PICKING A WINNER: HOW WE CHOOSE OUR MOST CREATIVE IDEAS

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Timothy Jesurun

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PICKING A WINNER: HOW WE CHOOSE OUR MOST CREATIVE IDEAS

Timothy Jesurun
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Approved:

Advisor
Dr. Andrea Snell

Committee Member
Dr. Paul Levy

Committee Member
Dr. James Diefendorff

Committee Member
Dr. Joelle Elicker

Committee Member
Dr. R. Ray Gehani

Accepted:

Department Chair
Dr. Paul Levy

Dean of the College
Dr. Chand Midha

Dean of the Graduate School
Dr. George R. Newkome

Date
ABSTRACT

In order to better understand the creative process it is necessary to understand how a person evaluates creative ideas, not just how they are generated. This study examines how people might choose as best ideas higher in originality or in practicality from a standard list of TV show ideas. This series of studies uses the model of idea evaluation proposed by Mumford, Lonergan, and Scott (2002) which says that people first forecast how the idea will work out if implemented, then compare the ideas against each other before finally choosing a single idea to pursue. Study 1 examined whether this model matched how people naturally evaluate ideas, but the results did not support the model. Study 2 examined if people can be influenced to favor originality or practicality by going through the process in different ways. Changing the process did affect idea evaluation as expected, especially for those low in divergent thinking, an individual difference related to generating new ideas. Study 3 tested whether the regulatory focus context could affect idea evaluation. The regulatory focus context did affect idea evaluation; those with a promotion focus favored original ideas and those with a prevention focus favored practical ideas. Further research is needed into the way people naturally evaluate ideas and also research is needed into idea evaluation in a setting that is more real world.
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CHAPTER I
INTRODUCTION

Creativity research has focused primarily on how people come up with creative ideas but it has given less attention to the steps before and after generating ideas (Herman & Reiter-Palmon, 2011; Mumford, 2001). If we are going to understand creativity, foster it in children, and learn to maximize it as part of innovation then we need to understand the whole process, not just one piece. According to a simple model like Reiter-Palmon and Illies (2004) there is at least one stage before generating ideas and one stage after. Before generating ideas people have to understand or construct the problem. How people think about the problem will shape how they come up with ideas. After generating ideas then the ideas must be evaluated and a single idea must be selected to be implemented (Reiter-Palmon & Illies, 2004). This study set out to examine that final stage, idea evaluation, with the goal of improving our understanding of the whole creative process.

Evaluation is important because creativity is more than just ideas. Creativity is a way to overcome problems in new and useful ways (Weisberg, 2006). If a person comes up with a creative idea, but then chooses to implement a different idea, then the creative process has failed. This is a realistic possibility. Research shows that people are not perfect at choosing their best idea (Runco & Smith, 1992). This means that skill in
evaluation is important so that success in generating ideas can be translated into success in solving problems.

A creative idea is both original and practical (Plucker, Beghetto, & Dow, 2004). An idea that is only original is bizarre and an idea that is only is practical is dull. Good evaluation means recognizing ideas high in both. The reality is that how a person should balance the importance of originality as opposed to practicality changes across disciplines or situations. There is a tendency to think about creativity as being for artists, but marketers, scientists, and entrepreneurs have to be creative as well. A key part of this study is to understand how people naturally balance originality and practicality differently as well ways to directly or indirectly shift the balance.

There are three fundamental questions that this study set out to answer. The first is how people evaluate ideas. I tested the model of idea evaluation proposed by Mumford, Lonergan, and Scott (2002), one of the only models of idea evaluation I found in the literature. Their model states that people first forecast the ideas they are evaluating and consider how the ideas would work out if implemented. Then people compare the ideas to each other to determine which is best. Finally people choose a single idea to implement. To test this model I examined differences in how much people favored ideas higher in originality over ideas higher in practicality. I did not manipulate participants but instead asked them to reflect on the process after they went through it. I expected that people who reported focusing on originality when forecasting and comparing would choose ideas higher in originality and those who reported focusing on practicality would choose ideas higher in practicality.
I also examined the effects that individual differences would have. I selected divergent thinking as an individual difference that would be related to favoring originality either in the process or in the choice of an idea. Divergent thinking is a typical measure of skill in idea generation. I scored it based on the proportion of unique ideas divided by the total number of ideas the person came up with. For an individual difference likely to be related to favoring practicality either in the process or in the choice of an idea I selected risk-aversion. Risk-aversion is a measure of how much a person tries to avoid taking risks, and original ideas are risky while there is much less risk to practical ideas.

The second key question, addressed in the second study, is whether we can affect the choices that people make by changing the process they go through. In this study I lead some participants to forecast the ideas based on originality and compare them based on originality before asking them to choose the best idea. Other participants forecasted and compared based on practicality before choosing a best idea. I expected that this difference, without changing the idea choice question, would be enough to make a difference in the ideas that participants chose. I also examined if individual differences interacted with the manipulation such that it was more effective for some kinds of people.

The third key question was whether the context, specifically the regulatory focus environment, could affect people’s choices. A person with a promotion focus sees his goals as things to achieve, while a person with a prevention focus sees his goals as standards he needs to avoid failing to reach. I primed some participants with a promotion regulatory focus and others with a prevention focus and examined differences in the ideas they chose. I expected that those with a promotion focus would favor ideas higher in originality; they want to achieve the production of something original. I expected that
those with a prevention focus would favor ideas higher in practicality; they would want to avoid ideas that might not work. I also looked at whether individual difference would make the regulatory focus effect stronger or weaker.
CHAPTER II

STUDY 1: OBSERVING THE IDEA EVALUATION PROCESS

Creativity is a topic that has interested and confounded psychologists for more than half a century. The question of greatest interest has always been how people come up with creative ideas. We can see this central thread clearly in the history of creativity for example earlier in Wallas’ model (Wallas, 1926), then Torrance’s test of divergent thinking (Torrance, 1966), as well as in more recent models such as Amabile (1983) and Mumford et al (1991). In this great excitement other aspects of the whole creative process have often received less attention than they deserve (Mumford, 2001; Herman & Reiter-Palmon, 2011). Creativity is not simply generating a new idea; it involves preparation beforehand to understand the problem and implementation of the idea afterwards (Reiter-Palmon, & Illies, 2004). Of particular interest in this study is that last step, idea evaluation. After a person has several ideas he needs to choose the one worth pursuing. This is not a simple, obvious decision (Runco & Smith, 1992) and merits further study.

Creativity is the key to finding new solutions to problems in many domains, not just art, but also fields such as communication, marketing, and science. A person’s creative ability to solve problems hinges on implementing a single idea, chosen from a larger set of ideas (Reiter-Palmon & Illies, 2004). If people are choosing ideas poorly and not selecting their best ideas, then the research into enhancing the generation of better
ideas is wasted. The best idea a person has will never be implemented. What is needed is a better understanding of how people evaluate ideas. Once we understand how people choose a best idea we can consider intentionally manipulating the process to improve it as well as considering possible indirect and environmental effects on idea evaluation.

The Importance of Creativity and Idea Evaluation

Creativity is a valuable tool for solving a variety of problems, not just for creating art. While many problems have simple solutions, or at worst complex but well known solutions, some problems can only be solved through creativity. Creativity is necessary in solving two kinds of problems. This first are problems with unknown solutions. It takes creativity to find a new solution (Herman & Reiter-Palmon, 2011). Insight problems are a good example of these kinds of problems. A person may struggle to understand how the words “base,” “room,” and “basket” are related, but then they realize that the word “ball” goes with each of them. The other kind of problems that require creativity are problems which are ill-defined. Problems which are poorly structured or which have ambiguous information about them require creativity (Abelson & Levi, 1985). These kinds of problems have multiple solutions, though not all are of equal quality. For example global warming is an ill-defined problem that will take creativity to solve. Not all of the factors are well understood and some of the information about it is ambiguous. There are multiple solutions, like building nuclear power plants or incentivizing public transportation, but not all are equally good solutions.
Creativity is not just for art or for children. Creativity is important for solving interpersonal, business, and global problems. For example, an angry boss is a poorly defined problem when you don’t know if you did something wrong or how to fix it. How to market a new product or how to create a new drug are both ill-defined problems requiring creativity. It will take creativity to solve some of the ill-defined global problems like climate change or how to create lasting peace in the Middle East. Creativity is an important process.

Since creativity is important, so also are the parts of creativity. Solving these problems will require better understanding the problem, generating better solutions, and choosing the best solution to the problem. Most of the research has focused on the middle step, generating ideas (Mumford, Medeiros, & Partlow, 2012), and has often ignored or placed less emphasis on evaluating and implementing those new ideas (Herman & Reiter-Palmon, 2011; Runco & Chand, 1995). While generating new ideas is what makes creativity unique from other cognitive activities, the process of creativity does not end with a list of ideas (Basadur et al., 2000; Osburn & Mumford, 2006). The sculptor must sculpt one of his ideas. The scientist must test one of his solutions. From the list of many ideas must come one idea to be implemented. Choosing one idea is a very different process from coming up with many ideas. Choosing is a convergent thinking or evaluative thinking task unlike the divergent and flexible thinking needed to generate ideas. Cropley and Cropley (2008) review several studies indicating that without convergent thinking to monitor and guide divergent thinking only pseudo-creativity can occur.
It would be okay to pay idea evaluation less attention if idea evaluation is easy. For example, the problem mentioned before of finding a word to go with “base,” “room,” and “basket,” requires very little skill in evaluation. Once you think of “ball” you know you are right. Ill-defined creativity problems are not so simple though. In Runco and Smith (1992) and Runco and Vega (1990) people accurately identified at best 30% or 40% of their most original ideas. Rietzschel, Nijstad, and Stroebe (2006) found that the average creativity of ideas that people chose was no higher than the average creativity of the ideas they had generated. This means that people's choices were no better than chance. Clearly research is needed to understand how people evaluate ideas and what can be done to improve their evaluation skills.

Understanding Creativity

Definition of Creativity. Before zooming in on idea evaluation it is important to understand what creativity is and how it works. Defining creativity is an important, yet surprisingly elusive task. People have an intuitive sense of what is creative, but acquiring quantitative measures of creativity has proved challenging. This is not only a layman problem, as Plucker, Beghetto, and Dow (2004) found that 21% of the studies on creativity they examined from the psychology and creativity literature had no definition of creativity and 41% had only an implicit definition of creativity. Where they did find definitions of creativity, explicit or implicit, they noted several common characteristics of the definitions including: uniqueness, artistic, usefulness, divergent thinking, problem
solving, and aspects of definitions that involved psychometrics, stakeholders, and accessibility.

Plucker, Beghetto, and Dow (2004) offered their own definition of creativity:
“creativity is the interaction among aptitude, process and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (p. 90). This is a good definition as it covers the major streams of creativity research identified by Runco (2007). The phrase “aptitude, process and environment” covers three of Runco (2007)’s major streams of creativity research: person, process, and press (place), with the fourth major stream, product, named directly later in the definition.

While Plucker et al (2004) provide a good thorough definition, there is a simpler definition that they found to be common in the literature when other researchers did define creativity. This definition is that creativity involves ideas which are both novel and useful. This is only part of Plucker et al’s longer definition, but it does get at the core of what creativity is about. The aspect of novelty captures that the product is original, unlike anything in the person’s memory, and unlikely to be thought of by anyone else. The aspect of usefulness means that an idea must be appropriate to the task at hand and must solve the problem. This is the aspect that ensures that creativity is useful and not just bizarre. The consensus around this twofold definition of novel and useful is strong. For example, Zhou and Oldham (2001) measured creativity by combining novelty scores with usefulness scores. Sullivan and Ford (2010) examined this twofold definition and found that creativity is a formative measure made up of novelty and usefulness, not a reflective
measure. This means that creativity is not a whole of which novelty and usefulness are representations, but rather that only both together define creativity.

This two-fold definition is the core way in which creativity will be examined in this paper. While the most creative idea maximizes both originality and practicality, it is worth considering them as two independent aspects that can be enhanced or reduced across people and situations. Some people might favor one over the other. For example artists are more willing to sacrifice practicality to achieve something original. On the other hand, R&D scientist are more willing to sacrifice originality to achieve a practical new product. Situations matter too. Being a programmer for Microsoft is different than working for Google.

Before moving on I want to highlight a subtle difference in the way we talk about creativity. Sometimes we think about creativity as the process of generating new and useful ideas and sometimes as the process that results in a new and useful idea. Some of the definitions reported in Plucker et al (2004) are in terms of generating ideas and others in terms of a single best idea. This is an inconsistency that is recurring in the literature. In this paper the term creativity will be used only for the complete process which ends with a single best idea. Coming up with ideas will be referred to as idea generation.

Models of Creativity. If we define creativity as the production of an idea that is both original and practical, we need to better understand the process that brings a person to that one best idea. There are several models of the creative process, all of which acknowledge the role of idea evaluation. Perhaps the simplest model, and one of the oldest, is a two stage model of first divergent thinking followed by convergent thinking (Runco & Chand, 1994). Divergent thinking is where new ideas are formed. These ideas
are different from, or divergent from, typical ideas. Successful divergent thinking involves getting away from the normal. Convergent thinking involves a person’s thinking returning to normal, practical thinking. The person must force the different ideas to fit with reality. This is where a single best idea is chosen to be implemented. This two stage model is rather vague and other theories can be seen as providing more detailed descriptions of creativity.

Amabile’s Componential Model (1983; 1996) is a more detailed model with different stages. The first step is problem or task identification. People must first realize there is a problem or be given a problem. Once the problem is identified the person must acquire or activate in memory relevant information and response algorithms. The third stage is response generation, which is the same as idea generation. After that stage is response validation and communication, which is the same as idea evaluation. People must compare their ideas to reality and what they know to determine if any of their ideas solves the problem. Amabile’s model has a fifth stage which consists of making a decision about whether the creativity process was a success and can be stopped, whether it was a total failure and should be stopped, or whether it was inadequate but the process is worth trying again. The five stage model provides a solid foundation for building theory and conducting research.

One of the more thorough and cognitively grounded models is the one presented in Mumford et al (1991). While the general structure is the same as Amabile’s, Mumford et al provide a more fine grain model of the process of idea generation. The first stage is problem construction, and is much like the problem finding or problem identification stage in other models. Take for example a scientist who has decided to design an electric
car. Problem construction involves understanding the requirements and limitations of the electric car she is to design. The second stage is information encoding where knowledge relevant to the problem is recalled from memory or gathered from the environment. Our scientist must start by remembering, or looking up, as much information as she can about electric cars. The third stage is category search where relevant knowledge structures and schemas are activated. Our scientist next calls to mind everything she knows about electricity, batteries, car construction, power trains, energy infrastructure and so forth. The next stage is specification of the best fitting categories in which the person determines what categories are most important. Our scientist may decide that her best ideas will come from thinking about batteries and car construction or maybe she might decide that the power train category and electricity category will yield the best results. In the next stage categories are combined and reorganized to produce new ideas relevant to the problem. At this point she will combine her batteries category with her car construction category to generate ideas about how to use the construction of the car to carry and charge the batteries. If she chose the power train category and electricity category instead then ideas would be around making a more efficient powertrain. These ideas are then evaluated, and if approved, implemented. Even after implementation the person monitors his or her solutions and is ready to start the creative process over again. The overall structure of this model is similar to the others models that were discussed but provides greater detail in how problem finding moves to idea generation.

Both the Amabile (1983; 1996) and Mumford et al (1991) models provide a lot of valuable detail, but a simpler model will suffice for the current study. Reiter-Palmon & Illies (2004) present a three stage process model of creativity which summarizes many of
the models they observed in the literature. The first stage is problem finding or problem
construction. It is important to have and understand the problem before proceeding with
the creative endeavor. The second stage is idea generation, the relatively well understood
and often studied phase of coming up with possible solutions. The third stage is idea
evaluation where ideas are considered for their effectiveness in solving the problem. This
theory provides a good simple structure for thinking about the process of creativity, even
if it lacks some of the detail present in the Amabile and Mumford et al models.

**Idea Evaluation Process**

Before considering what happens during idea evaluation, it is important to think
about how idea evaluation fits into the model of the creative process. Most of the models
of creativity considered idea evaluation to occur as a separate stage of creativity, while in
reality there is often a blending with the idea generation stage. The popular practice of
brainstorming is built on delaying evaluation until after idea generation (Osborn, 1957).
In reality such a distinction does not exist in all situations and even when it does it is not
nearly so clean. Baer (2003) points out three different situations in which generation
overlaps more or less with evaluation. In some creativity situations a person may be
evaluating as they are generating. This happens when they are being creative in real time
with little time for evaluation after generation. They must be done together because of
time pressure or lack of resources. As an idea occurs to them, they decide to implement it
or abandon it. The second situation is the typical two stage process of generation first
then evaluation. Even in this situation people don't totally stop evaluating as they generate. Some ideas are screened as they are generated, especially irrelevant ones. Evaluation also serves as a boundary on the ideas being generated. Baer (2003) labels the third kind of overlap “paradigm shift”. This is creativity in situations where evaluation can be delayed quite substantially. The person may play with and mull over an idea, usually in the back of his or her mind, for quite some time before evaluating it. This paper discusses evaluation from the two stage approach for the sake of simplicity, but the reasoning and findings of this study apply with near equal strength regardless of how much the two activities overlap.

While there are models of what happens in the idea generation phase (e.g. Finke, Ward & Smith, 1992, Lubart & Sternberg, 1995), there is very little research on the late stages of the creativity cycle (Mumford, 2001). Guilford, often credited with being a key person in sparking research in creativity, along with his colleagues discovered some late cycle capacities related to successful creativity (Wilson et al., 1954). The first was conceptual foresight, which is being able think about and anticipate the consequences of ideas. People were better evaluators when they could forecast the outcome of implementing an idea. The second component was penetration, the ability to see the non-obvious effects of idea implementation. This capacity has proved in subsequent research to be an unstable factor and potentially redundant with conceptual foresight (Mumford, 2001). The third component discovered by Guildford and his colleagues was redefinition judgment. This is the ability to adjust and change ideas to make them more valuable or appropriate. The final late process was problem sensitivity, which is the ability to monitor the creative process for problems as ideas are being considered. To reiterate, Guilford and
colleagues found four key capacities related to idea evaluation: foreseeing an idea’s consequences, seeing the deeper and more complex effects of the idea, adapting ideas so that they work and seeing problems as they form in the creative process.

There has not been a great deal of follow up research on Guildford's findings regarding late cycle capacities. Mumford and his colleagues are the major exception having examined the importance of forecasting and revision in evaluation. Mumford, Lonergan, and Scott (2002) presented a complete model of idea evaluation. According to them, there are three key stages to idea evaluation. A person must first forecast the likely outcomes of implementing the idea, and then compare the ideas based on those likely outcomes before finally choosing a single idea as the one worth pursuing.

Forecasting involves considering the implications and likely outcomes of an idea (Osburn & Mumford, 2006). While at first poor, people become better at forecasting with experience and these forecasts can form a good foundation for making an evaluation (Byrne, Shipman, & Mumford, 2010). An evaluator needs to consider what an idea would look like once implemented for each idea she is considering. The second step is comparing all of the ideas under consideration. Being able to pick the best idea from the list requires determining the relative value of all of the ideas under consideration. A person needs to know which idea is the best on the list. The final step is actually choosing a single idea to implement. People consider the outcomes of their ideas in regards to the goals of the situation and constraints of the performance requirements (i.e. Lonergan, Scott, & Mumford, 2004). In the Mumford, Lonergan and Scott (2002) model, much like Amabile (1996), evaluation ends with a decision to reach one of three conclusions. The person could decide that the idea was a good one and begin implementing the idea, the
person could decide that the idea was not worth implementing and trash it, or the person might decide that he or she should revise the idea, based on the evaluation criteria, so that it would be a good idea. While Mumford et al (2002) present this revision as happening in the evaluation phase, other models of creativity, such as Amabile (1996) and Mumford et al (1991), treat this as looping back to the idea generation phase of the process.

While this is the ideal process, in reality people may not make full use of it. One possibility is that people may rely on heuristics or shortcuts in making decisions. They may not forecast the ideas or compare them, or if they do they may do so only for some ideas and not all of them. This speeds up processing but may reduce accuracy. People would be inaccurate in perceiving the relative strength of the ideas and thus make mistakes in idea evaluation.

Testing the Idea Evaluation Model

Testing the Mumford, Lonergan and Scott (2002) model of idea evaluation is difficult. What we wanted to know is if the Mumford et al process is in fact the process that people use when evaluating ideas. Since it is an entirely cognitive process it would be hard to observe. One way to test the model is to have people evaluate ideas, choose the best one, and then ask participants questions about the process they went through. Differences in participant’s answers to the questions should match differences in the ideas that they chose. Instead of looking at how high quality the idea they chose was we will instead look at favoring originality versus favoring practicality. Earlier I defined
creativity as the production of an idea that is both original and useful. These two factors together make up a creative idea. So we can examine differences in the process that shift people higher or lower on originality and higher or lower on practicality. It is important that other than favoring originality or practicality the ideas are equally good. We cannot allow an outside factor, like intelligence, to confound our ability to see differences in favoring originality or practicality. To achieve this participants faced a forced choice between favoring high originality, favoring high practicality, or choosing an idea that is only moderately high on both. Highly intelligent people should be stuck between three good options. This neutral balance point means that differences in people’s choices are not demand effects or intelligence effects, but can be attributed to something else, which in this study we expected to be differences in the process that individuals go through.

The goal of the first study was not to manipulate the process of idea evaluation in anyway. The goal was to observe it naturally occurring. This means a loss of power and specificity, but it is an important first step in understanding the idea evaluation process. Since we cannot observe thinking we will ask participants to retrospectively self-report the process they went through in choosing the best idea from a list. Of greatest interest will be questions about the degree to which they used forecasting and comparing based on either originality or practicality. If they were considering how original the ideas might be if implemented and then ranking them based on originality then they are likely to choose ideas higher in originality as being best. If instead they were thinking about how practical the ideas would be if implemented and ranking them based on that, then they are more likely to select ideas higher in practicality as being best.
**H1:** Those who report engaging in more forecasting and comparison based on originality will choose ideas higher in originality.

**H2:** Those who report engaging in more forecasting and comparison based on practicality will choose ideas higher in practicality.

Individual Differences

While the purpose of this study is to examine the process of idea evaluation, individual differences cannot be ignored. Different people will bring their own preferences and biases to the idea evaluation task. People have an intuitive sense that there are creative people and uncreative people (Weisberg, 1999) and so the creativity literature has focused on identifying and quantifying what makes someone a creative person.

One of the more influential models of individual differences is that of Amabile’s (1983, 1996) Componential Model discussed earlier. She proposed that there are three kinds of individual differences. The first was domain knowledge: people must know the facts, findings, and past products of the field in which they are creating. The second set of individual differences Amabile identified was creativity skills. These skills were not precisely defined, but included the range of techniques that help a person generate new ideas, break false limitations, and connect remote ideas. The third kind of individual
differences are motivation, specifically, intrinsic motivation which has been found to foster creativity (Lubart & Sternberg, 1995).

There are a number of ways that these aspects might relate to idea evaluation. Domain knowledge is critical for judging the practicality of an idea and is the only set of individual differences that Amabile (1983, 1996) connects with idea evaluation. Higher domain knowledge might function as a filter instead of a balance when considering ideas, ruling out ideas that are too low in originality or low in practicality. Creative skills may have the weakest link to idea evaluation as they are defined as promoting the generation of ideas. Intrinsic motivation, while not connected by Amabile, is likely also important for driving evaluation behavior and bringing the creative process to a close.

Personality is another major approach to understanding the individual differences that underlie creativity. Several attempts have been made to identify the “creative personality.” Examples include Patterson (2001) as well as a subset of the Adjective Checklist used by Gough and Heilbrun (1983). None have picked up much momentum. At a broader level there has been some success in tying creativity to the Five Factor Model. Feist (1998) and Kelly (2006) examined the predictive ability of the Five Factor Model of personality on creativity and both found that Openness was the best predictor of creativity. If we think specifically about idea evaluation, then Openness is likely tied to a preference for originality while Neuroticism and Conscientiousness are likely tied to a preference for practicality.

Another route that has been taken to identify creative individuals is to focus on skills and experience. For example creative individuals are able to make connections between ideas that less creative people have more trouble connecting (Mednick, 1962).
Remote association tasks allow us to measure this ability. Creative individuals also are able to generate more ideas, and more ideas that are different from each other. We can measure this with divergent thinking tasks. Torrance developed what is one of the most thorough and widely used tests of divergent thinking, the Torrance Test of Creative Thinking (Torrance, 1966, 1999). Creative people also have a history of being creative, and by using biodata and examining past experience we can measure this (i.e. the Creative Behavior Inventory (Kirschenbaum, 1989) and the Scale of Creative Attributes and Behavior (SCAB) (Kelly, 2006)). If we think about idea evaluation, past evaluating experience can be very formative.

This paper will not examine all of these individual differences, but it will consider two as examples: divergent thinking which is expected to increase the likelihood of choosing ideas higher in originality and risk-aversion which is expected to increase the likelihood of choosing ideas higher in practicality. By examining these two individual differences we can better understand the expected effect that other individual differences might have on the idea evaluation process.

Divergent Thinking

One of the most interesting questions in creativity research is whether skill in idea generation relates to skill in idea evaluation. Guilford initially conceived of evaluation as orthogonal to divergent thinking, and so conceptually there should be no relationship
between them (Runco & Chand, 1994). Eysenck (2003) argued the opposite and contended that convergent and divergent thinking are not orthogonal. Research on this question has been mixed. Charles and Runco (2001) did not find a relationship between idea generation and evaluation accuracy. Silvia (2008) though found that people who performed better at idea generation agreed more highly with expert raters in the evaluation of their own ideas. He found a similar positive effect for Openness in enhancing agreement with raters, a trait which in both Silvia (2008) and other research has been found to foster idea generation (Feist, 1998). The generalizability of Silvia’s findings is limited by the use of divergent thinking task rated on originality, with no concern for practicality. It is not surprising to find that being original and identifying originality are closely related. In real world problem solving though, originality must be paired with practicality. Despite being distinct phases with distinct cognitive processes, it remains unclear whether the things which foster idea generation will also foster idea evaluation.

To answer this question I decided to use divergent thinking as a simple and widely used measure of skill with idea generation. As mentioned earlier divergent thinking is a person’s ability to think of multiple, varied, and unique ideas (Runco & Chand, 1994) and it is the most common way of measuring idea generation. By definition divergent thinking is about being able to generate ideas high in originality (Baas et al 2008). People who score high in divergent thinking are focused on originality. It may be intentional or it may be unconscious. Regardless, those high in divergent thinking are people who generate ideas high in originality.
Divergent thinking has been measured in terms of fluency, flexibility, uniqueness and expert rated creativity scores (Baas et al, 2008). Fluency is a measure of how many ideas were generated. It is a simple count variable. Flexibility is a measure of how many different kinds of ideas were generated. For example when considering uses for a box, a list that included both “hold books” and “a stool” shows more flexibility than a list with only ideas such as “hold books,” “hold toys,” and “hold blocks.” Uniqueness is a measure of whether any other participants gave that same idea. Some research also has judges rate the creativity of each idea and then give participants scores based on average creativity rating they received, or some variation thereof. All of these measures capture originality oriented idea generation, though they fall short of measuring practicality oriented or balanced idea generation. Divergent thinking is a good way to capture originality-oriented behavior.

Given the strong link between divergent thinking and originality it reasonable to think that people higher in divergent thinking will choose ideas higher in originality when picking a best idea from a list. These people are naturally attuned to originality and will thus be inclined to choose ideas which are original. These people will also focus on originality as they go through the idea evaluation process. Originality is important to them, or at least natural to them, and so as they consider ideas they will think about originality.

\textbf{H3: Those higher in divergent thinking will choose ideas higher in originality}
H4: Those higher in divergent thinking will report higher levels of originality-focused forecasting and comparing

Risk aversion

Creativity is a risky endeavor since by definition the outcome is untested and unknown. Those who engage in the creative endeavor do not know the outcome ahead of time, and their work may or may not be creative or successful (Dewett, 2006). This means that there is an element of risk to new ideas. Ideas high in originality entail a willingness to risk failure because they are by definition new and untested. Ideas high in practicality are less risky. Highly practical ideas are ideas which are expected to work. They exist within the constraints of the situation and follow more closely from ideas that have already worked (Litchfield, 2008). Given that this is the case, it is likely that people who are averse to risk will naturally, independent of any manipulation, favor ideas higher in practicality. They avoid things that include or increase the possibility of failure (Mandrik & Bao, 2005). One of the earliest formulations of risk aversion defines it as making choices which minimize the possibility of loss (Kahneman & Tversky, 1979). In the same way, I expect that when those high in risk aversion evaluate ideas, they also will prefer ideas with the lowest potential for loss. Practical ideas are ideas which can be done, and there is much less risk of pursuing such an idea and then finding that it cannot be done or that it does not achieve the goal. When those high in risk aversion evaluate ideas they therefore look for ideas high in practicality. This also means that as they go
through the idea evaluation process they will forecast and compare based on practicality more than originality.

\textit{H5: Those higher in risk aversion will choose ideas higher in practicality}

\textit{H6: Those higher in risk aversion will report higher levels of practicality-focused forecasting and comparing}

Study 1 Methods

\textit{Participants}

Participants were workers from MTurk. MTurk is a website run by Amazon where people can be paid for small pieces of work, typically editing documents, proofreading a website, or taking surveys. MTurk has been used for research in the past (Barger et al, 2011) and the research suggests that even when participants received minimal compensation, scales have a reliability as high as if measured in a traditional setting (Buhrmester, Kwang & Gosling, 2011). Data were collected from 65 participants of whom only 55 were retained after screening the data. 5 were removed for failing to finish the survey or failing to complete important measures. 5 were removed for bizarre or inappropriate answers to the written questions.

The sample was 47.3\% male with a mean age of 30.0. The sample was 56.4\% Caucasian, and 34.5\% Asian. I did not ask about country of origin, but according to Ross
et al (2010) 57% of MTurk workers are from the US and 32% are from India, with no other nation making up more than 5%.

**Procedures**

A survey was posted to MTurk which included a link to the survey designed in Qualtrics. Participants were paid 50 cents for an average of 20 minutes of their time. This rate is similar to the amount paid by other studies (Montag, 2011) and is the highest pay rate in Buhrmester, Kwang, & Gosling (2011).

The central task of the study was the idea choice task. Participants were told that they were to assume the role of a TV producer. The instructions for the idea choice task read as follows: “For this task please imagine that you are a producer for a major television network. On the following screens you will see three lists of ideas for new TV shows submitted by aspiring writers. Your job is to choose the best idea from each list.” At the top of the page for each list it read: “Please examine the ideas listed below and choose the best idea.”

The idea choice task was the first thing that participants did. After the idea choice task they answered the self-report process questions described in the measures section. These questions were designed to measure what process they went through in choosing ideas. They also answered the individual differences (divergent thinking, risk aversion, and trait regulatory focus) questions. The individual differences measures were placed here at the end to minimize their impact on the central hypotheses of this study. After that the participants completed a few demographic questions, were thanked, and then debriefed.
Measures

*Idea Choice Task.* The major outcome variable in this study was the degree to which the participant chose ideas higher in originality rather than higher in practicality as the best idea on the list. The central task of this experiment is choosing the best idea from a list of three ideas (see appendix A for the lists). Ideas were not generated by participants but instead were standard across participants and conditions. Participants did this three times, each with entirely different lists of ideas with the order of the lists and the order of the ideas on the lists randomized. Each list contained three ideas, one high in originality but low in practicality, one low in originality but high in practicality, and one idea moderate in both originality and practicality. Participants therefore chose between favoring originality, favoring practicality, or favoring neither three times. Using three lists provided greater reliability. It also increased the potential for participants to favor either originality or practicality to some degree, unless they selected the idea moderate in both aspects every time.

The ideas used in this study came from those generated in previous research. Montag (2011) used the task of generating ideas for a new TV show, and so this study presented participants with TV show ideas to choose from. In Montag (2011) participants generated ideas and then those ideas were rated by judges on several aspects including originality and practicality. Judges gave ratings to ideas on a 1-5 scale to each aspect, which I then averaged and standardized to determine high and low levels of originality and practicality. Judges were thoroughly trained such that they produce scores of high reliability and validity. Ideas were selected for this study based on patterns of high and low scores for originality and practicality provided by the judges in Montag (2011).
was necessary to edit the ideas from Montag (2011) in order to be more consistent in length, diction, and clarity as participants in this study may have been influenced by such superfluous aspects.

The ideas were piloted to ensure that participants, who lacked the expertise of the judges in the Montag (2011) study, saw the ideas as being high and low in originality as expected. The first wave of piloting involved six people who rank ordered the nine idea according to originality and practicality. This data was inconsistent as some people ranked the same idea very differently. To fix this a couple sentences labeled as “production notes” were added which directly addressed originality and practicality, but not using those words. In the next set of pilot data, involving eleven participants, the three lists of three ideas were used and participants were asked to pick the most original, the most practical, and the best. The responses were much more consistent with expectations for each idea. The idea labeled as best varied across participants, indicating that there was no obvious best idea on a list.

While the ratings from Montag (2011) have great precision in scoring the levels of originality and practicality of an idea, since the ideas in this study have been edited, the ratings from Montag (2011) cannot be assumed to still be precisely accurate. Instead, the ideas used in this study were treated as having a simplified scoring of 3 for high in originality and low in practicality, 2 for moderate in both, and 1 for low on originality and high in practicality. Each participant saw three lists and picked one idea and these three scores were averaged to create the dependent variable. This variable therefore indicated their relative preference for ideas high in originality versus ideas high in practicality.
Process questions. The questions participants answered about the process they went through are listed in appendix B. These questions were created for this study and ask about the extent to which individuals engaged in forecasting and comparison in general and also forecasting and comparing related to originality and to practicality specifically. The first question was the following free response question: “Please describe the process you used when selecting an idea. What steps did you go through and what aspects of the ideas did you focus on?” After that participants answered the specific questions listed in appendix B. For example a general forecasting question is “I considered the advantages of each idea” while an originality forecasting question is “I considered whether the idea would be different from similar TV shows.” A general comparison question is “I ranked the ideas.” while a practicality comparison question is “I ranked all of the ideas based on how practical they were.” It was emphasized that there was no right or wrong answer and that the researcher is simply trying to understand what the participant was thinking about. Participants received six scores from these questions representing the sum of their responses to the relevant questions: general forecasting, originality forecasting, practicality forecasting, general comparison, originality comparison, and practicality comparison.

Divergent Thinking. To measure divergent thinking we asked participants to complete two divergent thinking tasks used in Plucker, Qian, and Wang (2011), but originally from Wallach and Kogan (1965): “Make a list of things that have wheels. Try to provide original ideas” and “Make a list of things that make noise. Try to provide original ideas.”
Validity is an important concern in the divergent thinking literature (Plucker & Renzulli, 1999; Silvia et al, 2008) and there has been much debate about the best way to measure divergent thinking accurately. Plucker, Qian, and Wang (2011) recently compared a number of techniques involving fluency, originality, and subjective ratings. Fluency, the number of ideas a person generated, alone showed very poor validity. The variety of subjective ratings methods Plucker et al examined also showed poor validity and a lot of confounding with fluency. The best measure that Plucker et al found involved objective uniqueness scores. Uniqueness is measured by giving a point to an idea that fewer than 20% of the sample also gave. Plucker et al found that dividing this number by the number of ideas generated produced a score that was high in reliability and validity while relatively low in correlation with fluency. This same measure of divergent thinking was used in this study. The author screened ideas for uniqueness awarding a single point for ideas which did not appear on more than 20% of participant’s lists of ideas. The sum of these points for a given participant was then divided by the total number of ideas that a participant submitted to get an overall divergent thinking score. This score was positively skewed and thus a log transformation was used to make the distribution normal. Because some people had no unique ideas, they scored a zero, which cannot be log transformed. To allow for a log transformation 0.5 was added to each divergent thinking score before applying the log transformation.

Risk Aversion. In order to measure risk aversion we used the General Risk Aversion scale from Mandrik and Bao (2005). The items are listed in appendix C. The scale asks participants to rate the questions on a scale from 1 to 7 and includes questions like “I feel comfortable improvising in new situations” and “I prefer situations that have
foreseeable outcomes.” Mandrik and Bao (2006) reported a Cronbach’s alpha of .71. In this study I had a reliability of .80. Mandrik and Bao report that the GRA has a statistically significant correlation with the Risk Aversion in Product Usage scale, which also measures the construct of risk aversion. The GRA is also correlated with intentions to engage in such behaviors as skydiving, rock climbing and gambling, but not related to theoretically unrelated behaviors such intentions to engage in jogging, biking and singing karaoke.

**Trait Regulatory Focus.** Because of the potential interaction between trait and state regulatory focus (Shah, Higgins, & Friedman, 1998) I measured trait regulatory focus and examine it as a possible moderator. Trait regulatory focus was measured using the General Regulatory Focus Measure from Lockwood, Jordan, and Kunda (2002). This is a commonly used measure of trait regulatory focus which focuses on the difference in reference point between the two foci (“gain” vs. “loss”). The reliabilities in this study for the separate foci were good (promotion α = .86, prevention α = .83). An example of a promotion question is, “I often think about the person I would ideally like to be in the future.” An example of a prevention question is, “In general, I am focused on preventing negative events in my life.” The items are listed in appendix D.

**Study 1 Results**

Before addressing the hypotheses a closer examination of the dependent variable is necessary. There were three lists of ideas and no idea was ever chosen less than 17% of
the time from a list and no idea was chosen more than 54% of the time from any list, which suggests that there were no obviously bad or obviously great ideas. When averaged across all three lists, 47.6% of the time participants chose ideas higher in practicality, 28.0% of time chose an idea balanced in both, and 24.3% of the time they chose an idea higher in originality.

To test Hypotheses 1 and 2, about whether self-report forecasting and comparison explained observed differences in idea choice I used multiple regression. To test the originality hypothesis (hypothesis 1) I tested the ability of the forecasting for originality variable and the comparison for originality variable to predict the preference for originality in the ideas the person chose. I expected forecasting and comparison to both be unique significant predictors, although it seemed possible that they might be overlapping predictors. The results were not significant (F(2,54) = 1.69, p=.19) nor was there even a simple correlation between either predictor on originality (r_{forecasting} = .03, p=.83, r_{comparison} = .20, p=.14). Thus the degree to which participants favored originality in the ideas they chose was unrelated to how much they reported forecasting or comparing based on originality.

To test the practicality-focused process hypothesis (hypothesis 2) I tested the ability of the forecasting for practicality variable and the comparison for practicality variable to predict preference for practicality in ideas choice. As with hypothesis 1, I expected forecasting and comparison to both be unique significant predictors, but they may have been overlapping predictors. The results were not significant (F(2, 54) = 1.16, p=.32) nor was there even a simple correlation between either predictor on originality (r_{forecasting} = .06, p=.65, r_{comparison} = .18, p=.19). These results are similar to hypothesis 1.
How much forecasting and comparing based on practicality the participants reported engaging in was unrelated to how much they favored practicality in the ideas they chose as the best.

To test the hypotheses regarding individual differences I performed several correlations. Hypothesis 3 was not supported since the correlation between divergent thinking and originality of ideas chosen was not significant ($r = -.094, p = .49$). Hypothesis 4 was also not supported as divergent thinking was not correlated with either originality-focused forecasting ($r = .23, p = .094$) or originality-focused comparing ($r = .17, p = .23$). Hypothesis 5 was not supported as there was no significant negative correlation between risk-aversion and originality of ideas chosen ($r = .05, p = .75$). Hypothesis 6 was also not supported as risk-aversion was not correlated with either practicality-focused forecasting ($r = .26, p = .06$) or practicality-focused comparing ($r = -.06, p = .70$).

Study 1 Discussion

_A new model of evaluation_. The results of the hypotheses regarding the natural condition, in which participants received no manipulation, showed no support for the Mumford et al. (2002) model of idea evaluation. If that model was accurate then participants should have reported using those steps in their decisions. We would have expected the questions that specifically asked about relevant forecasting and comparing to have been related to differences in the ideas that participants chose. Instead we did not find a relationship, which casts some doubt on the model. It seems that people do not
spontaneously engage in this process, though it could be a measurement problem. Self-report introspective questions do not give us the clearest measure of the process, and the lack of an effect could be the result of limitations in that methodology.

In hopes of better understanding the results I examined the written descriptions that participants gave of how they chose a best idea. It appeared that participants were often using gut feelings and intuition to choose idea, not a conscious effortful process. This would suggest that conscious or rational models are not the best models of real world human decision-making. Instead examining unconscious decision making seems the most promising direction for understanding how people choose a single best idea when given no external direction on how to evaluate ideas.

There are two relevant finding in the unconscious decision-making literature. The first is that unconscious decision-making is inferior to conscious decision-making when the problem is simple, but superior to conscious decision-making when the problem is complex (Dijksterhuis & Nordgren, 2006). Dijksterhuis and Nordgren (2006) speculate that this is due to the ability of the unconscious to consider more information simultaneously while conscious decision-making is limited to the capacity of working memory. This would suggest that participants in the natural condition of this study were making broader and deeper evaluations of the TV show ideas than could be captured by the rational, structured paradigm used in this study for categorizing ideas.

The other thing we know about unconscious decision-making is that it can expose unconscious biases. Often such research is focused on exposing racial biases (i.e. Greenwald et al., 2009). This research suggests that certain preferences can exist in the unconscious and might affect how participants in our study evaluate TV show ideas.
People who like sci-fi will rate sci-fi TV show ideas better above and beyond how original or practical the idea is. To take that idea further, participants may be evaluating ideas based on a match with an unconscious exemplar of a good TV show. So for example, people who like the show “Friends” will rate TV show ideas that are comedies with mixed-gender, single, young adults as being the best kind of TV show ideas. These possibilities will need to be addressed by future research.

The individual differences did not show any of the hypothesized effects. Those who chose ideas higher in originality were not the people higher in divergent thinking. Also, those who focused on originality in their forecasting and comparing were not the people who scored higher in divergent thinking. Similarly, those who choose ideas higher in practicality or who focused on practicality when forecasting and comparing ideas were not higher in risk-aversion.

The simplest explanation is that skill in generating ideas, such as divergent thinking, do not predict differences in how people evaluate ideas. These results suggest that they are distinct processes and may be based on distinct skills. Distinct enough that having separate sessions or separate people for brainstorming and evaluating make sense. Further research is needed on this. The other explanation is that the suggestions about unconscious decision-making discussed above may explain these results. If people were not spontaneously using the steps of the Mumford et al (2002) model, then things which should effect that model would not have an effect.
CHAPTER III

STUDY 2: DIRECTLY MANIPULATING THE IDEA EVALUATION PROCESS

Even though we did not observe people using the Mumford, Longergan and Scott (2002) model, that model may still provide a foundation for manipulating idea evaluation. The point of manipulating the idea evaluation process is not simply to confirm that process works as the model would suggest, but also because the ability to affect the process is important. Firstly, helping people to be better evaluators is valuable. As discussed above, creativity is important not just for artists, but for businesspeople and for scientists. If there is a way to get better results from the creative process then we can have a positive effect on people and organizations in a variety of fields.

More specifically, being able to shift people towards originality or towards practicality is valuable. It is valuable both because people are different, but also because situations are different. Some people are naturally more attuned to originality or practicality, as was discussed with individual difference above. These sorts of people may make errors in selecting the best idea as they weigh one factor of creativity too highly, over emphasizing originality or practicality. Techniques that will help them intentionally rebalance their evaluations will be highly valuable to them and to those they collaborate with.
The ability to shift people’s evaluation towards originality or practicality is also important because different situations have different balances of originality and practicality. In art the value of originality is greater than practicality whereas in science practicality is the more important factor. Even from task to task the relative weight may vary. For example a marketing firm may have some clients who are bold and will like an original approach, and some clients who are more conservative, and will like a more practical approach. Techniques to allow an individual or team to better respond to the relative importance of originality and practicality will be valuable.

While affecting evaluation is the goal, it is worth acknowledging that efforts to affect evaluation might fail. People may evaluate ideas based on internalized standards. Nothing that is said to them or done to them will change how they evaluate ideas. This may be active resistance or it may represent the power of individual differences again. Some people may have skills, habits, or experiences which make their idea evaluation process immune to outside influence. Based on the narrative descriptions in study 1, the problem may be that evaluation is an unconscious process, and so would not be affected by conscious manipulation. Research showing that idea evaluation can be affected would be an encouraging finding for those looking to improve or alter the creativity of themselves or their colleagues.

Affecting the Idea Evaluation Model

The Mumford et al (2002) model provides two points at which idea evaluation can be affected. One is by changing the forecasting process. If people think about the
result of implementing the idea differently, then they should choose different best ideas. The other place where idea evaluation can be affected is in the comparison process. If people compare the ideas differently, then they should end up choosing different ideas. In this study we combined both manipulations to give us the best chance of finding an effect.

Again the main kind of effect we were looking for was a preference for originality or for practicality. These are separate factors, but we have forced participants to choose between equally good ideas which favor one or the other factor. We expect that people who forecast ideas based on how original the idea would be if implemented, and compare ideas based on originality, will then favor the ideas highest in originality. If instead we have them consider how easy the idea will be to do, and compare based on that, then they will pick an idea higher in practicality.

\[ H7: \] Those who perform forecasting and comparison based on originality will choose ideas higher in originality than those who performed forecasting and comparison based on practicality.

Interaction with Individual Differences

As I mentioned before, individual differences can potentially play an important role in shaping how the process works and its outcome. We already examined how
different people might use the process differently, but different people may be more or less sensitive to being walked through the process. Individual differences are chronic orientations which the manipulation will work with or against. Research suggests that primes that are redundant with a person's chronic orientation will have a small effect (Johar, Moreau, & Schwarz, 2003; Smeesters et al. 2003). This means that in this study people high in divergent thinking, and thus already focused on originality, will be less affected by a manipulation aimed at increasing originality. They are already oriented towards originality so nothing will move them much high since they are already there. It is only for those low in divergent thinking, and thus low in a focus and faculty with originality, that the manipulation will work. The same is true for risk-aversion. Those already high in risk-aversion cannot be lead to be higher in a preference for practicality, but those low in risk-aversion will be affected.

H8: Type of processing and divergent thinking will interact to predict the originality of ideas chosen. People low on divergent thinking will be the most affected by the manipulation. (fig 1)

H9: Type of processing and risk-aversion will interact to predict the practicality of ideas chosen. People low on risk-aversion will be the most affected by the manipulation (fig 2)
Figure 1. Hypothesis 8: the interaction of the process manipulation and divergent thinking on originality

Figure 2. Hypothesis 9: the interaction of the process manipulation and risk aversion on practicality
Study 2 Methods

Participants

MTurk was utilized for this study as well. Data were collected from 59 participants of whom only 51 were retained after screening the data. 2 participants failed to finish the survey, 2 participants were removed for bizarre responding to the written questions and 4 were removed for failing to complete the priming.

The sample was 41.2% male with a mean age of 34.2. The sample was 47.1% Caucasian, and 39.2% Asian. As with study 1, the sample is older and more diverse than a typical student sample.

Procedures

Participants were randomly assigned to perform either originality-focused or practicality-focused forecasting and comparing. Participants used the same kind of forecasting and comparing for all three lists. For each list participants were shown each idea and asked to forecast that idea. For those in the originality-focused process condition they were asked: “what about this idea is different from other TV shows” and then “what about this idea is the same as other TV shows.” For those in the practicality condition they were asked: “for each idea write down ways in which the TV show is easy or cheap to produce and reasons it is likely to succeed” and “for each idea please write down any challenges or difficulties to actually producing the show and reasons it may fail.” The next screen asked participants to rank order the ideas based either on how original or how
practical they were. After this they were asked to choose the best idea from the list. After repeating this procedure for all three lists, participants completed the three manipulation check questions described in the measures section. Finally, participants completed the same individual differences measures used in study 1 and were then debriefed.

**Measures**

*Idea choice task.* The same ideas were used in this study as in study 1.

*Manipulation check questions.* All participants were asked three manipulation check questions. It was emphasized that there was no right or wrong answer and that the researcher was simply trying to understand what the participant was thinking about. The first question asked participants to indicate where on a continuum between two opposing statements they fell. The statements used were: “I considered ideas based on their uniqueness – I considered ideas based on their usefulness.” These were followed by two Likert scale items. “To what extent did you focus on choosing an idea high in originality?” and “to what extent did you focus on choosing an idea high in practicality?” This measure was scored by reverse coding the Likert item asking about originality and averaging the scores. This score is a preference for practicality orientation.

*Individual differences.* The same measures were used for divergent thinking, risk-aversion (α = .60) and trait regulatory focus (promotion α = .81; prevention α = .85) as were used in study 1.
Study 2 Results

Before addressing the hypotheses a closer examination of the dependent variable is necessary. Averaged across all three lists, those in the originality process condition most often picked the idea highest in originality (44.1%) and those in the practicality condition chose the idea that was a moderate balance of both aspects (47.8%). This is not quite as expected for the practicality condition, but they were the least likely to choose the ideas highest in originality (18.8%).

Before examining the experimental hypothesis it is also important to examine whether there is evidence of the manipulations working. Based on questions asked at the end of the study, it seems that the process manipulation worked; participants in different conditions reported different degrees of emphasis on originality (t (49) = 2.45, p=.018) and in the expected direction (-.45 vs. -1.05).

To answer Hypothesis 7 I used a t-test to look at the ability of process condition (originality-focused vs. practicality-focus) to predict differences in preference for originality in idea choices. I expected that those who went through the originality-focused process would choose ideas higher in originality, which is what I found (t (49) = 2.08, p=.04). The mean originality of the originality focused group was 2.10 and the mean of the practicality focused group was 1.80. This indicates that those in the originality-focused group did choose ideas higher in originality.

To test hypothesis 8 I ran a moderated regression using divergent thinking, process condition, and their interaction to predict preference for originality in idea choices. The interaction model was statistically significant (F (3, 50) =5.53, p=.002), as
was the interaction term (b = 3.64, p = .03). Centering divergent thinking and the condition variables yielded no main effects. The graph of the interaction is in figure 3, and shows that for those low in divergent thinking the process had a large effect in raising or lowering the originality of the ideas they chose. For those high in divergent thinking, the process had a smaller but opposite effect. For those high in divergent thinking, practicality focused processing raised the originality of the ideas the person chose and vice versa.

![Figure 3](image-url)

Figure 3. The observed interaction of training and divergent thinking on originality of ideas chosen.

To test hypothesis 9 I ran a moderated regression using risk aversion, process condition, and their interaction to predict preference for originality in idea choices. The interaction model was not statistically significant (F (3, 50) = 1.39, p = .26), and the interaction term looked more like it was diluting the predictive power of the model.
Study 2 Discussion

Even though the underlying model of evaluation was not supported in study 1, the manipulations used in study 2 did have an effect. Walking participants through different questions before having them evaluate ideas did affect their choice of ideas. Answering questions about how original or unoriginal the ideas were lead participants to choose the ideas higher in originality. Answering questions about how practical or impractical an idea was lead participants to choose ideas lower in originality than those asked to focus on originality. While this result sounds obvious in retrospect, it was possible that people’s evaluations were built on internalized standards that could not be easily influenced or that such questions might be intentionally counterbalanced by the person to keep them from making an extreme decision.

These findings suggest that managers can have an effect on how their innovative workers evaluate ideas. The effect is apparent even without directly stating that originality or practicality is of highest importance. It is possible to lead them to focus on increasing the originality or on increasing the practicality of the idea they choose to pursue. This can be useful with individuals who balance originality and practicality differently than is ideal for the current task. This study suggests that managers can shape their employees evaluations by asking the right questions.

It would have made sense if practicality-focused manipulation had lowered the preference for originality in people’s choices, but instead both the originality and the practicality focused groups have a higher originality of idea choice than the study 1 mean
preference for originality. Only the originality-focused condition is statistically significantly higher than the study 1 mean, and in fact it probably makes the most sense to think about the practicality-focused condition’s mean as being about equal with the study 1 data. Still, it is surprising that the practicality-focused process did not lower the originality of idea choice. The simplest explanation is that the practicality oriented process did not actually lead to any changes in the way the person was evaluating. They answered the questions, but still used their normal evaluation rules or unconscious processing to evaluate the ideas. Another explanation is that people by default evaluate ideas in a way that favors practicality.

*Moderating effect of divergent thinking.* Remember that in this study divergent thinking is representing a person’s skill with creativity, specifically their ability to generate original ideas. The results indicate that for those low in divergent thinking changes in the process have a strong effect. Having these less creative people answer questions about the originality of the ideas leads them to evaluate ideas based on originality. Having them answer practicality questions leads them to evaluate ideas based on practicality. This means that people low in divergent thinking can grasp the key aspects of ideas and effectively evaluate them based on criteria implicit in the questions they are asked. This suggests that managers can help guide employees lower in divergent thinking to choose ideas higher in originality or practicality.

For those high in divergent thinking, the training seems to have had no effect or maybe even the opposite effect since the graph of the interaction shows a crossover near the high end of divergent thinking. If we consider there to be no true effect, and the crossover is the result of random chance, then the interpretation is simple. Those higher in
divergent thinking, the people we would generally think of as highly creative, cannot be influenced by the questions we ask them before making an evaluation. This immunity to direct manipulation may be because these kinds of people already consider the originality and practicality of the ideas and so the questions do not activate different kinds of thinking about the ideas. Their immunity to the manipulation might instead or in addition be the result of highly rigid internal standards for evaluation which an indirect effect like leading questions cannot overcome.

If we consider the crossover in the interaction to be something real, then we have a harder time understanding the results. Here are three possible explanations, all of which would require further research to feel any confidence in. One explanation is that the manipulation may be having an effect, but for those high in divergent thinking it is a different one than I expected. Perhaps the manipulation is too simplistic and triggers different thoughts and processes in high divergent thinking individuals than I intended. Perhaps they saw in the questions something different than I intended or processed the questions differently than those low in divergent thinking. Their mental model for how to evaluate ideas may not match the framework that I used, leading to the difficulty in explaining their results.

Another explanation along those lines is that individuals high in divergent thinking are overcorrecting for the effect of the manipulation. They feel the pressure exerted by the process to favor one aspect of evaluation and they compensate in the opposite direction. This may be a natural skill of high divergent thinking individuals who are more aware of the pull towards too much originality or too much practicality. They
may have learned to correct for these forces in their own thinking and so continue to correct for them when they evaluate other people’s ideas.

The third explanation is that those high in divergent thinking see the ideas on the list differently than I intended. My paradigm for writing and scoring the ideas is a fairly simple one, and high divergent thinking individuals may see complex factors that differentiate the ideas differently than I scored them. They are choosing ideas based on a more nuanced understanding of the ideas or based on factors I did not consider.
CHAPTER IV

STUDY 3: INDIRECTLY MANIPULATING THE IDEA EVALUATION PROCESS THROUGH REGULATORY FOCUS

Study 2 yielded some favorable results in regards to manipulating idea evaluation. It seems that going through a different process does lead to different decisions. This raises an interesting possibility. If we can intentionally and consciously affect idea evaluation, can we also indirectly and unconsciously affect it? Most relevant is whether there might aspects of the context or environment which affect idea evaluation. As mentioned earlier, Runco (2007) identified “place” as one of the major kinds of creativity research. Place research is interested in the way environment affects creativity. For example Amabile (1983) identifies three major work context factors: organizational motivation to innovate, resources, and management practices. Woodman, Sawyer, and Griffin (1993) focus on two kinds of environmental effects: group characteristics and organizational characteristics.

Specific to idea evaluation there is much less research on the effect of environment. One good example is Blair and Mumford (2007) who examined participant’s evaluation of ideas which could be funded by a fictitious foundation. When acting as the funding agency, participants chose ideas which were consistent with
existing social norms and provided short term benefits to many. They avoided ideas that were risky or original. Only when the evaluation criteria were relaxed and time pressure was higher did people favor riskier and more original ideas. The ideas did not change, nor was the process explicitly changed, but simply by change the goals and the external forces people’s evaluations changed. The current study takes a similar goal-oriented approach, but instead uses regulatory focus to produce a change in idea evaluation.

Regulatory focus describes how people view their goals in one of two ways: either with a promotion focus or prevention focus (Brockner & Higgins, 2001; Higgins, 1997). A person with a promotion focus sees a goal as an ideal state to be achieved. Success for them leads to cheerfulness and failure leads to dejection. A person with a prevention focus views a goal as an ought state where failure to reach the goal must be avoided. Success for them leads to contentment and failure to agitation. Regulatory focus can be a chronic trait but it can also be a temporary state. The effect of the momentary state is of greater interest in this study.

Crowe and Higgins (1997) found that those with a promotion focus attempted to assure success and avoid oversight. They are more concerned with avoiding errors of omission than making errors of commission. They produced more possible solutions in hopes of including a good one, with less worry about including bad ones. Bryant and Dunford (2008) reframe the contrast in terms of risk. They describe promotion oriented people as more willing to risk doing the wrong thing if it increases their chances of doing the right thing as well. A promotion focus fosters the optimism needed to list ideas of uncertain quality, ideas which fewer people will have thought of.
While for creativity in general a promotion focus is seen as best (Baas, DeDreu, & Nijstad, 2008) for idea evaluation specifically it might have some limitations. The optimism and loose thinking produced by a promotion focus may mean more lax evaluation. This can be seen in Lam and Chiu (2002) when promotion individuals rated their ideas more highly than prevention individuals when in fact there was no difference in expert ratings. Herman & Reiter-Palmon (2011) found that those higher in promotion were better at recognizing how original their ideas were, but worse at identifying how practical their ideas were.

The research on regulatory focus is suggestive of the likely difference in the evaluation process between promotion and prevention individuals. Promotion people are concerned with finding ideas that are high reward, and are less concerned with excluding low-reward ideas (Bryant & Dunford, 2008). They are willing to risk including poor ideas if it increases their chances of including a great idea. Original ideas are high reward (Lubart & Sternberg, 1995) and so promotion people will value those kinds of ideas. Since promotion individuals value highly original ideas, and are good at identifying them (Herman & Reiter-Palmon, 2011), then I expect that they will choose ideas higher in originality.

The research on prevention focus is also suggestive. Crowe and Higgins (1997) found that those with a prevention focus tried to avoid errors and reject incorrect responses. They provided fewer responses in hopes of avoiding including any bad responses. Prevention focused individuals are motivated to avoid errors of commission. They are not willing to risk doing the wrong thing even if it means a better chance of doing the right thing (Crowe & Higgins, 1997). Prevention people want to avoid loss and
so they seek risks that might bring non-loss and avoid risks that might bring loss (Bryant & Dunford, 2008). The effect is not a straightforward as prevention orientation being the same as risk-aversion; rather, prevention focus is risk-aversion to loss.

Herman & Reiter-Palmon (2011) found that those higher in prevention were better at recognizing how practical their ideas were, but worse at identifying how original their ideas were. Prevention oriented people look for ideas which provide decreased risk of loss and are less concerned about chances for gain (Bryant & Dunford, 2008). Practical ideas are low risk, and thus desirable to prevention oriented people. Prevention people value practicality highly, are good at identifying it (Herman & Reiter-Palmon, 2011), and therefore will choose as the best idea an idea that is high in practicality

*H10: Those in the promotion condition will choose ideas higher in originality than those in the prevention condition.*

Interaction with Individual Differences

Again, we must consider the role of individual differences in shaping how the manipulation will affect people. We already examined how different people might use the process differently and how the process manipulation might affect people differently. Individual differences are chronic orientations which the manipulation will work with or against. Priming people in a way that matches how they already are will have only a small effect (Johar, Moreau, & Schwarz 2003, Smeesters et al. 2002). This means that in
this study people high in divergent thinking, and thus already focused on originality, will be less affected by a manipulation aimed at increasing originality like a promotion regulatory focus prime. They are already oriented towards originality so nothing will move them much high since they are already there. It is only for those low in divergent thinking, and thus low in a focus and faculty with originality, that the manipulation will work. The same is true for risk-aversion. Those already high in risk-aversion cannot be lead to be higher in a preference for practicality, but those low in risk-aversion will be affected.

*H11: The regulatory focus prime and divergent thinking will interact to predict the originality of ideas chosen. People low on divergent thinking will be the most affected by the manipulation. (fig 4)*

*H12: The regulatory focus prime and risk-aversion will interact to predict the practicality of ideas chosen. People low on risk-aversion will be the most affected by the manipulation (fig 5)*
Figure 4 Hypothesis 11: the interaction of regulatory focus and divergent thinking on originality

Figure 5. Hypothesis 12: the interaction of regulatory focus and risk aversion on practicality
Study 3 Methods

Participants

MTurk was utilized for this study as well. Data were collected from 83 participants of which only 70 were retained after screening the data. Four participants failed to complete the survey and another two participants failed to complete the dependent variable and were removed. Seven participants were removed for bizarre or inappropriate responding.

The sample was 62.9% male with a mean age of 32.4. The sample was 45.7% Caucasian, and 42.9% Asian. As with study 1 and 2, the sample is older and more diverse than a typical student sample.

Procedures

Regulatory focus was manipulated in several ways. The first way was in the directions about the task. When told to assume the role of a TV producer those in the promotion condition were told that they worked for a successful network “looking to continue its success by producing more high quality shows.” Those in the prevention condition were told they worked at a failing TV network “looking to end its failures by not producing any low quality shows.” The primary manipulation was a writing task adapted from Galinsky, et al. (2005). Participants were asked as part of their role as a television producer, to write one of two lists in preparation for evaluating TV show ideas. As this is an online study they wrote into a textbox in the survey which I reviewed later for compliance. Those in the promotion condition were told, “Spend a couple minutes
writing down your goals as a TV producer in reviewing TV show ideas. What are the outcomes that you want to achieve in reviewing TV show ideas. How can you promote these outcomes?” Those in the prevention condition were told, “Spend a couple minutes writing down your obligations as a TV producer in reviewing TV show ideas. What are the outcomes that you need to avoid in reviewing TV show ideas. How can you prevent these outcomes?” for both conditions a couple of goals were already provided to guide and prompt participant responses. The instructions given for the idea evaluation task also reinforced the manipulation of regulatory focus. Those in the promotion condition were told as part of their instructions at the top of each list, “Please identify the best television show idea from each of the following lists in order to reach your goals as a television producer.” Those in the prevention condition were told, “Please identify the best television show idea from each of the following lists in order to avoid failing to meet your obligations as a television producer.”

After this they were asked to choose the best idea. After going through all three lists, participants completed the three manipulation check questions described in the measures section. Finally, participants completed the same individual differences measures used in study 1 and 2 before being debriefed.

**Measures**

*Idea choice task.* The same ideas were used in this study as in study 1.

*Manipulation check questions.* All participants were asked three manipulation check questions. It was emphasized that there is no right or wrong answer and that the researcher is simply trying to understand what the participant was thinking about. The
first question asked participants to indicate where on a continuum between two opposing statements they fell. The following statements were used: “I focused on choosing an idea that would be successful – I focused on choosing an idea that would not be a failure.” These were followed by two Likert scale items. “To what extent did you focus on choosing an idea that would be successful?” and “to what extent did you focus on choosing an idea that would not be a failure?” This measure was scored by reverse coding the Likert item asking about success and averaging the scores. This score is a preference for prevention orientation.

*Individual differences.* The same measures were used for divergent thinking, risk-aversion ($\alpha = .64$), and trait regulatory focus (promotion $\alpha = .84$; prevention $\alpha = .89$) as were used in study 1.

**Study 3 Results**

Before addressing the hypotheses a closer examination of the dependent variable is necessary. Averaged across all three list, those in the promotion prime condition most often picked the idea balanced between originality and practicality (37.7%) and those in the prevention prime condition chose the idea that was a higher in practicality (45.3%). This is not quite as expected for the promotion prime condition as they showed no strong preference for any kind of ideas. Compared with the data from study 1, the promotion group chose the high practicality idea less often (32.5% vs 47.6%) and the high originality idea more often (29.8% vs 24.3%), which is the expected pattern.
Before examining the experimental hypothesis it is important to examine whether there is evidence of the manipulations working. The regulatory focus prime did not seem to work; participants in different groups reported no preference for promotion oriented decision-making ($t(67) = 1.40, p = .17$). The manipulation check items for regulatory focus were examined through a reliability analysis to determine if there one of the questions was poor. The alpha was .60 and the item with the lowest correlation with the scale was the item asking if they focused on avoiding failure. Removing that item would only give a small boost to the alpha of .03. When means and variance were examined for each item it was clear that participants only used the upper end of the scale for the question asking if they focused on success. Perhaps the regulatory focus prime was so subtle that participants were not consciously aware of thinking in a promotion or prevention way. Another possibility is that the effect of the manipulation was not primarily about regulatory focus but was about something else, such as fear-of-failure or risk-aversion.

To test hypothesis 10 I used a t-test of the ability of regulatory focus group (promotion prime vs. prevention prime) to predict preference for originality of ideas chosen. I expected that those in the promotion group would choose ideas higher in originality. This is the pattern I found ($t(68) = 2.63, p = .01$). The mean originality of the promotion group was 1.95 and the mean originality of the prevention primed group was 1.64. This indicates that those in the promotion group did chose ideas higher in originality. This cannot be explained simply by differences in chronic regulatory focus between the conditions as there were none ($t(66) = .305, p = .76$).
To test hypothesis 11 I ran a moderated regression using divergent thinking, regulatory focus condition, and their interaction to predict preference for originality of ideas chosen. The interaction model was statistically significant (F (3, 69) = 3.26, p=.03), but the interaction term was not significant (b=.804, p= .42). The statistical significance of the model appeared to come only from the strong effect of the regulatory focus prime.

To test hypothesis 12 I ran a moderated regression using risk aversion, regulatory focus condition, and their interaction to predict mean preference for originality of ideas chosen. The interaction model was statistically significant (F (3, 67) = 3.00, p= .04), but the interaction term was not significant (b=.215, p= .30). As before, the statistical significance of the model appeared to come only from the strong effect of the regulatory focus prime.

Study 3 Discussion

Regulatory Focus manipulation. The regulatory focus manipulation did have the hypothesized effect, though it is unclear if the manipulation truly was of regulatory focus. Those with a promotion prime chose ideas higher in originality and those with a prevention prime chose ideas higher in practicality. The prevention condition is the only condition with a mean originality lower than the study 1 sample, who received no manipulation, though the difference in means was not statistically significant (t(73)=−.382, p=.704). Regulatory focus was used in this study to demonstrate how contextualizing the goal affects idea evaluation. The results do support the idea that
simply how goals are framed can affect how people make evaluations, even if the frame in this study was not clearly of regulatory focus. If people are in a setting where they are trying to maximize success, then they will evaluate ideas in favor of originality. If people are in a setting where they are trying to avoid failure, they will evaluate idea in favor of practicality. This indicates that how a company is doing can have an effect on what ideas employees choose to pursue. It also suggests that manager or team attitudes can have an effect.

The best framework for understanding these results is the differences in risks and rewards between types of regulatory focus mentioned in the literature review. Those with a promotion prime were more willing to risk gaining something rewarding, which original ideas are (Lubart & Sternberg, 1995), while those with a prevention focus were less willing to risk making a bad decision, which an impractical idea would be. When participants were told that the company was doing well and they should reach their goals they were willing to choose more original ideas. When participants were told that things were not going well and they should avoid bad ideas they were less willing to choose more original ideas. They chose ideas that they believed would provide safe success.

Another explanation is that a promotion focus might result in broader cognitive activation. Those with a promotion focus have a more global, inclusive and flexible style of thinking (Forster & Dannenberg, 2010). The positive mood allows for more activation of the neural network allowing for improved search and better performance on associative tasks (Isen, Daubman, & Nowicki, 1987). The positive effects of a promotion focus are most apparent on tasks that rely on cognitive flexibility (Baas, DeDreu, & Nijstad, 2008). Those with a promotion focus are therefore better able to consider
original ideas, while those without a promotion focus will have trouble processing original ideas due to more restrictive and narrow thinking. Those with a prevention focus would have trouble grasping an original idea fully since the idea would not be able to trigger as broad an activation in their neural network. This explanation is highly speculative, and requires intentional study, but it does fit the literature.
CHAPTER V

SUMMARY

To better explore the pattern of the data I ran an ANOVA looking at differences in originality of ideas chosen across the five conditions in this study. The ANOVA was statistically significant (F (4,175) = 4.42, p=.002) and so post-hoc tests were run to determine which groups differed. The means are plotted in figure 6. The results indicated that the originality process group (M= 2.10) was different from both the natural condition (M= 1.75) and from the prevention condition (M= 1.65). No other statistically significant differences were found using the alpha correction provided by the Tukey test, though the use of least-square differences for post-hoc tests reveals all of the differences reported above for hypotheses 7 and 10. The pattern apparent in figure 6 is that the natural, practicality, and prevention condition are about the same, while originality and promotion conditions are higher in originality. This suggests that people naturally evaluate ideas in a practicality-oriented way. It is worth noting that the prevention condition is the only condition lower in originality than the natural condition and not by much.
This study revealed a number of important finding related to how people evaluate their ideas. In the first study I examined whether people spontaneously made use of the model proposed by Mumford et al (2002). After they evaluated the ideas I asked them to report the process they went through. No evidence was found for the Mumford et al model, which may be due the weakness of a self-report study or it may indicate that the model needs to be revised. A closer look at the data suggested that perhaps participants were using unconscious processing or prototype matching to pick TV shows, not a rational multi-stage model like Mumford et al.’s. This possibility merits further study. If idea evaluation is an unconscious process, then it has a different set of strengths and weaknesses than if it is conscious process. It could be enhanced or affected in different ways.
In study 1 I also examined the role that individual differences might play in idea evaluation. Unfortunately, the individual differences of divergent thinking and risk-aversion used in this study failed to explain differences in participant’s choices of the best idea. The failure of divergent thinking to predict differences in evaluation is another piece of evidence suggesting that skill with idea generation is unrelated to skill with idea evaluation. It seems that generation and evaluation are different skills which different people are good at.

While the results of study 1 were not favorable for the Mumford et al. (2002) model, I continued to rely on the model to form manipulations that I expected to affect people’s idea evaluation. In the second study I sought to directly affect people’s choices by having them think through the Mumford et al. (2002) process model in different ways. Some went through the model focused on originality and other focused on practicality. This did have an effect. Participants lead to think about originality chose ideas higher in originality, and the same with practicality. This means that people can be lead to evaluate ideas different, just based on the process they are lead through. Getting people to think differently about ideas is as simple as guiding them through the questions that are most relevant. There is no need to be heavy-handed or directive. The results of study 2 also showed that the effect was most noticeable for those who were low in divergent thinking. People without a natural skill in coming up with ideas were the most affected by changes to the process. Those higher in divergent thinking are much harder to affect, perhaps because they have an internalized standard for creativity or resist attempts to unbalance the creative process.
In the third study I examined the potential of the context to affect people’s idea evaluation. Using regulatory focus primes I was able to produce differences in people’s choices. Participants told to achieve success picked ideas higher in originality. Participants told to avoid failure picked ideas higher in practicality. Individual differences did not have an effect on this relationship. The implication is that context matters. People will choose different ideas at an organization that is struggling, and therefore is striving to avoid failure, than at an organization that is doing well, and therefore is seeking to achieve success.

Limitations and Future Research

One of the first issues to discuss is the sample. The MTurk sample is not like the student sample used in much of the creativity literature. The participants from MTurk were much more like average adults in age with a mean in the lower thirties and were much closer to evenly balanced in gender, even favoring males slightly. This means that my results should better represent typical adult processes and behaviors.

The ethnic profile of my sample was closer to global racial proportions rather than US proportions. This is most obvious in the proportion of Asians in my sample. Determining global race categories is difficult, but 60.3% of the world’s population lives in Asia (Population Reference Bureau, 2013), while Asians only make up 5.1% of the US population (Census Bureau, 2014). The proportion of Asians in my study, 39.7%, is closer to the global rather than the US proportions. There is not an apparent reason to
think that this high representation of Asians should affect the results, but in order to be cautious I tested it by performing a two way ANOVA using ethnicity and condition as predictors. Ethnicity was not significant, nor was the interaction, making me confident that ethnicity had no impact on the results. For this reason I feel confident using the whole sample. Future research using MTurk should be mindful of the international nature of MTurk workers and better capture the diversity of race and country of origin.

One limitation is that a web survey is different from the actual behavior of people in creativity oriented jobs or working on creativity oriented tasks. While this study exposes some of the underlying mechanics, further research is needed within the context of a work setting. The control that I gained from doing a survey is not typical of the workplace where many factors affect motivation, regulatory focus, and sensitivity to context cues.

Participant’s choice of a best idea had low stakes in this web survey, but in a job setting it has much higher stakes. This may heighten the effect of the manipulations or it might cause a shift downward in the originality of the ideas that all people would choose. Future research should examine the effect that larger consequences have on idea evaluation.

Another limitation is that using TV shows may be dissimilar to other kinds of creative products. People may evaluate the creativity of advertising or of a kitchen gadget differently than they do a TV show idea. One area of interest is scientific or engineering idea evaluation, which is very different from evaluating TV shows, and may be an area where there exists a high preference for practicality which is hard to reduce in favor of
originality. Replication of this study across different creative domains, especially the R&D context, would help determine how consistent these priming effects are.

People are often evaluating their own ideas in the real world, not a list given to them. The typical model of creativity involves first generating ideas and then evaluating them. When people evaluate their own ideas they are prone to a number of biases such as having an emotional attachment to an idea, weighing an idea based on how much work they put into it, or valuing aspects of the process more than the resulting idea. Replicating this research with the participants generating their own ideas before evaluating them will provide valuable insight into real-world idea evaluation.

The non-significant results for the natural condition mean that a new model of naturally occurring idea evaluation may be warranted. I proposed some ideas in this paper, but that model, or others, must be tested.

We need to better understand how people actually evaluate ideas, not just for scientific completeness, but because the purpose of creativity is not simply to have new ideas, but to find solutions to problems. A solution is more than a new idea, it is an idea that works, and knowing when you have a workable ideas is an important skill. Organizations involved in innovation have a lot to gain from understanding how idea evaluation works, who is good at it, and how it can be changed or enhanced. This knowledge will help them hire the best kind of people, train their current employees better, and manage their employees in ways that enhance both the originality and practicality of the organization’s products.
REFERENCES


APPENDIX A

IDEAS USED IN THE IDEA CHOICE TASK

List 1:

(High originality, low practicality) An engineering firm develops a powerful rail gun and during a test it accidentally shoots the moon which is actually made of cheese. The show will follow the engineering firm's attempts to harvest the cheese and bring it back to earth. There will also be a character played by Samuel L. Jackson who works for the engineering firm and is trying to convince the world that cheese is the basis of the world economy. The show essentially is based on how cheese is actually central to our everyday life in unusual and comedic ways. PRODUCTION NOTES: Highly unique concept, but I’m not sure who would watch it. It will be hard to get Samuel L. Jackson and we will need a large special effects budget.

(Moderate originality, moderate practicality) Our fashion designer (single trendy, 25 years old, and striking) has been asked to create a suit for the Prince of Wales for an upcoming glitzy charity gala. She flies to England, meets the prince (who is a flirty playboy), and engages in the royal social scene while designing killer clothes. Fame and fashion go hand-in-hand, and there are so many angles to work from. Celebrities,
politicians, you name it! The designer would also have a team of people working under her, and they could be explored for story lines as well. There is a lot of room for an interesting love life and career progression. PRODUCTION NOTES: Decent concept that hasn’t really been done before, but similar enough to other shows to expect success. Budget is a bit of a problem with the locations and the wardrobe.

(Low originality, high practicality) A group of about 6 interesting medical and surgical residents with strong personalities of different types would be chosen. They would be real physicians in training. They would have either hidden cameras mounted on themselves or there would be a camera operator filming them, depending on the situation. Some would be exciting sequences happening in real time. Other parts would be the doctor speaking with a patient, or just speaking to the camera. It would intertwine the story lines and go from one to another to keep the viewer interested. It would often be very exciting, heart wrenching, eye-opening, shocking, hopeful, and realistic. PRODUCTION NOTES: medical shows are not that unique, but a character-driven documentary is a nice change. Reality TV is cheap to make and popular.

List 2

(High originality, low practicality) So there is a group of friends and each decides to study abroad in a different country (like Europe, China, India, South America) except one stays in America. Each episode would depict the different lifestyles of the friends. They would show their new friends, new school, and travels. Of course there would be drama amongst the friends (communication, relationships, etc.). This show would promote
studying abroad. How cool would it be to see the world in a TV show, with college students, and drama of course. PRODUCTION NOTES: A show about studying abroad is a pretty new idea. It’s not clear if it will hold people’s attention though. The locations and local events will raise the budget a lot as well.

(Moderate originality, moderate practicality) It could be about two wealthy twin sisters who are from the Midwest, and separate in college, one goes to the west coast (Pepperdine) the other one goes to the East Coast (Brown). It could show how the people in America from different coasts live differently. I feel like our popular culture is really obsessed with the coasts and their glamorous lifestyles are interesting to modern America. The girls would have to adapt and would deal with typical college drama, people abusing prescription drugs to pull all-nighters for finals, eating disorders with sorority girls, sex scandals, pressures to succeed etc. PRODUCTION NOTES: The idea of sisters at different schools is not extremely unique, but it is a new idea. Have two locations does raise the budget a little.

(Low originality, high practicality) Two students met at college. The girl is poor, working class, the boy from one of the richest families in the US. They fall in love. But what they do not know is they were switched in the hospital and actually the girl is rich. There was a reason for the switch too. A mystery connects the two families. Someone got killed who knows about the secret. This is a good TV show idea because it is entertaining and the story can go on for years and years. People like mysteries. PRODUCTION NOTES:
Switched at birth is not a new idea. People do like these shows though where there is a mystery. Show set on college campus will have an average budget.

**List 3**

*(High originality, low practicality)* Think "Extras" meets "Rosencrantz and Guildenstern are Dead." The show will be a 60-minute, high-concept weekly dramedy. A repertory company of actors presents Shakespeare's plays. The action focuses on the offstage lives of key company members, both in interaction w/weekly guest stars (who are playing Shakespearean roles) and amongst themselves. Their off stage lives mirror the events of the play they are performing. Approximately 6-8 actor regular ensemble. Develop overlapping story arcs in order to maximize the number of plays available (Shakespeare only wrote about 28). There would be opportunities for full Shakespearean scene performances by regulars and guest stars (minimum 1 per episode). PRODUCTION NOTES: I’ve not seen a TV show based on Shakespeare before, maybe because no one would watch it. It needs a large budget for the costumes and sets. Getting guest stars might be difficult.

*(Moderate originality, moderate practicality)* “College Life”: A group of high school friends attend the same college. Both dramatic and comical situations arise as they attempt to adapt to college life together. There are a lot of events in college that will make good TV. The show will be about making friends, losing friends, romance, fear, hope and disappointment. Pilot: Group of friends embark on their first week away at college (large university setting). Episode includes attending first classes, home football
game, and first college parties. Episode will attempt to establish university setting, give viewers initial idea of main characters personalities, and introduce some side characters.

PRODUCTION NOTES: Doesn’t really break new ground, but college life shows are popular. Reasonable budget, no real production hurdles.

(*Low originality, high practicality*) A Human Resources department in a university setting is hilarious, political, somewhat psychotic, and a great place to deal with people. It is someone's first day on the job in HR. She is in her 20's, fresh out of college, still naive to the way life is. A middle age employee starts harassing her, but when she reports it she finds out that the college president hired the man and so HR cannot do anything to stop his sexual harassment and cannot fire him. It will just go into what the girl is thinking about her first day, and really make fun of the political aspect of the situation.

PRODUCTION NOTES: A work place comedy is not unique, but these kinds of shows are still popular. Budget should be average.
APPENDIX B

SELF REPORT PROCESS QUESTIONS

Please write in the box below the process you used when selecting an idea. What steps did you go through and what aspects of the ideas did you focus on? There are no right or wrong answers, so please be honest. We are only interested in what you were thinking about when you made your decision on the previous screen.

Please rate each of the following activities on a 1-5 scale. 1 indicates that you did not engage in the activity at all, 3 indicates you did engage in that activity, but not for every idea or not thoroughly, 5 indicates that you completely and thoroughly engaged in that activity.

**Forecasting**

*General*

I considered the advantages of each idea

I considered the disadvantages of each idea

I considered positive outcomes if the ideas were implemented
I considered negative outcomes if the ideas were implemented

**Originality**

I considered how unique the idea would be

I considered whether the idea would be different from similar TV shows

**Practicality**

I considered how easily the idea could be implemented

I considered whether the idea would be hard to do

**Comparison**

**General**

I rated each idea in my mind

I ranked the ideas

I compared each idea against all of the other ideas

I compared each idea against the standards I had

**Originality**
I rated each idea on how original it was

I ranked the ideas based on how original they were

*Practicality*

I rated each idea on how practical it was

I ranked the ideas based on how practical they were
APPENDIX C

RISK AVERSION QUESTIONNAIRE FROM MANDRIK AND BAO (2005)

*General Risk Aversion Scale* (From 1= “Strongly Agree” to 7= “Strongly Disagree”)

1. I do not feel comfortable about taking chances.

2. I prefer situations that have foreseeable outcomes.

3. Before I make a decision, I like to be absolutely sure how things will turn out.

4. I avoid situations that have uncertain outcomes.

5. I feel comfortable improvising in new situations.

6. I feel nervous when I have to make decisions in uncertain situations.
APPENDIX D

ITEMS FROM THE GENERAL REGULATORY FOCUS MEASURE FROM LOCKWOOD, JORDAN, AND KUNDA (2002)

Promotion/Prevention Scale

Using the scale below, please write the appropriate number in the blank beside each item.

1  2  3  4  5  6  7  8  9

Not at all true        Very true of me
of me               of me

1. In general, I am focused on preventing negative events in my life.
2. I am anxious that I will fall short of my responsibilities and obligations.
3. I frequently imagine how I will achieve my hopes and aspirations.
4. I often think about the person I am afraid I might become in the future.
5. I often think about the person I would ideally like to be in the future.
6. I typically focus on the success I hope to achieve in the future.
7. I often worry that I will fail to accomplish my academic goals.
8. I often think about how I will achieve academic success.

9. I often imagine myself experiencing bad things that I fear might happen to me.

10. I frequently think about how I can prevent failures in my life.

11. I am more oriented toward preventing losses than I am toward achieving gains.

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

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

14. I see myself as someone who is primarily striving to reach my “ideal self”—to fulfill my hopes, wishes, and aspirations.

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

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

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

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