gioia, found that in “organizational domains novelty and value are loosely coupled outcomes affected by relatively independent constellations of influences” (2000:727). In looking at creative and non-creative decisions reported by senior managers from a broad professional background, the authors identified seven variables that discriminated decisions at different levels of creativity. When four of these variables influenced the novelty dimension and three distinguished the value dimension the authors held that this “pattern of results reveals creativity to be multidimensional phenomenon, and shows that those

dimensions are affected by markedly different process that are essentially independent of each other” (Ford & Gioia, 2000: 723). By showing that different antecedents drive different dimensions of creativity, it is conceivable that a focus on any antecedent in particular could stress that dimension in making an evaluation of creativity.

The investigation into how novelty and usefulness combine to form judgments of creativity took another important step with the work of Paletz and Peng (2008) applying a cross-cultural lens in considering the American, Japanese and Chinese perspectives. Their research showed that judgments of creativity are in some ways consistent across cultures, in that the influence of novelty on judgments of creativity was stable across cultures. However, the researchers found that appropriateness was more influential in creativity judgments for American and Japanese participants. In considering how both novelty and appropriateness were related to judgments of creativity of a product and desire for that product, this research found that “novelty was more important overall for creativity and appropriateness was more important for desire” (2008: 296). These results appear to indicate a slight difference between cultures in how creativity is implicitly defined and begin to undercut the assumption of a stable relationship of novelty and usefulness to overall creativity.

In an effort to test the multifaceted nature of the construct of creativity, Sullivan and Ford (2010) conducted two experiments to explore how creativity is defined when people evaluate creative products. The authors had students rate both ideas for a new business and a new advertising campaign, as well as had professional artists rate a piece of print artwork. Stimuli were rated on multiple item measures of creativity, novelty, usefulness, and stylistic appeal. The results across all three ratings was novelty and

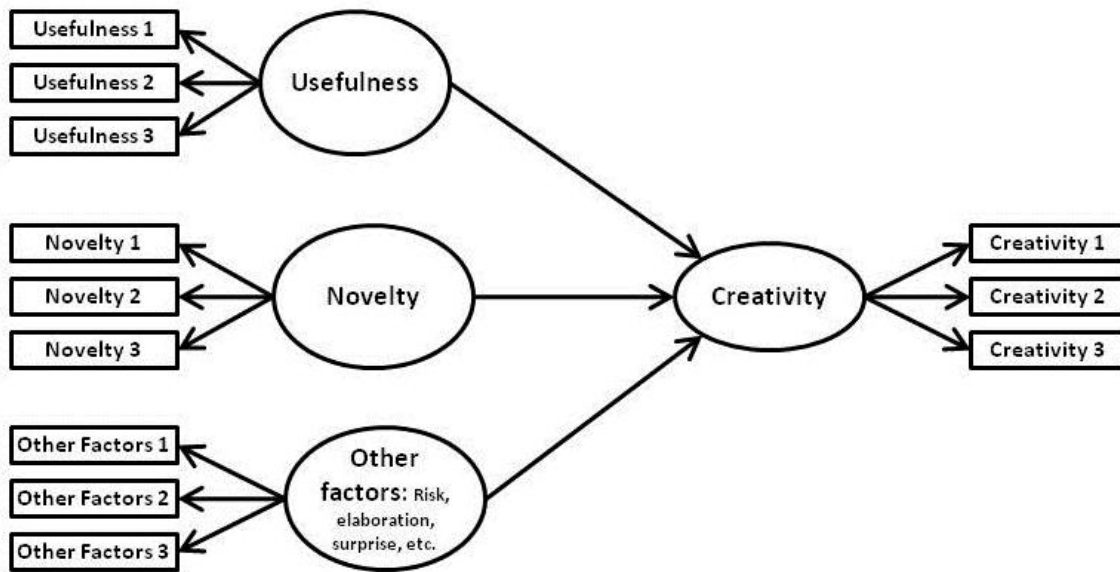
usefulness measures loaded on separate factors and that these two factors together predicted a better fit to overall creativity than did either a single combined factor or with a third factor of stylistic appeal added to the model. In supporting a multifaceted conceptualization of creativity as a function of novelty and usefulness evaluations, the authors identified a next step as “understanding the relative weight of novelty and usefulness assessments” (Sullivan & Ford, 2010: 518). In exploring the multidimensional structure of the construct of creativity, the authors identified “an apparent inconsistency between how the construct of organizational creativity is defined and how it is measured” (2010: 506).

This research and other reviews (e.g, George, 2007; Mumford, 2003; Shapiro, 1968) show that the alignment of theoretical and operational definitions of creativity is far from clear, in that conceptually creativity is presented as a complex construct but that complexity is often ignored operationally. This lack of clarity as to what is being studied conceptually and what is being measured empirically influences the validity of generalizing creativity research. A study looking to test a theoretical relationship of some other construct with creativity that only measures the component of novelty is misleading when the findings are reported as ‘creativity’. Comparing findings from studies utilizing even slightly different conceptual and operational definitions of creativity can cause great conflict between researchers, where the reason for differential findings may be because they are investigating different focal phenomena using the same name - Creativity (Hennessey & Amabile, 2010). This conflict and lack of clarity has been acknowledged between these two explicit definitional levels (Runco, 2007), yet there is often conflict at a third level of abstraction that is little discussed. Inconsistencies between explicit

definitions stated by researchers and the implicit definitions of creativity utilized by judges in experiments and lay persons in practice can also confound our broader understanding of the construct of creativity.

To clarify how this construct is operationalized, one must measure not just one level of the construct (global or facet) but both. I propose a measurement model to capture scales on all three focal variables and any other relevant constructs that are considered to be related to creativity ratings in a particular instance or context. If no additional variables are included the error term will include the unexplained variance not captured by the primary facets of novelty and usefulness. The measurement model I am proposing and using in this study is shown below in Figure 2.

Figure 2: Proposed Measurement Model between Novelty, Usefulness, and Creativity



IV. GLOBAL MEASURES AND IMPLICIT DEFINITIONS

While conceptual and operational definitions are often explicitly spelled out in a research effort, implicit theories and definitions are “constructions by people (whether psychologists or laypersons) that reside in the minds of these individuals” (Sternberg, 1985). Even though explicit definitions may be clearly stated in the research proposal or held clearly in the mind of a corporate manager, that does not ensure that these same definitions are used by others working on the same project (Cronin & Weingart, 2007; Litchfield, 2007). When creativity is conceptually defined as a multidimensional construct and operationalized primarily through a unitary global measure, if one is to claim that different studies are addressing the same phenomena then one must assume that the dimensions of novelty and usefulness combine in a stable fashion during the application of implicit definitions in rendering creativity judgments. This assumption must hold for the usage of the term ‘creativity’ to be consistent across study contexts. This problem is exacerbated by the reliance on subjective ratings for which judges use their own implicit definitions as evaluation criteria (e.g. Amabile, 1996). Assuming that novelty and usefulness combine in a stable consistently weighted fashion to form creativity judgments is a testable assumption. However, this may necessitate a more complex measurement model to accurately align explicit and implicit definitions of creativity.

Treating creativity as a global construct has led to ambiguity in generalizing findings from one study context to another (Dean, Hender, Rodgers, & Santanen, 2006). There is an ongoing debate about when to consider multidimensional constructs at a global or facet level of measurement, with benefits and drawbacks identified for both approaches (e.g., Bagozzi & Edwards, 1998; Edwards, 2001; Ironson, Smith, Brannick, Gibson, & Paul, 1989; Wanous, Reichers, & Hudy, 1997). Considering creativity as a subjective global construct raises questions about what is being measured and if different creativity studies are measuring the same thing (Ford & Gioia, 2000). “An intriguing and still unanswered question about the use of subjective judgments is, what, exactly, do judges mean when they call something ‘creative’?” (Amabile, 1996: 31). This lack of operational clarity on how creativity is defined by those providing the subjective judgments of creativity limits the testing of theory and the programmatic advancement of creativity research (George, 2007; Unsworth, 2001).

While researchers theoretically define creativity as being composed of novelty and usefulness, operationally these components are ignored when global measures are used. This requires an assumption that judges, expert or not, are implicitly using these criteria in a consistent fashion when making subjective creativity judgments. Even if a researcher finds acceptable statistical levels of within rater agreement on measures of overall creativity, there is no assurance that the two raters agree on the criteria for these judgments. Consider Figure 3, which shows the range (using a 5-point Likert scale where 0 = “None” & 4 = “Extreme”) of both multiplicative and additive conceptualizations of how novelty and usefulness evaluations combine to render a creativity judgment. Under both of these models, if Judge 1 believed an idea was extremely novel (rating of 4) and

average on usefulness (rating of 2) and Judge 2 believed the same idea was average for novelty (rating of 2) and extremely useful (rating of 4), they would both arrive at identical creativity ratings (8 for the multiplicative and 6 for the additive). Researchers would incorrectly assume that these judges to be in complete agreement as to the how the idea is creative, when in fact there are meaningful differences in how each judge views the idea's creativity.

Figure 3: Multiplicative and Additive Models' Potential Creativity Scores

		Multiplicative Model							Additive Model				
<i>Novelty Ratings</i>	4	0	4	8	12	16	<i>Novelty Ratings</i>	4	4	5	6	7	8
	3	0	3	6	9	12		3	3	4	5	6	7
	2	0	2	4	6	8		2	2	3	4	5	6
	1	0	1	2	3	4		1	1	2	3	4	5
	0	0	0	0	0	0		0	0	1	2	3	4
		0	1	2	3	4			0	1	2	3	4
		<i>Usefulness Ratings</i>							<i>Usefulness Ratings</i>				

Utilizing global measures of a multidimensional construct leads to ambiguous findings, in that “variation in a multidimensional construct may imply variation in any or all of its dimensions” (Edwards, 2001: 145). Several reviews have proposed that independent ratings for novelty and usefulness might be combined via addition or multiplication to generate a composite unitary measure of creativity (Shalley & Zhou, 2008; Shalley et al., 2004; Zhou & Shalley, 2003) and scales have been developed that

use this approach (Besemer & O'Quin, 1986; O'Quin & Besemer, 1989). The issue with combining multiple dimensions to form a resulting construct is that this construct will be essentially ambiguous (Edwards, 2011). Additionally, this combinational approach stands in contrast to empirical evidence showing individual main effects for novelty and usefulness contributing to creativity judgments (Paletz & Peng, 2008; Runco & Charles, 1993) and measured in isolation it is unclear how and with what weights the components should be combined to accurately compute a judgment of creativity. Yet it should be clear that current global operationalizations “conflate novelty and value” in considering creativity (Ford & Gioia, 2000: 723).

There is, however, a potential benefit to measuring overall creativity and not just its components. Criteria beyond novelty and usefulness might be included when people make evaluations of creativity (Amabile, 1996; Runco & Charles, 1993). Overall ratings of creativity as a global measure may be capturing additional criteria specific to a particular context and thus may capture a “holistic representation of complex phenomena” (Edwards, 2001: 145). Restricting creativity to a combination of measures of novelty and usefulness may oversimplify this construct and omit other relevant facets as has been described with other combinational measures (Scarpello & Campbell, 1983). If we are to agree that creativity is a context dependent social judgment (Amabile, 1996; Sternberg, 1999), then identifying what goes into making those judgments is essential to specifying this construct and generalizing research findings related to creativity.

In order to justify and not just assume the primacy of novelty and usefulness in making creativity judgments we should test the extent to which these components contribute to the measurement of overall creativity. Additionally, if creativity is just a

fixed combination of these two components then why do we need a measure of overall creativity? There are two cases in which we might want to measure both the dimensions of novelty/ usefulness and overall creativity. First, if we are unsure of how novelty and usefulness should be combined (model and weightings) to represent creativity within a particular context then measuring the dimensions and overall creativity could allow us to deduce the combinational formula applicable in that situation. Second, if creativity is more than just a combination of novelty/ usefulness dimensions, measuring overall creativity will capture those unnamed dimensions, while measures of novelty/ usefulness can be used to clarify the contributions of each named dimension and partial out the potential contributions of unmeasured dimensions. It would be important to know if creativity is only a combination of novelty and usefulness, or if something more, how much these two components contribute to an overall judgment of creativity.

It is imperative for creativity researchers to understand how creativity is implicitly defined not only by supervisors who rate employees using creativity scales and judges who evaluate products using the CAT, but by an even broader population who might benefit from our research. The first two groups involve the internal validity of creativity research findings, while the third concerns the external validity of our findings. How the general public defines creativity influences the ways in which our findings are translated and generalized to inform a broader applied understanding of our research, a point often made with respect to general organizational behavior research (e.g., Rynes, 2007; Rynes et al., 2001). In using an operationalization that includes both global overall creativity and independent measures of novelty and usefulness dimensions, researchers can begin to not only understand how creativity is being implicitly defined by participants in our

studies but begin to offer more specificity and clarity when attempting to generalize our results. The translation of academic findings to inform practitioners and into generalized knowledge is a broad-based goal of organizational research (Rynes, 2007) and this is even more important for creativity researchers as organizations become increasingly dependent on new ideas and innovation for creating value (Kanter, 1988; Tushman & O'Reilly, 1996; Woodman, Sawyer, & Griffin, 1993).

Understanding how people implicitly define creativity can help clarify what our raters are actually judging when they evaluate something as creative (Amabile, 1996). How novelty and usefulness are combined to render a judgment of creativity might influence whether an idea is supported or rejected within an organizational context (Goldenberg, Lehmann, & Mazursky, 2001; Haradon & Douglas, 2001; March, 2006). While researchers have often assumed that judgments of creativity are generated through evaluations of the “dimensions of originality and feasibility, this does not mean that ‘lay’ participants will use these criteria when making their selections” (Reitzschel et al., 2010: 49). This assumption gets even more constraining when researchers do not measure how novelty and usefulness combine to generate judgments of creativity, in that this presumes that both dimensions contribute equally or at the very least are related in a stable fashion to overall creativity.

Organizations and groups often have very different priorities when it comes to acceptable levels of novelty and usefulness (Ford & Gioia, 2000; Litchfield, 2007) and priorities of exploration and exploitation (e.g., Benner & Tushman, 2003; March, 1991; Smith & Tushman, 2005). Thus, it is rational to think that individuals could have different priorities in weighting these two goals in creativity generation and evaluation.

This differential weighting would make any assumption by researchers of a stable relationship between novelty and usefulness across studies problematic. Even between people in the same organization “it is unwise to assume that multiple goals will survive the communication process intact and in the intervener’s implicitly desired weighting” (Litchfield, 2008: 658). So if the contribution of individual evaluations of novelty and usefulness are not stable in rendering creativity judgments, then what might explain these differences?

Weighting Dimensions

One way to test if the relationships of the dimensions of novelty and usefulness to overall creativity are stable is to explore factors that might moderate those relationships. While plainly manipulating the directions for a task, by explicitly requesting novelty or usefulness, could increase the salience of one dimension or the other, this invocation of dimensions directly is not a fair test of creativity per se but more a test of demand characteristics. While goal direction and instructions have been a focal area for creativity researchers (e.g., Madjar & Shalley, 2008; Osborn, 1953; Rietzschel et al., 2010; Shalley, 1991), showing that situational framing or contextual factors might impact the weighting of evaluations of novelty and usefulness in determining overall creativity judgments would be a strong case against assuming a stable relationship in defining this construct.

Before considering how the weighting of evaluations of novelty and usefulness might change under different contextual conditions, it might be important to consider if novelty and usefulness are expected to be equal contributors to judgments of creativity. While creativity has been conceptualized as both novelty and usefulness, historically novelty has been given precedence. Guilford’s (1950) early discussions of creativity

stressed the novelty component's association with creativity only bounded by usefulness considerations. Amabile (1996: 38) identified novelty "as the most important criterion" for creativity. In considering criteria for judging an idea's creativity, two empirical studies, one by Runco and Charles (1993) and another by Rietzschel, Nijstad, and Stroebe (2010), found higher correlations between evaluations of novelty and creativity than between usefulness and creativity. While both of these studies used abstract laboratory tasks, it could be assumed that this primacy would carry over to considering the creativity in real world situations although perhaps not to an extreme extent (Ford & Gioia, 2000). In a review of implicit definitions of creativity found in research articles, novelty was the most common characteristic cited (Plucker et al., 2004).

Considering this historic primacy of associating novelty with creativity, a decision making framework would support the trend that novelty will have a relatively stronger weight in determining judgments of creativity than usefulness. Based primarily on a foundation of bounded rationality (Simon, 1957), decision making research has shown that when presented with formulaic decision processes, people often simplify these decisions either consciously or unconsciously through biases and heuristics (e.g., Gigerenzer & Gaissmaier, 2011, Tversky & Kahneman, 1974). "When faced with a complex problem, people employ a variety of heuristic procedures in order to simplify the representation and the evaluation of prospects" (Tversky & Kahneman, 1992). Most often these heuristics are used as short-cuts to concerted rational decision making, and result in examining fewer criteria, relying on easy to access information, simplifying weighting of criteria, using less information, and examining fewer options (Shah & Oppenheimer, 2008). In applying these effort cutting processes, information that is most

prominent will receive greater weighting in a decision maker's judgments (e.g., Fiedler, 2007; Tversky & Kahneman, 1974; Tversky, Sattah, & Solvic, 1988). As novelty is historically the most prominent dimension of creativity, it may be that in most cases or when considering a vast number of situations, evaluations of novelty will have a stronger weighting than evaluations of usefulness in judging the overall creativity of an idea or product. However, the relationship between these two dimensions and creativity while unequal could still be relatively stable. Litchfield (2008) considered novelty and usefulness the dual goals of creativity. Yet if creativity exists beyond these two dimensions, reaching a judgment on creativity may entail an even more complex decision process. Building off of established decision making theories, particularly those addressing heuristics and biases in making judgments, could offer a foundation for why the weighting of novelty or usefulness in making creativity judgments might not be stable.

While there is evidence of a more prominent component garnering additional attention and weight during decision making activities (e.g., Tversky & Kahneman, 1974; Tversky et al., 1988), the salience of a given dimension may be made more prominent through the availability of the dimension to be considered or recalled (Tversky & Khaneman, 1973). More specifically, when people are asked to make a global judgment that may be influenced by multiple criteria, the criteria most recently considered assumes a disproportionately strong weighting in the resultant judgment (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006; Schkade & Kahneman, 1998). This focusing is not only supported through cognitive decision process but also through motivated information processing. Bechtoldt, DeDreu, Nijstad, & Choi, (2010) found that group

norms favoring novelty or usefulness motivated people to attend to those aspects of creativity. This stronger weighting given to criteria occupying our focal attention is consistent across both cognitive processing and motivational information processing approaches (Kunda, 1990; Nickerson, 1998).

Using this rationale, focusing a person's attention on either novelty or usefulness should increase the weighting of that factor when a judgment of creativity is made. Evidence of contextual or individual moderating factors would indicate that judgments of creativity are not comprised of a stable combination of separate evaluations of novelty and usefulness as currently assumed. Clearly stating a preference for one dimension or the other would surely influence that preferred dimensions weighting factor, but also restricts an individual's implicit definition explicitly. So what factors might subtly influence the balance with which novelty and usefulness are used to make creativity judgments in an everyday work context?

I am primarily focused in this dissertation on variations in judgments of creativity made within a common domain and am seeking to relate this research to work organizations. Thus I considered several contextual factors that are within a manager's control through which they may influence the weighting of novelty and usefulness in making creativity judgments within the work place. Managers often have control over many aspects of an employee's work, from group composition to resource allocation, from goals and expectations to rewards, which may influence creativity at work (Shalley & Gilson, 2004). Many of these factors may potentially moderate the weighting of novelty and usefulness in relation to overall creativity.

Yet in applying a decision making frame on why the weightings of novelty and usefulness may vary in judging creativity through consideration of bounded rationality (Simon, 1958) and resulting information processing shortcuts (for a review see, Gigerenzer & Gaissmaier, 2011), I wanted to ground the beginning of this research effort in a contextual variable that is central to bounding the contextual frame of creativity evaluation and that consideration is time. Time may provide two powerful limitations on our processing of information related to creativity. First it can provide a limitation on the set of ideas considered to be within context and thus influence the set of possibilities that an idea is compared against. Second it may directly influence how long (and thus the amount) our cognitive resources can be focused on an evaluation of the creativity of an idea. Theoretically time is important from a decision making perspective as a frame and as a resource but it is also central to how creativity has been conceptualized.

Returning to our conceptualization of creativity as being historically bound, time has an important effect on creativity and judgments of creativity (Amabile, 1996). It is noted that often creative ideas are recognized right away but only conferred later on as the ideas become broadly accepted (Csikszentmihalyi, 1996; Mainemelis, 2010). Some of the ideas that revolutionized their fields and continue to impact us today were initially rejected but later found prominence as foundations of their respective fields. Ideas from scientist like Galileo (heliocentrism), Nicola Tesla (alternating current), and Ignaz Semmelweis (antiseptic washing in medicine), were initially dismissed but later hailed as extremely creative concepts. Time appears to be an important consideration for evaluating creative ideas as ideas must be considered within an appropriate context so how we bound that context in time may influence what an idea or product may be

compared to in making that judgment. Managers often have control over an employee's consideration of time from multiple perspectives through time as a resource with work sequencing and resource allocation, and in considering time as a framing as effort is often directed through the use of short and long-term goals. Thus time is both a central contextual factor in the workplace and a bounding consideration for evaluation of creative ideas.

In thinking of creativity generation, evaluation, and implementation as part of a broader innovation process, evaluation of potentially creative ideas may be considered an act of forecasting whether a generated idea would be novel and useful upon implementation (Mumford, Lonergan, & Scott, 2002). Managers seeking to evaluate potential new products or services are essentially making a creative judgment based on anticipated outcomes of implementation. With this in mind it may be helpful to reflect on how far out in time an idea is considered under and how close an individual is to the task or the implementation, when a judgment of its creativity is considered. This concept of focal length with respect to time and distance is also something that is controllable with managerial framing of a task. Organizations often direct activity toward six month production goals or five year strategic plans. This use of time frames directs attention and may influence creativity evaluations that are necessarily historically bound. Managers often also control assignment so work task and thus can control how closely one is tied to a specific effort or implementation.

This line of thinking led me to consider time as a potentially potent moderator that could influence the weighting of novelty and usefulness in relation to judgments of

creativity. Time and relative responsibility for a task both represent types of distance from an activity. Theoretically, the distance one feels from a situation or task has been conceptualized by Construal Level Theory as psychological distance (Liberman & Trope, 1998; Liberman, Trope, & Wakslak, 2007; Trope & Liberman, 2010) and has been shown to influence the way people attend to and process information. Psychological distance will thus be the potential moderator to be tested in this dissertation.

Thus in an effort to explore the potential instability of the weighting of both novelty and usefulness in making creativity judgments, I would like to test the moderating influence of psychological distance on the salience of the dimensions of novelty and usefulness for judgments of overall creativity. Testing the potential moderating effects provides a meaningful test of the assumed stability of the dimensions of novelty and usefulness in judgments of creativity, as well as extending the findings of previous research linking psychological distance (Förster et al., 2004; Jai, Hirt, & Karpen, 2009; Polman & Emich, 2011; Wiekens & Stapel, 2008) to creativity through differential weighting of the dimension of novelty and usefulness.

V. PSYCHOLOGICAL DISTANCE

Construal Level Theory (CLT) is a framework for understanding the linkage between psychological distance and the levels of abstraction used to process and interpret information (for reviews, Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007). This theory posits that “individuals use more abstract mental models, or higher level construals, to represent information about” (Trope & Liberman, 2003: 405) psychologically distant events. Trope and Liberman have defined psychological distance as “a subjective experience that something is close or far away from the self, here, and now” (2010: 440). Consideration of psychological distance is egocentrically based, meaning that the perception of distance is referenced on the individual, their location, and the current time. As the self, physical location, and current time are reference points for determining distance, moving a focal event or object further away from any of these is expected to increase the psychological distance an individual feels from the focal event or object.

CLT considers time (temporal distance from now), spatial (physical distance from the individual’s location), and social (perceived difference from self) as three of the four dimensions on which psychological distances can change. The fourth way CLT envisions psychological distance can be changed is through hypotheticality. Hypotheticality is defined as “the distinction between real and imagined objects and between probable and improbable events” (Trope & Liberman, 2010). It is considered a distance in that reality

is actually occurring (100% certainty) and events with lower probability of occurring are further (thus greater distance) from becoming reality than events with higher probability of occurring. While CLT assumes that distance dimensions are interchangeable, this assumption has yet to be tested. Several studies have found that invoking one distance engenders feelings of distance on other dimensions; increasing social distance has been shown to increase perceptions of spatial and temporal distance (Stephan, Liberman, & Trope, 2010); increasing spatial distance increased responses of perceived social distance (William & Bargh, 2008); and increasing hypotheticality increases perceptions of spatial, temporal, and social distance (Wakslak & Trope, 2009). Thus psychological distance can be considered as a more general manifestation resulting from variation on any one, some, or all of the aforementioned dimensions.

“The basic premise of CLT is that distance is linked to level of mental construal, such that more distant objects will be construed at a higher level, and high-level construal will bring to mind more distant objects” (Trope & Liberman, 2010: 444). This theory states and empirical evidence (Bar-Anan, Liberman, & Trope, 2006; Liberman, Macrae, Sherman, & Trope, 2007) supports a reciprocal relationship between psychological distance and construal level. Such that greater psychological distance engenders higher levels of construal and higher levels of construal invoke feelings of greater psychological distance. If one were to consider the tree for the forest visual analogy (Dhar & Kim, 2007; Trope & Liberman, 2010; Trope et al., 2007), from a proximal perspective, one can identify concrete specifics and complex details of the specific tree. In contrast, from a distance the details and specific of that same tree fade, while broader considerations and relationships become visible. This analogy works in reverse in that if you want to see the

details of a tree you need to get a closer look and if you want to see the whole forest you need to back away from any single tree.

Levels of construal represent the mental model through which information is processed and interpreted; this cognitive lens allows one to focus on some types of information while obscuring others. Trope and Liberman outline the distinguishing aspects of high and low-level construals as:

High-level construals are relatively simple, decontextualized representations that extract the gist from the available information. These construals consist of general, superordinate, and essential features of events. A defining characteristic of high-construal features is that changes in these features produce major changes in the meaning of the event. Low-level construals tend to be more concrete and include subordinate, contextual, and incidental features of events. Changes in these features produce relatively minor changes in the meaning of the event. Low-level construals are thus richer and more detailed but less structured and parsimonious than high-level construals (2003: 405)

As psychological distance increases, those aspects of information aligned with high-level construals become more valuable, and as psychological distance decreases, aspects aligned with lower-level construals become more relevant (Trope & Liberman, 2003, 2010). While CLT often discusses two (high and low) levels of construal, abstraction is conceived to exist at a variety of levels across a continuum (Trope & Liberman, 2010).

Construal Level Theory and the concept of psychological distance grew out of a line of research on construal level and temporal distance that showed that temporal perspectives (often manipulated from tomorrow to one year from now) influenced: how people prioritized information (Liberman, Sagristano, & Trope, 2002, Study 1), made choices based on primary or secondary goals (Liberman & Trope, 1998; Trope & Liberman, 2000), considered information complexity in decision making (Liberman et

al., 2002 Study 2), and valued feasibility versus desirability in making choices (Liberman & Trope, 1998). As the broader concept of psychological distance became more prominent, further studies showed that spatial distance (Henderson, Fujita, Trope, & Liberman, 2006), social distance (Liviatan, Trope, & Liberman, 2008), and hypotheticality (Torodov, Goren, & Trope, 2007) also influenced the level of abstraction used to evaluate choices and make decisions.

Psychological distance has been related to creativity in studies using different dimensions of distance. Förster, Friedman, and Liberman (2004) found that increasing temporal distance facilitates solution attainment on insight problems and creative idea generation through higher levels of abstract thinking. Both creative idea generation and creative insight in problem solving was shown to benefit from increased spatial distance in experiments reported by Jai, Hirt, and Karpen (2009). Findings that social distance increased creative generation and that this relationship was mediated by general perceptions of psychological distance were reported by Polman and Emich (2011). Theoretically, creativity and idea generation has historically been associated with divergent thinking (e.g. Guilford, 1950; Osborn, 1953; Runco, 1984; Shalley & Gilson, 2004) and the broadening of perceptions that is engendered by abstract thinking. However, how this relationship works through the individual dimensions is not yet clear.

With respect to the dimensions of novelty and usefulness, CLT makes several predictions. Psychological distance influences the primacy of desirability or feasibility concerns in decision making choices. Feasibility has often been cited as a factor in determining the usefulness of an idea or product (e.g. Csikszentmihalyi, 1996; Reitzschel et al., 2010). It has been shown that increasing temporal distance (Liberman & Trope,

1998), social distance (Liviatan et al., 2008), and hypotheticality (Torodov et al., 2007) decrease the importance of feasibility in choice behavior. Conceptually, lower levels of construal allow for fine details to be more in focus, this finer grained information allows a less uncertainty in considering the feasibility of a proposed solution. In situations, such as when solving a business problem, where feasibility may be highly related to the usefulness of an idea within context, it would stand to reason that as concerns about feasibility decrease with greater psychological distance, concerns about usefulness would also decrease. As an attentional focus is brought to concerns about usefulness, bounded rationality (Simon, 1957) and decision making heuristics (Gigerenzer & Gaissmaier, 2011; Tversky & Kahneman, 1973) would propose that this factor would receive greater weighting in complex decision processes. Thus, I propose that increasing psychological distance will decrease the salience of usefulness evaluations in making creativity judgments.

Hypothesis 1: The relationship of usefulness evaluations to overall judgments of creativity will weaken as psychological distance increases.

Novelty has been considered within CLT in that “novel events are unfamiliar and often (but not always) subjectively improbable” (Trope & Liberman, 2010: 457). Conceptually, higher levels of construal focus ones attention on broader categories of information, allowing one to bring in more flexibility and fluency to ones thought process. This activation of opening up the minds focus to diverse input should activate a higher appreciation for novelty. In several experiments, participants construed actions and products more abstractly when these were framed as more novel versus more familiar occurrences (Förster, Liberman, & Shapira, 2009). Another set of experiments has shown that exposure to novel (as compared to familiar stimuli) prompted participants to process

information at a higher level of construal in preferring choices based on global characteristics versus more fine grained details (Förster, 2009). Wiekens and Stapel (2008) have shown that manipulations of social distance can increase the novelty of responses in naming objects within a range of categories. This pattern of results led Trope and Liberman (2010) to call for future research to examine the relationship between construal level, novelty, and creativity.

If judgments of creativity are based on a weighted combination of evaluations of an idea's novelty and usefulness, it appears that psychological distance may prime the salience of one dimension at the expense of the other. This is in line with the findings of Bar-Anan, Liberman, Trope, and Algom (2007), that showed participants focused on information that was congruent with their primed level of psychological distance and ignored cues congruent with another level of psychological distance. This evidence and the rationale behind many decision making perspectives (e.g., Tversky & Kahneman, 1974; Tversky et al., 1988) would predict that as psychological distance increases, the level at which information is processed or construed also grows more abstract; this tendency will make information about novelty more salient and thus more influential in making judgments of creativity. Considering this I propose that increasing psychological distance will increase the salience of novelty evaluations in making creativity judgments.

Hypothesis 2: The relationship of novelty evaluations to overall judgments of creativity will strengthen as psychological distance increases.

I look to test these hypotheses across three studies. The first is a situated experiment using an intact organization working on issue of significance to their daily work and testing general psychological distance frames. The second and third studies are

laboratory experiments using sub-dimensions of time and social distance in framing the tasks.

VI. STUDY 1

This first study was undertaken in the field using a situated experiment (Greenberg & Tomlinson, 2004) to explore the general effects of psychological distance on weighing novelty and usefulness in making judgments of creativity. Wanting to maximize experimental control but conduct this research in a more natural environment, I chose to approach this Study 1 as a situated experiment. Employees were randomly selected into conditions and presented with carefully crafted manipulations, but the ideas they were evaluating were actual suggestions put forward to address a real organizational need. Thus this experiment blended the artificial control of an experiment with the natural content and work process of the organization to explore how employees made creativity judgments within their own work context. This study was conducted using an internet based survey within a large multinational staffing firm's southeastern regional division. Using three conditions of control, low psychological distance, and high psychological distance, this study is used to test Hypothesis 1 and 2.

Sample

Working closely with the senior vice-president and the communication director for the region, I developed core materials that would be relevant to the region's employees and leadership team. With the potential for gaining feedback and improvement ideas on considered innovations this research project was seen as a

potential benefit for the company as well as the researcher and thus no external incentives were necessary to encourage participation in this study. The senior vice president of the region sent out an email encouraging participation in this university based innovation study to all 485 employees of the region. Responses came from all major job roles within the region, including sales (47.9%), recruiters (36.9%), field support personnel (8.3%) and corporate support (1.4%), with the remaining (4.6%) indicating another job category. Respondents were typically male (67.4%), white (88.4%), single (53.0%) and younger (M=29.6 years old), with employees ranging in age from 23 to 45 years of age. All employees indicated some college education, with the majority holding a Bachelors Degree (88.4%) and several with a Masters (3.7%).

In total, the survey was initiated 261 times and completed by 212 employees (43.7% response rate). This drop-out rate (18.7% attempts were never completed) was expected due to the dynamic nature of a sales based workforce's schedule, where tasks are often interrupted by urgent calls. Because the study was anonymous, several of these drop-outs may have completed the survey from the beginning at another time. Thus to be conservative analyses have only been run on those completing the entire survey. This situated experiment using corporate communication channel regularly utilized for soliciting feedback and employee input, received surveys from almost half the employees based in the region. While this is not full participation and there may be some sampling bias (Rogelberg & Stanton, 2007), this sampling bias is a naturally occurring byproduct of soliciting voluntary feedback in the workplace. Voice or speaking up within an organization is a voluntary activity, yet it is only that input actually contributed that are then available to the broader organization (Rank, Pace, & Frese, 2004; Van Dyne, Ang,

& Botero, 2004). Thus only considering the respondents who voluntarily responded we are more closely mimicking real world organizational situations. The respondents to the situated experiment can then be considered a realistic population whom provide normal feedback to the region's leadership as a natural course.

Study Design

This study was designed to request employees to evaluate four creative ideas developed to help improve a particular aspect of their business. To ensure that this task had a natural realism to the employees and the organization, I worked with the region's leadership team to develop ideas around a new company wide initiative to improve "pricing and durations" of client contracts. Working with this group, I requested that they develop several creative (both new and useful) ways that they could improve these aspects of client contracts. This group developed a number of potential innovative solutions to these issues and in discussion with the region's senior vice-president selected four that would be put forward to the entire region. Using these four internally developed ideas as the basis for the study was intended to provide some internal validity in that all ideas were pertinent to the core functions of the entire organization. These ideas are listed below:

Idea: The idea is – NO FREE CONVERSIONS – the current state is that we do not typically charge a buyout fee if the contractor meets their contract to hire period of time. However, during client negotiations we may decrease our duration terms to win the business. In this case and others like it, we should be charging a conversion fee at the end of this contract period. So the idea is that every contract that is lower than the standard we have for each division, there will be a buyout fee added to the contract agreement. This will result in additional revenue gained for (Company Name) at the end of this contract and before the contractor goes direct.

Idea: Recruiter salary negotiations training – As of now there is no robust training program for teaching our recruiters how to negotiate. I feel that if we conducted a negotiation training session in the region we could gain margins. Sales people can increase margins through bill rate and mark up negotiations and recruiters can increase margins if negotiations are handled properly. By making this a focal point we could increase margins on just about every deal.

Idea: Focus on Contract placements making 25%+ of first year salary – for direct hires we make 25% of the candidates first year salary, yet sometimes we negotiate deals on a contract or contract to hire basis where we make less gross profit than 25% of their first year salary. For a contract or contract to hire scenario, we should exceed 25% of first year salary and here is why – it takes just as long to find the candidate and during a contract we absorb the burdens of employment; ie workers compensation, unemployment, benefits, and contractor maintenance. If we taught every sales person to how to exceed 25% of their candidate's first year salary we would increase our spread per contractor and ultimately increase our margins.

Idea: Increase durations by 1 week for every assignment moving forward – starting April 1st every new negotiation (new client) we would try to get one more week for the duration of the contract. So if we would normally negotiate a new deal at 26 weeks, let's go over 27 weeks instead. If we did this as a region, we would see an increase in spread over the long term. Essentially, if we added one week to every assignment we would see our gross profits increase and ultimately our regions spread would reflect this change.

Employees were sent a link to the survey asking them to evaluate several potential new approaches to how client deals might be structured to improve profit margins and then complete a survey focused on their feelings and views of innovation. Employees were automatically placed at random into one of three conditions that framed the task at hand into one of three primed conditions: Control, Low Psychological Distance and High Psychological Distance.

Employees were then presented with four ideas and asked to evaluate them one at a time on creativity, novelty, usefulness, and the extent to which the individual felt competent to rate each idea. After rating the four ideas, participants were asked to

complete a short survey which included manipulation checks, measures of intrinsic motivation for doing this task, creative efficacy, and some demographic information.

Manipulations

In an effort to maximize the strength of the psychological distance prime, efforts were made to consider all of the dimensions of psychological distance within the priming text. The control condition includes the basic instructions for the assignment with effort made to minimize distance considerations in the text drawn from manipulations of these factors from previous research (for reviews see, Bar-Anan et al., 2006; Trope & Liberman, 2010). In the psychological distance conditions, where the ideas came from was altered to manipulate both social, as similar to self versus different other focused (Liviatan et al., 2008, Polman & Emich, 2011) and spatial, as either near or far locations (Jia et al., 2009) distance. In attempting to reduce psychological distance, the low condition positioned the ideas to be considered as having been developed by fellow “Southeast Region employees”, while in the more distant condition the ideas originated from “external consultants” from Canada. Temporal distance was manipulated as in previous studies (Förster et al., 2004; Liberman et al., 2002) with requests to consider how these ideas would improve business “in the near future” (Low) or “over the next few years” (High). Hypotheticality differed in the potential consideration for use by the participant region varying certainty of outcome (Todorov et al., 2007), as the ideas “are being considered” (Low) or “some might be considered” (High) by the region’s leadership. The full text of each of these conditions is list below.

Control: Thank you for agreeing to participate in this study. (Company name) has agreed to encourage participation in this survey to learn more about how new

ideas are evaluated throughout the Southeast region. All of these ideas were generated to improve Pricing and Durations. Your input will help us to learn more about how the organization as a whole considers creative ideas. In participating in this study, you will be asked to evaluate four ideas developed for this study and then complete a short survey.

Low Psychological Distance: Thank you for agreeing to participate in this study. (Company name) has agreed to encourage participation in this survey to learn more about how new ideas are evaluated throughout the Southeast region. You will be asked to evaluate several ideas generated by other employees. A focal group of Southeast Region employees worked to generate suggestions as to how to improve business in the near future. This focal group was asked to generate ideas to improve Pricing and Durations. Many ideas were suggested and are being considered by your southeast region's senior leadership team. Your input is needed to learn more about how the organization as a whole considers creative ideas. In participating in this study, you will be asked to evaluate four ideas developed for this study and then complete a short survey.

High Psychological Distance: Thank you for agreeing to participate in this study. (Company name) has agreed to encourage participation in this survey to learn more about how new ideas are evaluated throughout the Southeast region. You will be asked to evaluate several ideas recommended by Canadian consultants. We received a number of suggested ideas that had been developed for the Canada Region by a group of external consultants looking to improve their business over the next few years. This focal group was asked to generate ideas to improve Pricing and Durations. Many ideas were suggested and some might be considered by the senior leadership team. Your input is needed help evaluate these ideas and to learn more about how the organization as a whole considers creative ideas. In participating in this study, you will be asked to evaluate four ideas developed for this study and then complete a short survey.

Measures

This entire survey was completed individually and all measures unless otherwise noted were measured on a 7-point Likert scale.

Focal Variables: The creativity, usefulness, and novelty of each idea was measured using a scale based on common adjectives used by psychologists to capture these concepts. Items for each scale were developed based on synonyms often used interchangeably in creativity research for the focal constructs (Amabile, 1996; Cropley, 2000; Guilford, 1950; Kampylis & Valtanen, 2010; Plucker et al., 2004). The items used

to measure the perceived creativity of the ideas were, “*Overall, how creative is this idea?*”, “*How inventive is this idea?*”, and “*To what extent is this idea innovative?*” ($\alpha=.94$). Items used to capture the perceived Usefulness of each idea were, “*How useful is this idea?*”, “*To what extent might this idea be helpful?*”, and “*How valuable might this idea be?*” ($\alpha=.93$). The items used to capture the perceived Novelty of the ideas were, “*How unique is this idea?*”, “*How original is this idea?*”, and “*To what extent does this idea stand out as different?*” ($\alpha=.93$). All items for these constructs were rated on scales anchored by 1= *Not at All* and 7= *Extremely So* to capture the perceived extent each idea possessed these qualities.

Control Variables: As the componential model of creativity (Amabile, 1996) puts forward three (Motivation, Creativity Skills, and Expertise) necessary components required for creativity generation, I wanted to control for these related components in this study as these may have some effect on evaluation. Even with random assignment controlling distribution of these factors among conditions, I find significant variance on these factors across individuals within manipulated conditions. Thus, controlling for natural variance between individuals will help make a stronger case for the moderating effect of psychological distance

Most contextual studies have relied on intrinsic motivation as the explanatory factor for influencing creativity (for a review see, Shalley et al., 2004). With this in mind I measured Intrinsic Motivation focused on two targets, the first being intrinsic motivation for being creative as well as the intrinsic motivation for completing the evaluation task in this experiment. General intrinsic motivation was measured on a scale adapted from Tierney, Farmer, & Graen (1999) with three items evaluated on a scale

anchored with 1=*Disagree Strongly* to 7= *Agree Strongly*. The items in this scale were, “*I enjoy finding solutions to complex problems*”, “*I enjoy coming up with new ideas for products or procedures*”, and “*I enjoy improving existing processes or products*” ($\alpha=.88$). Intrinsic motivation focused on the recent task of evaluating ideas was introduced with a statement: “What is your level of enjoyment/ interest in considering new ideas? For each of the following statements, please indicate how true it is for you, using the following scale” and anchored with 1=*Very Untrue* to 7= *Very True*. These items were adapted from a scale created by Ryan (1982) to capture the interest and enjoyment of a particular activity. The items used to capture intrinsic motivation through interest and enjoyment of the activity itself were, “*This activity was fun to do*” , “*This activity did not hold my attention at all*”, “*I would describe this activity as very interesting*”, and “*I thought this activity was quite enjoyable*” ($\alpha=.86$).

As a self perception of one’s creativity skills, I measured creative self efficacy using two items from Tierney & Farmer (2002). These items were, “*I have confidence in my ability to solve problems creatively*” and “*I feel that I am good at generating novel ideas*” ($\alpha=.71$). These items were rated on a scale anchored at 1= *Disagree Strongly* to 7= *Agree Strongly*. These questions are used to broadly assess an individual’s belief that they have creative capabilities and thus should serve as a self-report estimate of general creativity skills.

Expertise or domain knowledge was assessed for each individual by averaging how competent they felt in rating each of the ideas. Individuals indicated their competence with these ideas in responding to a question, “*How competent did you feel to rate the creativity of this idea*” on a scale of 1= *Not at All* to 7 = *Extremely So*. While

these measures were at the idea level, I was more interested in general levels of expertise within the broader domain and thus these idea ratings were aggregated to comprise an average expertise rating within the domain.

Manipulation Check: To determine whether the experimental manipulation of psychological distance worked as intended, at the end of the survey participants rated their feelings of distance on four items. To assess an individual's general level of psychological distance from this task, questions were focused on distance from the ideas, parties involved, and the task overall (Liviatan et al., 2008; Polman & Emich, 2011). These four items were, *"How closely did these ideas relate to your organization?"*, *"When considering these ideas, how relevant were these ideas to your organization?"*, *"When considering these ideas, how closely did those who developed these ideas understand your business?"*, and *"How closely connected did you feel to this task when evaluating these ideas?"* ($\alpha=.89$). These items were rated on a scale anchored at 1= *Very Distant* to 7= *Very Close*. Testing the manipulation check across the three conditions Control, Low and High as shown in Table 2, indicated a significant mean difference between Low and High ($p< .01$) and Control and High ($p< .001$) but no significant difference between the Control and the Low Distance condition ($p= ns$). As no information was provided as to psychological distance in the control prime, it may be that employees felt close to the process naturally because the request had come from the region's senior vice-president and with no other information to influence distance that relation may have been enough to make them feel closer to the task than in the conditions where psychological distance was set, however this is not for sure so results will be

reported for the two manipulated conditions as the difference between them can be assumed to be based on the manipulation.

Table 2: Study 1 – Mean Differences in Psychological Distance as captured by the Manipulation Check

Condition	N	Mean	SD	Sig.(Tukey HSD)
Control	68	6.00	.87	Control – Low $p = .826$
Low Distance	76	5.90	.99	Low – High $p = .003$
High Distance	73	5.37	1.03	High – Control $p < .000$

Results

Table 3 provides the means, standard deviations, and intercorrelations of the variables at the individual level across all three conditions. In order to present correlations at the same level of analysis, some of the variables that had been captured for multiple ideas for each individual were aggregated to the individual level (Hofmann, Lei, & Grant, 2009). Ratings of creativity, usefulness, novelty, and expertise were captured for each idea rating ($N = 848$) by each individual ($N = 212$). To analyze these data with ratings of ideas nested within the individual I needed to take a multilevel approach to account for this nesting of the data. This was accomplished by using a random coefficient model to test for psychological distance moderating the relationships of novelty and usefulness to creativity (i.e., Deadrick, Bennett, & Russell, 1997; Hofmann, 1997).

I conducted a confirmatory factor analysis to examine whether the creativity, usefulness, and novelty items loaded onto different scales using the full data set (patterns were confirmed with separate CFAs on single item responses). The predicted three-factor

solution indicated excellent fit with this data, $\chi^2_{(24)} = 145.00$, CFI = .99, SMRM = .02. All factor loading were statistically significant and ranged from .87 to .94 for creativity, .83 to .94 for usefulness, and .85 to .92 for novelty. I compared this three factor model with alternative nested models. The model fit indices for creativity and novelty loading on the same factor were $\chi^2_{(26)} = 992.72$, CFI = .95, SMRM = .04, for creativity and usefulness on the same factor were $\chi^2_{(26)} = 1917.33$, CFI = .88, SMRM = .10, for novelty and usefulness on the same factors were $\chi^2_{(26)} = 3875.43$, CFI = .83, SMRM = .17, and for the one factor-solution were $\chi^2_{(27)} = 2761.37$, CFI = .84, SMRM = .11. A chi-square difference test indicated that the three-factor model showed superior fit to all of these alternative models. While novelty and creativity are highly correlated with a dissattenuated correlation of .90, the three factor model showed better fit for the data than loading these six items on one factor ($\Delta\chi^2_{(2)} = 847.72$, $p < .001$). Also theoretically, as one factor, novelty, is a dimension of the other, creativity, one should expect these measures would be highly correlated.

Table 3: Study 1 - Means, Standard Deviations, and Intercorrelations of All Variables Included in the Study at the Individual Level

Variable	M	SD	1	2	3	4	5	6	7	8
1. Creativity	4.63	0.95	(.94)							
2. Usefulness	5.19	0.79	.67**	(.93)						
3. Novelty	4.35	1.01	.88**	.53**	(.93)					
4. Intrinsic Motivation for Creativity	6.06	0.85	.14*	.15*	.12	(.88)				
5. Intrinsic Motivation for Task	4.33	1.12	.22**	.31**	.21**	.16*	(.86)			
6. Creative Skills	5.91	0.78	.16*	.18*	.14*	.56**	.21**	(.71)		
7. Domain Expertise	5.05	0.99	.32**	.43**	.32**	.16*	.27**	.23**	-	
8. Psychological Distance	5.74	1.01	.23**	.37**	.17*	.12	.25**	.08	.36**	(.89)

Note: N= 212. Correlations are all presented at the individual level of analysis. As each individual provided multiple ratings for creativity, usefulness, novelty, and expertise; these were aggregated at the individual level. *p< .05. **p< .01.

In exploring the relationship of novelty and usefulness to creativity as well as testing the moderating influence attributed to psychological distance, I wanted to explore the variance attributed at each step. To do this I ran three models, a base model (Model 1) with no predictors from which to begin to estimate the explained variance of subsequent models. The next model (Model 2) included both Novelty and Usefulness at Level 1. A third model (Model 3) including the two measures of intrinsic motivation, the measures of self-perceived creativity skills as well as domain expertise, and finally the manipulated condition (Low and High psychological distance) with individual ratings of ideas at Level 1 and individual differences at Level 2 in a model similar to that described by Deadrick and associates (1997) for considering individuals at Level 2. This analysis begins with a base model including only the dependent variable at Level 1 to partition the total variance explained at the idea and individual levels. Using the estimated variance components at the idea level ($r = 1.395$) and at the individual level ($u_0 = .538$, $p < .001$) of the base model, the variance in the dependent variable attributable to each level can be computed. Using the variance components from Model 1, the proportion of variance that can be explained at the individual Level 2 is 27.9% with the remaining 72.1% of variance attributed to ideas at Level 1. Thus, this analysis continues with modeling the Level 1 predictors alone in Table 4 to determine if significant residual variance exists at Level 2 to warrant exploration of individual direct effects and moderating factors, the equations estimated in this Model 2 are:

$$\text{Creativity} = \beta_{0j} + \beta_{1j}\text{Novelty} + \beta_{2j}\text{Usefulness} + r$$

$$\beta_{00} = \gamma_{00} + u_0$$

$$\beta_{10} = \gamma_{10} + u_1$$

$$\beta_{20} = \gamma_{20} + u_2$$

Table 4: Study 1 - Results Hierarchical Linear Modeling Results for Level 1 Main Effects with no Level 2 predictors

Fixed Effects	Coefficient	Standard Error	t-ratio	p
Intercept, β_{0j}	4.624	.031	149.69	< .001
Usefulness, β_{1j}	.325	.031	10.65	< .001
Novelty, β_{2j}	.595	.028	20.56	< .001

Note: N=146 for the fixed effects calculations using only low and high conditions. Additional variance explained was computed over the Null model to be $R^2 = .83$. Variance components for the null model were: Level 1 residual = 1.395 and individual = .538.

With significant variance indicated at Level 2 for both usefulness and novelty, the next stage of analysis is warranted. Model 2 provides an estimate of the mean creativity intercept as well as test of the estimated unstandardized slopes for both usefulness and novelty. The estimated mean creativity intercept was 4.624, indicating a moderate level of assessed creativity based on a 7 point scale. Both slopes for usefulness ($\beta = .325$, $p < .001$) and novelty ($\beta = .595$, $p < .001$) were significant indicating both components were influential in predicting ratings of creativity. Using an Level 1 residuals from Model 1 and Model 2, an estimate of the explained variance accounted for by including these two predictors can be computed using an ratio of $(r_{\text{Model1}} - r_{\text{Model2}}) / r_{\text{Model1}}$. This ratio indicated that the addition of usefulness and novelty together accounted for 83% of the Level 1 variance in ratings of creativity. A supplementary consideration including the interaction of novelty and usefulness at Level 1 showed this predictor to be non-significant ($t = -.675$, $p = .501$) beyond the independent effects of novelty and usefulness and thus this interaction term was not considered in these analysis. When considering factors at Level 2, Model 3 is constructed as such:

$$\text{Creativity} = \beta_{0j} + \beta_{1j}\text{Novelty} + \beta_{2j}\text{Usefulness} + r$$

$$\beta_{00} = \gamma_{00} + \gamma_{01}\text{IM_C} + \gamma_{02}\text{IM_A} + \gamma_{03}\text{CS} + \gamma_{04}\text{DE} + \gamma_{05}\text{PDCCond} + u_0$$

$$\beta_{10} = \gamma_{10} + \gamma_{11}\text{IM_C} + \gamma_{12}\text{IM_A} + \gamma_{13}\text{CS} + \gamma_{14}\text{DE} + \gamma_{15}\text{PDCCond} + u_1$$

$$\beta_{20} = \gamma_{20} + \gamma_{21}\text{IM_C} + \gamma_{22}\text{IM_A} + \gamma_{23}\text{CS} + \gamma_{24}\text{DE} + \gamma_{25}\text{PDCCond} + u_2$$

Table 5: Study 1 - Results Hierarchical Linear Modeling Results for Level 2 Effects

Creativity Direct Effects	Coefficient Estimate	Standard Error	t-ratio	p
Intercept, γ_{00}	4.625	.029	157.49	< .001
Intrinsic Motivation Creativity, γ_{01}	-.012	.041	-.28	.778
Intrinsic Motivation Act, γ_{02}	.015	.028	.54	.589
Creativity Skills, γ_{03}	.053	.050	1.07	.288
Domain Expertise, γ_{04}	-.017	.031	-.54	.590
Psychological Distance Condition, γ_{05}	-.173	.060	-2.88	.005
Usefulness Slope Effects				
Intercept, γ_{10}	.331	.029	11.50	< .001
Intrinsic Motivation Creativity, γ_{11}	.022	.039	.56	.576
Intrinsic Motivation Act, γ_{12}	.021	.030	.70	.486
Creativity Skills, γ_{13}	.023	.044	.52	.606
Domain Expertise, γ_{14}	-.071	.036	-1.94	.054
Psychological Distance Condition, γ_{15}	-.121	.062	-1.97	.051
Novelty Slope Effects				
Intercept, γ_{20}	.590	.027	22.24	< .001
Intrinsic Motivation Creativity, γ_{21}	.024	.034	.71	.478
Intrinsic Motivation Act, γ_{22}	-.003	.023	-.14	.888
Creativity Skills, γ_{23}	-.113	.043	-2.65	.009
Domain Expertise, γ_{24}	.063	.029	2.17	.032
Psychological Distance Condition, γ_{25}	.119	.059	2.02	.045

Note: Sample size was 583 at Level 1 and 146 at Level 2.

Level 2 effects shown in Table 5 estimate the influence of individual factors on the rating of an idea's creativity. The significance of these coefficients provides tests of both direct and moderating effects of individual factors, a significant coefficient estimate in predicting either usefulness slope or novelty slope would be direct evidence of moderation (Hofmann, 1997). In Hypothesis 1, I predicted that an individual's psychological distance would moderate the relationship between usefulness and creativity judgments. The coefficient estimate for the psychological distance manipulation ($\gamma_{15} = -.121, p \leq .05$) was significant and negative as predicted in Hypothesis 1. This result

indicates support for moderation, such that at higher levels of psychological distance the relationship between usefulness and creativity weakens.

Hypothesis 2 was supported in this study as indicated by a significant coefficient estimate for the psychological distance manipulation ($\gamma_{15} = .119$, $p \leq .05$). This provides evidence for Hypothesis 2, which states that psychological distance will strengthen the relationship between novelty and creativity. Even when controlling for factors previously considered necessary components (Amabile, 1996) for creativity these effects are evidenced, showing strong support for this moderation effect.

It is interesting to note that psychological distance also shows a significant direct effect on ratings of creativity ($\gamma_{05} = -.173$, $p = .005$). This result appears to indicate that at higher levels of psychological distance ratings of creativity may be slightly depressed overall and was not hypothesized. However, a greater focus on novelty in considering creativity may have contributed to this negative influence as the average novelty rating is lower than the average usefulness rating. It should also be noted that measured domain expertise was a significant moderator of both usefulness and novelty relationships with creativity, in the same direction as psychological distance. Additionally, self-evaluated creativity skills appear to weaken the relationship between novelty and creativity, without any significant effect on the relationship of usefulness and creativity. These effects were not initially hypothesized but support a broader contention that the weighting of novelty and usefulness vary in their relation to ratings of creativity.

Table 6: Study 1 - Variance explained in Creativity Intercept, Usefulness and Novelty Slopes between Models 2 and 3

Model	Creativity Intercept (u_0)	Usefulness Slope (u_1)	Novelty Slope (u_2)
Model 2, No level 2 predictors	.056	.044	.041
Model 2, Including level 2 predictors	.054	.040	.036
Percent Variance Explained	3.6%	9.1%	12.2%

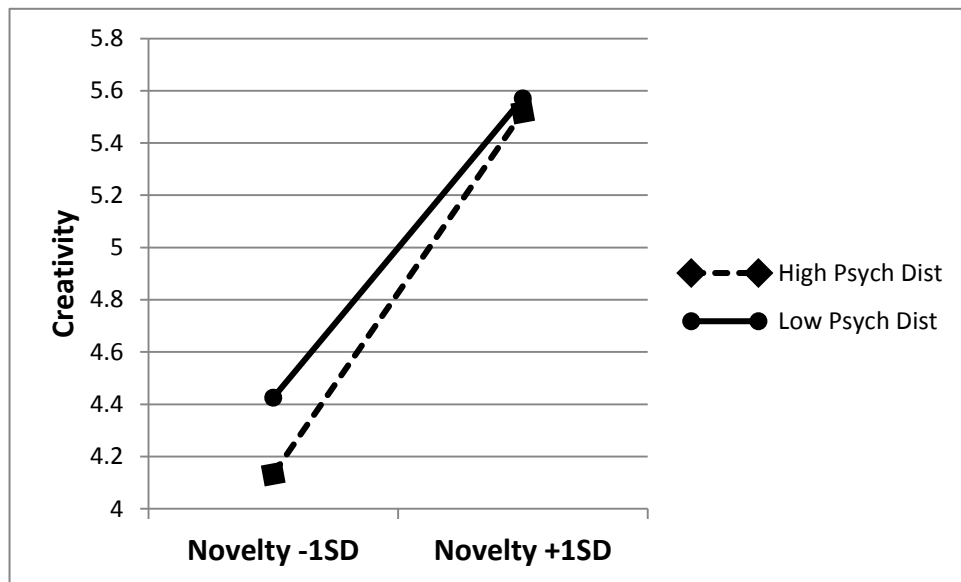
Note: Sample size was 583 at Level 1 and 146 at Level 2.

Support for Hypothesis 1 is strengthened by a good percentage of variance explained by our Level 2 predictors, as shown in Table 6, accounting for 9.1% of the variance in the slope for usefulness in predicting creativity. Support for Hypothesis 2 is also bolstered by a high percentage of variance explained by our Level 2 predictors which accounted for 12.2% of the variance in the slope of novelty in predicting creativity. The direct effects of the individual factors accounted for 3.6% of the variance in the creativity intercept. Figure 4 shows the moderation effect of psychological distance has on the relationship between usefulness and creativity, while Figure 5 does the same for the relationship between novelty and creativity. The test for moderation using multilevel modeling showed significant moderation of both relationships novelty and usefulness to overall creativity, however the effect size is harder to interpret from the preceding analysis. Using a fixed effects model of OLS regression, an unbiased assessment of the effect size can be determined (Hofmann, Morgeson, & Gerrass, 2003), this approach indicted that the interaction of psychological distance with the dimensions of novelty and usefulness were both significant and accounted for an additional 1% (R^2 change = .01) of variance beyond the simple main effects in predicting creativity. Interaction effects are often difficult to detect and within social science research typically account for between 1-3% of variance explained and should be considered important at these levels (McClelland & Judd, 1993).

Figure 4: Study 1 - Relationship of Usefulness and Creativity Moderated by Psychological Distance



Figure 5: Study 1 - Relationship of Novelty and Creativity Moderated by Psychological Distance



Discussion

This study provides initial support for a moderating effect on how individuals weight components of creativity in making judgments. This study finds that

psychological distance in fact can moderate the relationships of usefulness and novelty to judgments of overall creativity. In finding support for the use of psychological distance framing in altering how novelty and usefulness contribute to creativity judgments, this study provides evidence that the assumption of stability on considering the dimensions of creativity may be flawed.

While psychological distance evidenced a significant moderating effect on the salience of both novelty and usefulness, these effects were rather small. There are many reasons for difficulty in finding moderation in the field (McClelland & Judd, 1993). In this case range restriction of the focal moderating variable may have been an issue and weaken the statistical power of the analysis. Supplemental analysis of additional items captured in the demographic survey at the request of the company indicated a strong level of affective commitment to the company (scale $M = 5.92$, $SD = .10$) as indicated on items adapted from Allen and Meyer (1990). This high level of affective commitment to the organization may help create a naturally low sense of psychological distance in considering organizational issues. This may have been compounded by having the survey sent out by the region's senior vice-president. An indication of this may be found in the fact that the manipulation check for psychological distance did not find statistical difference between the control or low distance conditions. A high level of connection to the organization may have hampered the distancing prime from having a stronger effect. While the low and high psychological distance conditions were significantly different ($M_{High} = 5.37$, $M_{Low} = 5.90$, scale 1=*Very Distant* to 7 = *Very Close*), they both fell between anchors of *Somewhat Close* and *Close*. This range restriction is a potential

limitation for the generalizability of these findings to broader levels of psychological distance.

This study combines several different dimension of psychological distance into one manipulation. Thus there is no way to parcel out the effects of the individual dimensions of psychological distance on these relationships. Replicating the findings of this study in the lab manipulating the individual components of psychological distance, could help extend these findings and provide constructive replication of the findings from Study 1. Study 2 and Study 3 will test temporal and social distance framings on how novelty and usefulness contribute to judgments of creativity using the same task but different distance framings.

VII. STUDY 2

In an effort to corroborate the findings of Study 1, Study 2 will consider the moderating effect of temporal distance on the relationships between usefulness and novelty with creativity judgments. In an effort to extend the findings of Study 1, this study focuses on one of the dimensions of psychological distance; namely, temporal distance.

Sample

Participants were recruited through Mechanical Turk an online marketplace for crowdsourcing simple work tasks. One hundred working adults began the experimental study through volunteering to accept the survey assignment. Eighty seven participants completed the entire survey and are included in this analysis. Participants who completed this study were mostly male (54.7%), white (71.3%), and on average, 30.3 years old ($SD = 10.55$). Additionally, participants were drawn from 32 states with all having at least a high school diploma and 88% having some college education. Participants indicated an average of 9.29 years of work experience ($SD = 8.98$) and reported careers in a broad range of fields such as software, retail, education, manufacturing, and management among others.

Study Design

This study was designed to test the effects of psychological distance through framing an evaluation task using temporal distance a facet of the broader construct. Participants were directed to a task of reviewing ideas submitted as solutions to a business problem, which was adapted from Grant & Berry (2011). This task asks participants to help evaluate four ideas previously generated to help a band identify promising ways to increase revenue and build exposure. Before having participants formally evaluate the four selected ideas, they were asked to review a sample of twenty-five ideas generated for this problem. Amabile (1996) recommends that judges of creative ideas should have some training or be at least familiar with the domain in which they are rating ideas. Participants in this study are expressing their own personal judgments and not claiming any special expertise. However, as creativity is to be considered within context and is necessary a relative judgment, allowing participants to review a sample of generated suggestions will provide them with a point of reference from which to make a comparative judgment as suggested in Amabile's Consensual Assessment Technique (1996) as well as common practice for priming raters in policy capturing methodologies (Karren & Barringer, 2002). The general task statement and initial sample of generated ideas for review were included with a condition based framing statement built in between, as such (component names in italics and parenthesis were not included in experiment text but shown here for clarity):

(Task statement) The Association of Independent Music Artists (AIMA), in response to falling CD sales of many of their members, recently hosted an online forum to solicit ideas to help unsigned musicians and bands find ways to make money and increase their exposure as they build a following. In an effort to help evaluate these ideas, I am crowdsourcing this task.

Please consider the ideas submitted as options to help musicians and bands find ways to make money and increase their exposure as they build a following.

(Condition framing statement)

(Sample of generated ideas)

- Play more live shows
- Seek out opportunities through radio promotions or commercials
- Enter music festivals all over the country to broaden you fan base
- Sell music online
- Market autographed band merchandize or partner with a local record shop or music venue and hold an autograph signing event before a free show
- Perform at local bars and clubs
- Sell CDs for less
- Offer to play private parties
- Give music away for free on your band website
- Hold a raffle contest for those who buy the CD...like Willy Wonka's Golden Ticket
- Find volunteer students to do a marketing internship with the band to have someone focused
- Offer free music and sell advertising on your band website
- Dress up in animal suits or something else crazy, you might get free publicity and build interest from being different
- Advertise through Facebook and MySpace
- Sell band tee shirts and other gear
- Find other bands that you like and approach them with the idea of cross promoting their music on your website and yours on theirs
- Release bootleg albums of live shows for sale
- Paper college areas with flyers
- Approach independent stores to sell the CDs
- Put your songs for sale through Amazon or iTunes
- Publicise your talents with a free snippet CD and distribute it for free
- Video songs at a show and post on You Tube
- Have a CD release party
- Check people for recording devices at your shows
- Add CD coupons to live event tickets

Participants were then reminded of the focus of the activity by repeating the task statement and conditional framing statement. This was done to refresh the participant as to the nature of the upcoming task and reinforce the manipulation. Participants then

evaluated the same four ideas on creativity, then usefulness, and then novelty. The study concluded with a manipulation check and a short series of demographic questions.

Manipulations

The manipulations used in this study were designed after a review of manipulations used in past studies of psychological distance. Manipulating dimensions of psychological distance through framing situational context or priming thought on near or distant terms have induced strong differences in psychological distance in previous studies. Temporal distance has been primed with terms of: now, immediately, and soon for low distance conditions, and with terms such as: a year, a decade, and later used to prime high temporal distance to test construal level through speed of recognizing constructs presented either at high or low levels of abstraction (Bar-Anon et al., 2006) . Temporal framing of situations have used prompts like “imagine yourself tomorrow (a year from now)”, participating in an activity on “an upcoming weekend (a weekend a year from now)”, and meeting someone “tomorrow (four months from now)” in four studies by Liberman and associates in an effort to evaluate the association of distance with construal level (2002). Manipulations of “tomorrow” and “a year from now” or “next year” were imbedded into paragraph long decision scenarios to manipulate temporal distance across two studies conducted by Liberman and Trope (1998) looking at distance and choices of feasibility and desirability. In a study on predicting future events, temporal distance was manipulated within an instruction block indicating the events would occur either in a near time condition (following day or weekend) or a more distant condition (a year later or 3 months later) across two studies that found the manipulation

influences the contextual basis of information search and making behavioral predictions of behavioral constraints (Nussbaum et al., 2003).

Based on this abundance of successful manipulations of the dimensions of psychological distance in similar populations with minimal manipulations (Prentice & Miller, 1992), I adapted these previous framings to this study. These framings were presented at the beginning of the experiment and repeated before beginning the rating activity to reinforce the manipulation. The two experimental framings were stated as such:

Low Temporal Distance: Consider how these ideas could help musicians and bands improve in the near term (next few weeks).

High Temporal Distance: Consider how these ideas could help musicians and bands improve in the long term (next few years).

The ideas that were rated were taken from a previous creativity generation experiment Grant & Berry (2011) that expressed the greatest range on our focal variables. The ideas were rated in the same order by all participants and consisted of:

Idea 1: Have the band offer music lessons to make money and build a loyal following

Idea 2: Cover a vehicle(s) completely with magnets showing the band's logo or cover art with band info (website, email, facebook, etc) and drive around with it. When parked, people could take a magnet and then can buy music or come to a show.

Idea 3: Offer your music online through iTunes.

Idea 4: Play more live shows even if they are for free.

Measures

This entire survey was completed individually and new measures were used to capture the focal variables. Creativity was measured by asking participants to “*Rate the extent to which this idea is:*” the three items were “*Creative*”, “*Innovative*”, and “*Inventive*” ($\alpha = .95$ across all ideas) and was rated on a 9-item Likert type scale anchored by “Not at all” and “Extremely”. Usefulness was rated using the same prompt and items of “*Useful*”, “*Effective*”, and “*Helpful*” ($\alpha = .94$). Utilizing the same prompt and scale Novelty was captured by three items: “*Novelty*”, “*New*”, and “*Original*” ($\alpha = .95$).

Manipulation Check: In order to investigate that the framings worked to manipulated perceived temporal distance, after rating all of the ideas, participants were asked “*What timeframe (close or distant) did you consider when evaluating these ideas?*”. This item was rated on a 7 item Likert scale anchored from 1=Very Close, with 4=Neutral, to 7= Very Distant. As shown in Table 7, participants in the two conditions differed significantly ($p < .05$) in their responses to the manipulation check. A second manipulation check question was posed to capture a broader feeling of psychological distance by asking “*How closely connected did you feel to this task when evaluating these ideas?*”. This manipulation check did not indicate a significantly different feeling of distance from the task ($p = \text{n.s.}$) between conditions. While this manipulation check failed to detect significant differences between conditions, the experimental manipulation may have had the intended effect and may only indicate a failure of the manipulation check and not the manipulation itself (Sigall & Mills, 1998).

Table 7: Study 2 – Mean Differences in Perceived Distance as captured by the Manipulation Checks

Study	Condition	N	Mean	SD	t	df	p
2 Temporal Distance	Low Distance	43	2.70	1.10	-2.32	85	.02
	High Distance	44	3.34	1.46			
2 General Distance	Low Distance	43	3.09	1.56	.88	85	.38
	High Distance	44	2.84	1.10			

Results

Table 8 provides the means, standard deviations, and intercorrelations of the variables, as all variables were captured across four different ideas, this table presents each idea separately. These correlations lend weight to the argument that novelty may be the primary factor in driving overall creativity. Novelty was significantly correlated with creativity at between .54 and .80 across these ideas, while usefulness ranged from non-significance -.04 to significant .50.

Table 8: Study 2 - Means, Standard Deviations at the Idea Level

Study	Variable	M	SD	1	2	3
Idea 1	1. Creativity	5.96	1.91	(.91)		
	2. Usefulness	5.45	2.14	.43**	(.91)	
	3. Novelty	6.45	2.17	.78**	.26*	(.94)
Idea 2	1. Creativity	6.28	1.97	(.93)		
	2. Usefulness	5.57	1.97	.50**	(.90)	
	3. Novelty	6.26	2.08	.54**	.42**	(.90)
Idea 3	1. Creativity	2.88	2.04	(.93)		
	2. Usefulness	7.55	1.30	-.04	(.90)	
	3. Novelty	2.01	1.63	.65**	-.19	(.89)
Idea 4	1. Creativity	3.91	2.02	(.90)		
	2. Usefulness	7.16	1.70	.14	(.92)	
	3. Novelty	3.20	2.09	.61**	-.01	(.92)

Note: *p< .05. **p< .01. All ideas were rated by 87 participants.

A confirmatory factor analysis was conducted to examine whether the creativity, usefulness, and novelty items loaded onto different scales for each of these ideas. Special attention was paid to the relationship of novelty and creativity, for while they were found to be differentiating by the CFA for Study1, they were highly correlated. As shown in Table 9, the predicted three-factor solution indicated excellent fit with this data for all of the ideas. A chi-square difference test indicated that the three-factor model showed superior fit to all of these alternative models.

Table 9: Study 2 – Confirmatory Factor Analysis for Each Idea

	Variable	CFI	SMRM	χ^2	df	$\Delta \chi^2$	ρ
Idea 1	3 Factor Solution	.98	.08	42.06	24		
	2 Factor (Creativity and Novelty cross loaded)	.85	.13	173.25	26	131.19	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.83	.17	187.91	26	145.85	<.001
	2 Factor (Creativity and Novelty cross loaded)	.62	.29	376.54	26	334.48	<.001
	1 Factor Solution	.69	.22	377.92	27	335.86	<.001
Idea 2	3 Factor Solution	.98	.05	37.79	24		
	2 Factor (Creativity and Novelty cross loaded)	.83	.13	148.98	26	111.19	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.84	.14	150.37	26	113.58	<.001
	2 Factor (Creativity and Novelty cross loaded)	.81	.16	192.96	26	155.17	<.001
	1 Factor Solution	.69	.17	268.42	27	230.63	<.001
Idea 3	3 Factor Solution	.96	.07	49.07	24		
	2 Factor (Creativity and Novelty cross loaded)	.83	.11	159.61	26	110.54	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.72	.21	208.80	26	159.73	<.001
	2 Factor (Creativity and Novelty cross loaded)	.67	.31	282.60	26	233.53	<.001
	1 Factor Solution	.60	.22	316.46	27	267.39	<.001
Idea 4	3 Factor Solution	.99	.04	27.66	24		
	2 Factor (Creativity and Novelty cross loaded)	.83	.12	131.07	26	103.41	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.70	.21	190.44	26	162.78	<.001
	2 Factor (Creativity and Novelty cross loaded)	.55	.32	276.45	26	248.79	<.001
	1 Factor Solution	.54	.24	303.47	27	275.81	<.001

Note: All ideas were rated by 87 participants. All $\Delta \chi^2$ difference test were calculated against the 3 factor model.

I will once again apply the three step procedure suggested by Hofmann (1997) as conducted by Deadrick et al. (1997) focusing on the two temporal distance conditions. This analysis begins with a base model including only the dependent variable at Level 1 to partition the total variance explained at the idea and individual levels. Using the estimated variance components at the idea level ($r = 5.92$) and at the individual level ($u_0 = .008$, $p > .500$) of the base model, the variance in the dependent variable attributable to each level can be computed. Using the variance components from Model 1, the proportion of variance that can be explained at the individual Level 2 is 0.1% with the remaining 99.9% of variance attributed to ideas at Level 1. With less than .2% of residual variance existing at the individual Level 2 in this study, consideration of individual level direct effects was not warranted. These results do not support either Hypothesis 1 or 2. However, there is significant variance at the idea level and further consideration of how novelty and usefulness are weighted in these judgments of creativity might be worthy of consideration. These weightings are thus presented in Table 10. The equations estimated in this Model 2 are:

$$\text{Creativity} = \beta_{0j} + \beta_{1j}\text{Novelty} + \beta_{2j}\text{Usefulness} + r$$

$$\beta_{00} = \gamma_{00} + u_0$$

$$\beta_{10} = \gamma_{10} + u_1$$

$$\beta_{20} = \gamma_{20} + u_2$$

Table 10: Study 2 - Results Hierarchical Linear Modeling Results for Level 1 Main Effects with no Level 2 predictors

Fixed Effects	Coefficient	Standard Error	t-ratio	p
Intercept, β_{0j}	4.75	.089	53.65	< .001
Usefulness, β_{1j}	.092	.053	1.76	.083
Novelty, β_{2j}	.711	.028	25.40	< .001

Note: N=348 for the fixed effects calculations using only low and high conditions. Additional variance explained was computed over the Null model to be $R^2 = .73$. Variance components for the null model were: Level 1 residual = 5.920 and individual = .009.

These results show creativity judgments in this study being driven almost solely by evaluations of novelty ($\beta_2 = .711$, $p < .001$) as the usefulness coefficient ($\beta_1 = .092$, $p = .083$) is not significant. Using Level 1 residuals from models 1 and 2, the Level 1 estimated variance explained by these two variables was 73.0%.

Table 11: Study 2 – Variance Components for Level 1 Main Effects with no Level 2 predictors

Fixed Effects	Variance Component	SD	df	χ^2	p
Intercept, μ_0	.245	.495	84	105.99	.053
Usefulness slope, μ_1	.100	.316	84	135.74	< .001
Novelty slope, μ_2	.005	.067	84	88.60	.334
Level 1,r	1.599	1.264			

Note: Chi-square statistics were based on only 85 units that had sufficient data for computation. Fixed effects and variance data are based on all of the data.

The results shown in Table 11, indicate that there is significant variance in the slope of usefulness, and further analysis of this data in considering a moderation effect is warranted.

Table 12: Study 2 - Results Hierarchical Linear Modeling Results for Level 2 Effects

	Coefficient Estimate	Standard Error	t-ratio	p
Creativity Direct Effects				
Intercept, γ_{00}	4.750	.089	53.46	< .001
Temporal Distance Condition, γ_{01}	.095	.178	.53	.595
Usefulness Slope Effects				
Intercept, γ_{10}	.091	.052	1.75	.083
Temporal Distance Condition, γ_{11}	.067	.104	.64	.522
Novelty Slope Effects				
Intercept, γ_{20}	.710	.027	25.01	< .001
Temporal Distance Condition, γ_{21}	.026	.057	.45	.654

Note: Sample size was 583 at Level 1 and 146 at Level 2.

Level 2 effects shown in Table 12 estimate the influence of temporal distance on the rating of an idea's creativity. The significance of these coefficients provides tests of both direct and moderating effects of individual factors, a significant coefficient estimate in predicting either usefulness slope or novelty slope would be direct evidence of moderation (Hofmann, 1997). These results do not support Hypothesis 1, as the moderation effect of temporal distance on the relationship of usefulness with creativity is not significant. Neither do they support Hypothesis 2, indicating a non-significant moderation effect on the relationship between novelty and creativity.

Table 13: Study 2 - Variance explained in Creativity Intercept, Usefulness and Novelty Slopes between Models 2 and 3

Model	Creativity Intercept (u_0)	Usefulness Slope (u_1)	Novelty Slope (u_2)
Model 2, No level 2 predictors	.245	.100	.005
Model 2, Including level 2 predictor	.254	.101	.005
Percent Variance Explained	-3.7%	-1%	0%

Note: Sample size was 583 at Level 1 and 146 at Level 2.

Completing the multilevel analysis and confirming the lack of explanatory contributions of temporal distance in relation to Level 1 predictors through HLM. Table 13 shows a negative additional variance explained for the creativity intercept and the

usefulness slope. The results show no additional variance explained for the slope of novelty in predicting creativity with the addition of the temporal distance condition.

Discussion

This laboratory Study 2 was intended to extend the findings from the situated field experiment presented in Study 1. However, this study did not find support for psychological distance through a temporal distance framing to moderate the relationships between novelty and usefulness with creativity. While the manipulation check for temporal distance found significant differences between conditions a broader question of distance felt from the task was not significant. Thus perhaps these manipulations of temporal distance had some minor effect but with both groups answering around the “Somewhat close” anchor of 3 ($M_{\text{close}} = 2.70$, $M_{\text{distant}} = 3.34$) perhaps the manipulations was not strong enough to separate the groups meaningfully in cognitive focus. This was a surprise as manipulations similar to those used in this study have induced strong differences in temporal distance (Förestér et al., 2004; Liberman et al., 2002) in previous research.

However this study does show that in some instances judgments of creativity may be driven almost completely by evaluations of novelty as evidenced by the results in Table 10. This result in itself is further evidence of a disconnect between theoretical conceptualizations that require both novelty and usefulness (e.g. Amabile, 1996; George, 2007; Shalley & Zhou, 2008) and judges implicit ratings of creativity. Yet in looking at the correlations by idea in Table 8, it is interesting that for ideas three and four usefulness was not significantly correlated with creativity while for idea one and two they were.

There may be a threshold factor necessitating a minimum level of novelty before an idea's utility is considered in judging creativity. A further analysis using general linear modeling with idea as a fixed effects of this data to include an interaction term for novelty and usefulness did not find significance for this interaction term ($\beta = .04$, $\text{StdErr} = .08$, $t = .449$, $p = .ns$). Thus an interactional (Novelty x Usefulness) perspective is not supported but there does appear to be some relation between the level of novelty and the relationship between usefulness and creativity. Perhaps a threshold perspective ((Diehl & Stroebe, 1987, 1991) of creativity being considered to be present, only if both novelty and usefulness meet an above average threshold may be evidenced in these results.

VIII. STUDY 3

This study was run in parallel to Study 2 in an effort to corroborate the findings of Study 1. Study 3 explores the moderating effect of social distance on the relationships between usefulness and novelty with creativity judgments. In an effort to extend the findings on a broad consideration of psychological distance, this study looks to investigate the individual effects of a particular dimension of psychological distance, social distance.

Sample

Participants were recruited through Mechanical Turk an online marketplace for crowdsourcing simple work tasks. One hundred and eight working adults began the experimental study through volunteering to accept the survey assignment. One hundred participants completed the entire survey and are included in this analysis. Participants who completed this study were mostly male (66.0%), white (77.8%), and on average, 29.3 years old ($SD = 10.67$). Additionally, participants were drawn from 31 states with all having at least a high school diploma and 92% having some college education. Participants indicated an average of 9.55 years of work experience ($SD = 10.10$) and reported careers in a broad range of fields such as government, telecommunications, software, hospitality, education, banking, and software among others.

Study Design

This study utilized the same task and set-up as Study 2. Participants were asked to review a number of suggestions offered to help musicians and bands increase revenue and exposure and then evaluate four of them. The only difference in the set up of these studies was the manipulation and the manipulation checks.

Manipulations

The manipulations used in this study were designed after a review of manipulations used in past studies of psychological distance. Manipulating dimensions of psychological distance through framing situational context or priming thought on near or distant terms have induced strong differences in psychological distance in previous studies. Social distance has been primed with asking students to consider problems for themselves, close others, or distant others in studies to assess creativity of decisions (Polman & Emich, 2011) or similarity to self through common demographics or experiences for evaluating the work of others (Liviatan et al., 2008). This is not a complete list (for reviews see, Trope & Liberman, 2007; Trope et al., 2007) but all of these studies manipulations were successful and were conducted on college students.

Based on this abundance of successful manipulations of the dimensions of psychological distance in similar populations with minimal manipulations (Prentice & Miller, 1992), I adapted these previous framings to this study. These framings were presented at the beginning of the experiment and repeated before beginning the rating activity to reinforce the manipulation. The two experimental framings were stated as such:

Low Social Distance: Consider how these ideas as if several close friends were starting a band and asked for your thoughts.

High Social Distance: Consider how these ideas as if several strangers were starting a band and asked for your thoughts.

The same ideas were presented in this study and rated in the same order by all participants. These ideas were:

Idea 1: Have the band offer music lessons to make money and build a loyal following

Idea 2: Cover a vehicle(s) completely with magnets showing the band's logo or cover art with band info (website, email, facebook, etc) and drive around with it. When parked, people could take a magnet and then can buy music or come to a show.

Idea 3: Offer your music online through iTunes.

Idea 4: Play more live shows even if they are for free.

Measures

This Study 3 used the same measures as Study 2. The item scales across all ideas were found to be reliable: Creativity ($\alpha = .94$), Usefulness ($\alpha = .93$), and Novelty ($\alpha = .97$). Reliabilities for each scale on each item are reported in Table 15.

Manipulation Check: In order to investigate that the framings worked to manipulated perceived temporal distance, after rating all of the ideas, participants were asked “*How socially related (close or distant) did you feel to the bands you may be helping?*”. This item was rated on a 7 item Likert scale anchored from 1=Very Close, with 4=Neutral, to 7= Very Distant. As shown in Table 14, participants in the two conditions differed significantly ($p < .05$) in their responses to the manipulation check. A second manipulation check question was posed to capture a broader feeling of

psychological distance by asking “*How closely connected did you feel to this task when evaluating these ideas?*”. This manipulation check did not indicate a significantly different feeling of distance from the task ($p = \text{n.s.}$) between conditions. As temporal distance is one of several dimensions of psychological distance, perhaps the small change in temporal distance was not enough to move the broader construct.

Table 14: Study 3 – Mean Differences in Perceived Distance as captured by the Manipulation Checks

Study	Condition	N	Mean	SD	t	df	p
2 Social Distance	Low Distance	48	3.04	1.22	-2.01	98	.047
	High Distance	52	3.56	1.34			
2 General Distance	Low Distance	48	2.69	1.37	-.59	98	.557
	High Distance	52	2.85	1.32			

Results

Table 15 provides the means, standard deviations, and intercorrelations of the variables, as all variables were captured across four different ideas, this table presents each idea separately. These correlations lend weight to the argument that novelty may be the primary factor in driving overall creativity. Novelty was significantly correlated with creativity at between .40 and .80 across these ideas, while usefulness ranged from non-significance .04 to significant .56. In only one case, Idea 1, was Usefulness more highly correlated to Creativity than Novelty.

Table 15: Study 3 - Means, Standard Deviations at the Idea Level

Study	Variable	M	SD	1	2	3
Idea 1	1. Creativity	5.69	1.90	(.92)		
	2. Usefulness	5.42	2.13	.56**	(.92)	
	3. Novelty	6.38	1.78	.40**	.19*	(.91)
Idea 2	1. Creativity	5.94	2.23	(.94)		
	2. Usefulness	5.46	2.10	.58**	(.94)	
	3. Novelty	6.37	2.34	.72**	.49**	(.96)
Idea 3	1. Creativity	2.72	1.93	(.92)		
	2. Usefulness	7.08	1.73	.04	(.89)	
	3. Novelty	2.14	1.77	.76**	-.09	(.95)
Idea 4	1. Creativity	4.24	2.04	(.91)		
	2. Usefulness	6.72	1.81	.31**	(.94)	
	3. Novelty	3.68	2.00	.65**	.14	(.96)

Note: *p< .05. **p< .01. All ideas were rated by 100 participants.

A confirmatory factor analysis was conducted to examine whether the creativity, usefulness, and novelty items loaded onto different scales for each of these ideas. As shown in Table 16, the predicted three-factor solution indicated excellent fit with this data for all of the ideas. A chi-square difference test indicated that the three-factor model showed superior fit to all of these alternative models.

Table 16: Study 3 – Confirmatory Factor Analysis for Each Idea

	Variable	CFI	SMRM	χ^2	df	$\Delta \chi^2$	ρ
Idea 1	3 Factor Solution	.99	.05	35.57	24		
	2 Factor (Creativity and Novelty cross loaded)	.74	.16	204.52	26	168.95	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.81	.12	193.82	26	158.25	<.001
	2 Factor (Creativity and Novelty cross loaded)	.70	.22	241.31	26	205.74	<.001
	1 Factor Solution	.56	.20	362.41	27	326.84	<.001
Idea 2	3 Factor Solution	1.00	.02	24.35	24		
	2 Factor (Creativity and Novelty cross loaded)	.89	.11	216.61	26	192.26	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.87	.12	204.54	26	180.19	<.001
	2 Factor (Creativity and Novelty cross loaded)	.76	.18	394.52	26	370.17	<.001
	1 Factor Solution	.74	.18	437.87	27	413.52	<.001
Idea 3	3 Factor Solution	1.00	.03	16.51	24		
	2 Factor (Creativity and Novelty cross loaded)	.90	.09	139.73	26	123.22	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.82	.20	184.53	26	168.02	<.001
	2 Factor (Creativity and Novelty cross loaded)	.54	.37	386.04	26	369.53	<.001
	1 Factor Solution	.71	.21	307.75	27	291.24	<.001
Idea 4	3 Factor Solution	.99	.04	31.38	24		
	2 Factor (Creativity and Novelty cross loaded)	.86	.12	175.86	26	144.48	<.001
	2 Factor (Creativity and Usefulness cross loaded)	.74	.19	239.42	26	208.04	<.001
	2 Factor (Creativity and Novelty cross loaded)	.60	.32	359.61	26	328.23	<.001
	1 Factor Solution	.59	.24	409.08	27	377.70	<.001

Note: All ideas were rated by 100 participants. All $\Delta \chi^2$ difference test were calculated against the 3 factor model.

I will once again apply the three step procedure suggested by Hofmann (1997) as conducted by Deadrick et al. (1997) focusing on the two social distance conditions. This analysis begins with a base model including only the dependent variable at Level 1 to partition the total variance explained at the idea and individual levels. Using the estimated variance components at the idea level ($r = 5.74$) and at the individual level ($u_0 = .006$, $p > .500$) of the base model, the variance in the dependent variable attributable to each level can be computed. Using the variance components from Model 1, the proportion of variance that can be explained at the individual Level 2 is 0.1% with the remaining 99.9% of variance attributed to ideas at Level 1. With less than .1% of residual variance existing at the individual Level 2 in this study, consideration of individual level

direct effects was not warranted. However, moderation may still be possible so the variance components are considered and reported in Table 18. These results do not support either Hypothesis 1 or 2. However, there is significant variance at the idea level and further consideration of how novelty and usefulness are weighted in these judgments of creativity might be worthy of consideration. These weightings are thus presented in Table 17.

Table 17: Study 3 - Results Hierarchical Linear Modeling Results for Level 1 Main Effects with no Level 2 predictors

Fixed Effects	Coefficient	Standard Error	t-ratio	p
Intercept, β_{0j}	4.67	.079	59.31	< .001
Usefulness, β_{1j}	.192	.040	4.81	< .001
Novelty, β_{2j}	.704	.029	24.22	< .001

Note: N=348 for the fixed effects calculations using only low and high conditions. Additional variance explained was computed over the Null model to be $R^2 = .71$. Variance components for the null model were: Level 1 residual = 5.920 and individual = .009.

These results show creativity judgments in this study being driven primarily by evaluations of novelty ($\beta_2 = .704$, $p < .001$) but the usefulness coefficient ($\beta_1 = .192$ $p < .001$) while smaller is significant. Using Level 1 residuals from models 1 and 2, the Level 1 estimated variance explained by these two variables was 71.3%.

Table 18: Study 3 – Variance Components for Level 1 Main Effects with no Level 2 predictors

Fixed Effects	Variance Component	SD	df	χ^2	p
Intercept, μ_0	.188	.434	97	101.28	.363
Usefulness slope, μ_1	.041	.203	97	90.25	> .500
Novelty slope, μ_2	.019	.138	97	93.14	> .500
Level 1, r	1.648	1.284			

Note: Chi-square statistics were based on only 98 units that had sufficient data for computation. Fixed effects and variance data are based on all of the data.

The non-significant variance components indicate that there is not enough variance in these variables to make further analysis meaningful. These results fail to support a necessary pre-condition for evaluating moderation effects with multi-level modeling (Hofmann, 1997). Further analysis considering ideas as fixed effects indicated that the social framing condition did not moderate usefulness ($B = -.017$, $p = \text{n.s.}$) but while not significant at .05, the interaction of novelty and social distance condition trended in the expected direction ($B = .096$, $p = .084$) and registered a .3% increase in explained variance.

Discussion

Intended to replicate the finding of Study 1 in the laboratory, this experiment fell short. In not finding support for spatial distance moderating the relationships of novelty and usefulness with creativity judgments this study does not provide the kind of support for the two hypotheses presented in this dissertation. However it does appear that even though this manipulation influenced the perceived social distance of the participants, the extent to which this occurred was rather limited. Participants in both conditions clustered toward the middle of the scale ($M_{\text{close}} = 3.04$, $M_{\text{distant}} = 3.56$) on the perceived social distance manipulation check indicating that this study may also suffer from range restriction considerations in having enough statistical power to identify moderation effects (McClelland & Judd, 1993). This possibility is strengthened by the lack of psychological distance measured in the broader task distance manipulation check. The HLM analysis did not indicate significant variance at the individual level based on the framing conditions. However, the supplemental analysis indicated a trend of social

distance strengthening the relationship of novelty and creativity, though not enough to reach statistical significant. Perhaps a stronger manipulation driving the conditions further apart may help reveal the anticipated moderation effect.

These results confirm a similar pattern as discussed with Study 2, in that for Idea 3 usefulness was not significantly correlated with creativity. However in this study using the same task and ideas to be rated found a higher correlation of usefulness to creativity for Idea 1. While this variation does not help support the psychological distance moderator effect hypothesized, this variation in how usefulness and novelty relate to judgments of creativity within the same domain but across ideas suggests a more dynamically applied construct than an assumed stable combination of novelty and usefulness.

IX. GENERAL DISCUSSION

The purpose of this program of studies was to begin to identify if and through what contextual framings could creativity be focused more or less towards considerations of novelty and/or usefulness. By demonstrating that the contextual framing of a task may influence how judgments of creativity are made, the question then becomes was this a statistical anomaly or might there be consistent effects associated with psychological distance moderating the salience of the dimensions of creativity in arriving at a judgment of an ideas creativity? This dissertation presented three studies looking to explore how considerations of contextual distance in three different forms may moderate the weightings of novelty and usefulness in making judgments of creativity. Support was found for moderation of both weightings of novelty and usefulness with respect to general psychological distance in Study 1 and marginal support was found through supplemental analysis in Study 3 for moderation of the relationship between novelty and creativity by social distance.

I believe that this dissertation makes several contributions to the literature on creativity. First, by providing evidence that the relationship between the dimensions of novelty and usefulness to creativity may not be stable even within the same domain or problem context, I begin to challenge some implied assumptions underlying historical conceptualizations and operationalizations of creativity. These assumptions ground creativity in a stable relationship with its primary components of novelty and usefulness.

While the criteria of what contributes to a judgment of creativity has long been expected to vary between domains (e.g., Amabile, 1996; Csikszentmihalyi, 1996), how considerations of novelty and usefulness are combined to render those judgments has been little researched (Litchfield, 2008; Unsworth, 2001; Zhou & Shalley, 2003). This challenging of the assumption of a stable relationship between novelty, usefulness, and creativity provides support for a more flexible consideration of creativity, where the construct of creativity is no longer defined by novelty and usefulness but rather predicted by considerations of these facets.

Building off of this conceptual adjustment, a second contribution to the creativity literature is a new measurement approach incorporating measures of novelty, usefulness, as well as overall creativity taken together to better describe what is meant when judges make evaluations of creativity in what I would like to call the triangulation approach. In putting forward a measurement model that operationalizes creativity in concert with its primary predictors, I provide a method for reporting a more precise description of what is being considered as creative in research using subjective measures of this construct as suggested originally by Amabile as an extension of her Consensual Assessment Technique, (1983). This type of approach can even be used to reexamine older data sets by having new judges consider the results of past generative experiments using this new triangulation approach to clarify the nature of creativity's relationship with a number of previously explored constructs. In reporting not just overall creativity but what is meant by that concept research will begin to build a better understanding of the "elusive construct" (George, 2007) and build a broad foundation of how creativity may differ not only between domains but within domains, organizations, and work groups. This ability

to be clear about the nature of the construct of creativity being reported in the research literature should help this information readily translate to relevant practical applications with less confusion.

A third contribution is that this dissertation begins to explore what types of situational factors may encourage individuals to increase their focus on either novelty or usefulness. Work situations may at times call for radically new ideas and at other times require more utility focused solutions. This dissertation begins to explore how contextual framing may allow managers to encourage the desired types of creativity. By focusing on factors that are readily controllable by most managers, this work may help managers focus employees' creative energies towards the types of creative activities that are needed by the organization in a particular instance. Further examination of how situational context may influence not only creativity evaluation but also generation may help in explaining why two organizations in the same industry (domain) develop and chose radically different innovations when dealing with similar issues.

A fourth contribution may be a broadening of how we consider context influencing creativity. It has been noted that most contextual effects on creativity generation have been postulated to work through activating intrinsic motivation (Shalley et al., 2004). However, there may be other cognitive and psychological mechanisms by which context can influence creativity. In this dissertation, I conceptually proposed that mental construal level may be one of those mechanisms. Even though I did not directly test this mechanism, the moderation effects in Study 1 while controlling for intrinsic motivation support this possibility. The effort to begin expanding the list of explanatory

mechanisms through which context may influence creativity may open up this line of inquiry for other researchers to explore additional mechanisms beyond intrinsic motivation.

While I may enjoy highlighting the potential important contributions of this work, it would be unfair to do so without recognizing significant limitations to these claims. The first limitation is the fact that moderation effects were found in one of three studies using the intended HLM analysis, and it took a supplemental analysis to uncover a second instance that showed a trend towards moderation in another using fixed effects regression. The moderation effects found in the field manipulating psychological distance, and the marginal effect of social distance on the salience of novelty in judging creativity, both need to be replicated to strengthen the support for claims of instability in the combinations of novelty and usefulness within a field or domain.

While there may have been flaws in manipulation strength with the two laboratory studies, the fact remains that the moderating effects found with the field sample were not supported in the laboratory using the different dimensions of psychological distance manipulations. This lack of findings may have been caused by weak manipulations, or range restriction in both manipulated variables and idea stimuli. Examination of a broader range of psychological distance may also be valuable in determining if these effects are more or less evident at more extreme framing conditions exploring a broader range of the moderator variables (McClelland & Judd, 1993). Additional research will be necessary to confirm these moderation effects and extend this line of research beyond psychological distance to claim justification for changes to broader considerations of creativity.

Another limitation is that all of these studies considered ideas generated with the intent to be creative in mind. This creates a propensity for range restriction in the extent the rated ideas span the full range of creativity, novelty, and usefulness from very low to very high levels. Although the full range of responses were captured across individuals, ideas in these studies tended to be rated on average within the middle third of each of these scales. Thus these results can only speak with confidence to moderate levels of usefulness, novelty, and creativity, potentially limiting the generalizability of these findings to a restricted range of consideration. While the majority of work situations may tend to deal with ideas settling into this moderate range for our focal variables (Amabile, 1996; Beghetto & Kaufman, 2007), this is a potential limitation in holding these findings relevant to the extremes of creativity.

An alternative explanation for the effects of psychological distance could be a consideration of risk and time pressure. As evaluations of creative ideas are in part based on estimates of novelty and usefulness of the resulting implementation of these ideas, these evaluations contain an inherent amount of uncertainty (Mumford et al., 2002). Uncertainty and risk have a long history with influencing decision making priorities (e.g., Tversky & Kahneman, 1974; Tversky & Kahneman, 1992). As judgments from a greater psychological distance are made from a standpoint of increasing uncertainty these judgments may discount risks to a greater extent than those judgment made at a more proximal distance (Okhuysen & Bonner, 2005). Additionally, the costs of increasing time pressure may highlight risks of non-completion of a task and thus influence the prioritization of novelty or usefulness. Domain expertise, which should be directly related to concerns of uncertainty with respect to psychological distance, was controlled for in

these studies. With these controls and instructions in place, it is highly unlikely that the results for psychological distance were due to uncertainty or risk considerations but these are consideration that must be kept in mind as research with these constructs continues.

In light of the limitations described above, there are many opportunities available to continue to explore how novelty and usefulness evaluations contribute to judgments of creativity. There is some evidence that this relationship may not be as stable as previously assumed but there are many opportunities to extend this work and broaden the generalizability of this type of research. The final section of this dissertation will begin to outline some additional avenues that may provide support for a more nuanced consideration of creativity for researchers and a richer understanding of how the concept of creativity is implicitly used in practice.

X. FUTURE RESEARCH

The consideration that the relationship between novelty, usefulness, and creativity may not be fixed but rather a situationally dependent construction, opens up many doors for future research. With the problems identified in Studies 2 and 3, a logical future direction would be to attempt to replicate the moderation evidenced in Study 1 by addressing the issues with the flawed studies and attempt to rerun them with a new engaged sample. This effort would begin to provide corroboration for the contextually dependent nature of how novelty and usefulness are weighted in making creativity judgments.

It may also be valuable to explore the relationship of novelty and usefulness to creativity across the full range of those variables. While ideas generated with creative intent may be naturally range restricted in that internal evaluation of these ideas may limit responses that are at the extreme low end of any factor and ideas at the extreme high end are by nature very rare (Beghetto & Kaufman, 2007). The idea that creativity exists on a continuum that covers very low levels to very high levels does not preclude the fact that creativity at the extremes may be very rarely encountered. Creativity may be found to have a “highly skewed distribution” (Amabile, 1996: 39) that favors low to average creativity. Thus studies with restricted ranges of novelty, usefulness, and creativity may very well generalize to a broad array of organizational circumstances. However researchers should be encouraged to explore the extremes of these constructs, perhaps

using specifically created stimuli in a policy capturing study to explore differences in the relationships between the levels of these focal variables across the full range of possibilities.

Examination of how other contextual factors may influence the weighting of novelty and usefulness in making judgments of creativity may be another potential avenue for future research. Research may consider how factors like risk propensity, physical setting, status, and power dynamics influence how we weight novelty and usefulness in making creativity judgments. Expanding our understanding of how contextual and situational factors may influence how people evaluate ideas and products as creative can help organizations streamline their innovation processes and direct new efforts in a concerted fashion. Additionally, these factors may have particular significance to entrepreneurs attempting to position their new products or concepts in the best, most creative light.

If novelty and usefulness are predictors of creativity judgments, are there potentially other factors that commonly are included in making a creativity assessment? Identifying if there are other factors common across domains or if in certain domains a third or fourth factor should be considered would be a valuable contribution to the creativity literature. Perhaps the work of Besemer and O'Quin (1986, 1989) is a step in the right direction by attempting to capture multiple dimensions of creativity, but more work in this area from both the qualitative and quantitative side may help clarify the dimensionality of creativity.

Having proposed a new measurement model for creativity and developed measures for assessing the creativity, novelty, and usefulness for ideas and products, a potential area for future research is in the area of scale development to enable researchers to measure the creativity of employees by capturing multiple measures of the three focal constructs. Reworking and extending the measures of employee and individual creativity would be a valuable tool in the broader consideration of creativity as a personal characteristic.

Finally, while this dissertation focuses on differences in creativity evaluation with a fixed domain, consideration of how novelty and usefulness may vary in their relation to creativity in the generative process and across different domains would broaden the appeal of this line of inquiry. Perhaps considerations of creativity are stable within the domain of art but not business? Perhaps novelty and usefulness relate to creativity generation in a fixed and stable fashion? These are empirical questions that would be valuable to explore.

In this dissertation, I have tried to expand our conceptualization of how novelty and usefulness relate to judgments of creativity. Along the way I have created a new measurement model and tested the viability of several fundamental assumptions underlying historical perspectives on creativity. By providing evidence that the weightings of novelty and usefulness may not always be stable with relation to how creativity is judged, I have sought to propose adjustments both conceptually and operationally for how researchers can address this construct without relying on this assumption of stability. In doing so, I hope to help the field pin down the “elusive

construct” and help practitioners make better use of our collective findings by giving them additional tools to focus their own organizations’ creative efforts.

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