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Process Information and Creative Mindsets: An Examination of Their Role in the Evaluation of Creativity

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Dedicated to my beautiful wife, Vicky, and the squirrel hunter, Pepper.

ABSTRACT OF THE DISSERTATION

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Evaluating creativity is a key role for any organization interested in innovation and how that evaluation occurs has been a focal point of researchers. Although creativity scholars have made strides in understanding creativity evaluations, questions remain about the role that process information plays in the evaluation. While most creativity research involves some type of outcome, such as an idea or product, the evaluators often have no description of the creator's work process or any understanding of the idea or product's creation. In this dissertation, I build upon the existing evaluation literature and critically examine how process information may influence the evaluation of an outcome's creativity. In doing so, I investigate narratives of both iteration and insight process information, both of which are representative of creative work and likely to influence an evaluator's perception. I validated materials to manipulate the narratives of creative process information and conducted an experimental study to determine how they affected perceptions of creativity. In doing so, I also considered the role of an evaluator's growth creative mindset and how evaluators may differentially interpret and perceive the process information and final product depending on their mindset. The results offer some support that an evaluator's growth creative mindset matters for creativity evaluations, but the findings do not support the interaction effect hypotheses between an evaluator's growth creative mindset and process information on a product's perceived creativity. Post-hoc analyses suggest that the effects of growth creative mindset occur predominantly via the utility of the product, while not

affecting the perceived novelty. Post-hoc analyses also found a significantly negative effect of iteration process information on a product's perceived utility. This dissertation has implications for any creators who need to discuss or describe their work to potential evaluators like colleagues or managers, as well as for researchers interested in understanding more about the multi-faceted nature of creative evaluations. The implications of this work also has the potential to increase in relevance as work from home policies and organizational norms change in a Post-Pandemic world where individuals have more autonomy and control about what others see and know about their work process.

Chapter 1: Introduction

While research on creativity has burgeoned in the years since Guilford's call to action at the 1950 APA conference, we are still learning how individuals evaluate creativity (J. P. Guilford, 1950). Evaluation plays a key part in organizational innovation serving as the connection between the generation of ideas and their implementation, as well as a means to try and determine the quality and creativity of new products, ideas, services, or ventures (M. Baer, 2012; Berg, 2016; Lu et al., 2019; Rietzschel et al., 2010; Watts et al., 2019). Although the assessment and perception of work outcomes is a key factor for any organization's long-term success, those outcomes do not just exist on their own, but rather, were created by an individual or group of individuals. However, most research on creativity evaluations does not include the creation process of the entity in question and researchers have begun making calls for more holistic approaches to evaluating creativity (Birney et al., 2016; Caroff & Lubart, 2012). Further, while the norm in the creativity research does not include the actual creation as part of studies on evaluation, this does not necessarily reflect real life evaluations. Importantly, we must recognize that evaluators can have different understandings of what occurred during a creation process. While the creator may know the creation process in its entirety, other evaluators, such as colleagues, superiors, or customers, may have limited firsthand knowledge of that process and must rely on other sources to make sense of what occurred.

Consider the musical works of Wolfgang Amadeus Mozart, widely described as a creative genius in the field of music. Both in his own day, as well as ours, characterizations of Mozart portrayed him as a young prodigy who would simply sit at a piano and let greatness flow out of him (Stafford, 1993). For many individuals, they understood the creation of these great works of music as the result of a creative genius who could create a masterpiece with ease from a

singular thought. While this portrayal helps create a mystique around Mozart, it clashes with the reality of his work and life. Mozart certainly had natural talent and a predisposition to do well in music, but diaries, letters, and writings from Mozart's life reveal a deeply passionate musician who spent hours upon hours diligently composing, iterating, and experimenting within his craft (Abert, 2007). He described this active, engaged process himself in a letter to his father, Leopold, writing, "You know that I am, so to speak, plunged into music—that I am occupied with it the whole day—that I like to speculate, to study, and to reflect" (Wallace, 1866, pp. 241–242).

Mozart did not simply sit down at a piano and make masterpieces from just an insightful thought; he worked tirelessly, iterated, and would revise or discard ideas as he saw fit to make his music. However, all of those who have listened to Mozart's music do not necessarily know this creative process information. For instance, there's a distinct divide between what information a general consumer of Mozart's music knew about his process and what Mozart's father Leopold knew and while the quality of the music matters fundamentally to its evaluation, individuals also form judgments from not only of outcomes, but also the process of creation itself (Birney et al., 2016). Further, not all processes are considered equal as research on engineering design revealed that engineers rate an outcome's creativity much differently depending on the methods of design and creation used (Chulvi et al., 2012).

The information an individual knows about an outcome's work process could vary on any number of characteristics like project length, what behaviors occurred, the level of detail, thought processes, language, etc. While many characteristics exist and may matter for the evaluation of creativity, for the purpose of this dissertation I focus on one type of process information, the means of developing ideas and solutions. For this type of process information, I consider two well-known portrayals in the creativity domain. The first type of process information portrays

ideas and solutions as occurring from *insight* processes, with ideas coming to the creator as discontinuous, light-bulb moments and the solutions are developed more so through an intuitive style. In contrast, the process information may alternatively portray the solutions as occurring from *iteration* processes, with the solutions coming from trial and error, tinkering, and trying lots of options through a more analytical approach. In addition to considering what process information an evaluator knows about an outcome, the story of Mozart suggests another potentially important difference among evaluators: their beliefs regarding creativity.

If, for instance, one individual goes through life getting to see into the process of creators and how they come up with their outcomes like Mozart's father did, surely that individual must have a different view of creativity compared to an individual who never learned how the creations came to exist. For some individuals, the more mythical stories of the creative process suggest that creators are at the mercy of inspiration and that the ideas that shape our world come about by chance and good fortune. It is unsurprising then that one of our culture's most common symbols for creativity is a lightbulb going off over someone's head. However, this stands in stark contrast to a belief that suggest creativity results from thoughtful, focused, iterative effort, which Mozart's father Leopold clearly came to see throughout his son's life. Recent research in creativity has already identified a number of evaluator characteristics that affect evaluation, such as their economic mindset (J. Mueller et al., 2018), their cultural background (Paletz & Kaiping Peng, 2008), and domain expertise (Galati, 2015). This dissertation intends to build on this tradition by examining how narratives of an outcomes' creative process interplay with evaluators' beliefs regarding creativity.

Beliefs are important because our beliefs are the fundamental building blocks that influence how we interpret and understand the world, which forms the basis for how we evaluate

all entities (Axelrod, 1973a; Meyers-Levy & Tybout, 1989). Although we can have beliefs regarding any variety of concepts, those of interest here are those relevant to creativity. While past research has looked at a variety of beliefs or implicit theories of creativity, these efforts have largely pertained to the personality or style of creative individuals (Glück et al., 2002; Kaufman et al., 2006; Nicholls, 1972; Runco & Bahleda, 1986; Sternberg, 1985), the types of creativity (Beghetto & Kaufman, 2007; D. H. Cropley et al., 2014; Glück et al., 2002; Kaufman & Beghetto, 2009; Nicholls, 1972; Puccio & Chimento, 2001), the domain specificity of creativity (J. Baer, 2012; Gabora et al., 2012; Spiel & Korff, 1998), creative activities and achievements (Carson et al., 2005; Diedrich et al., 2018), cultural considerations (Lim & Plucker, 2001; Loewenstein & Mueller, 2016; Paletz & Kaiping Peng, 2008; Puente-Diaz et al., 2016) or the features of outcomes such as ideas and products (J. S. Mueller et al., 2012, 2014; Rao & Monroe, 1988; Soukhoroukova et al., 2012; Peracchio & Tybout, 1996).

Researchers have clearly spent a fair amount of effort researching beliefs, yet recent efforts have examined a new type of creativity belief that has yet to receive attention in evaluation research and may prove important for the field's ever-growing understanding. The beliefs in question are growth creative mindsets (Hass et al., 2016; Karwowski, 2014; Karwowski et al., 2019). Creative mindsets are specifications of Dweck's (e.g., 2006) mindsets, also known as "ability mindsets," and Dweck originally conceptualized them as a continuum and one's belief that intelligence is either fixed for one's life or capable of growing with effort. Recent research efforts have examined these mindsets in the creativity domain and have argued and found evidence that due to the complexity of creativity, individuals think of fixed and growth mindsets as separate constructs for creativity. In particular, the fixed creative mindset concerns whether individuals believe that there is an innate, talent-based component to creativity,

such that some individuals are naturally more creative than others are. In contrast, the growth creative mindset concerns whether individuals believe that there is a learned skilled component to creativity, such that any individual can develop competencies in creative domains given enough practice, education, and effort (Hass et al., 2016; Karwowski, 2014; Karwowski et al., 2019). While research has established the existence of these creative mindsets, researchers have not yet considered the role they may play in evaluation. In particular, this research focuses on growth creative mindsets and this dissertation attempts to build upon a growing literature on beliefs and evaluation by developing an understanding of how growth creative mindsets affect evaluation by influencing how an individual will pay attention to, understand, and interpret process information (Elsbach & Kramer, 2003; Kaufman & Beghetto, 2013; Loewenstein & Mueller, 2016).

At a broad level, removing a final product from the context of its creation removes a great deal of information in why the product has certain features or functions, as well as in how exactly the creator achieved those results. Without any information about the process, individuals can only wonder or make assumptions about what the creator did to make the product. However, while routine work may have established processes that are predictable and unimportant in understanding the end results, creative work is inherently novel and uncertain, with the processes often varying and having meaningful differences (Madjar et al., 2011; Simonton, 2003). This uncertainty makes it such that an individual's assumptions about what happened during a creative project may differ drastically from what actually occurred and relying on research that ignores the role of the process may limit our understanding of how creativity evaluations actually work. This is particularly the case of evaluations in organizations because the evaluators often have some understanding of the process, even if it is not as comprehensive an understanding as

the creator (Perry-Smith & Mannucci, 2015; E. Rouse, 2013; E. Rouse, 2018). Further, this work may also help explain mixed findings in the literature by extending work on the role the evaluators play and how their knowledge and beliefs may bias creativity evaluations either favorably or unfavorably (Franke et al., 2014; Kaufman et al., 2008; Koppman, 2016). If individuals have different beliefs about creativity, such as the degree they believe in a growth mindset, then they likely have different expectations regarding creativity, which may lead to them forming different interpretations and perceptions of creativity (Axelrod, 1973a; Loewenstein & Mueller, 2016).

This work contributes to the literature in three ways. First, this dissertation intends to consider what role information about the creative process has on the evaluation of a creative product. Examining the role of process information fits with the dissertation's goal of taking a more holistic approach to creativity evaluations rather than focusing solely on outcomes of creative work. Further, the process information exposed to evaluators in organizations will naturally vary and not enough research has considered this aspect as a source of variation, nor considered how the content of the information might differ. By introducing a consideration of process information attributes in the form of narratives depicting *iteration* and *insight*, this helps identify what aspects of the creative process are important for an individual's understanding and evaluation. Second, this work intends to extend current work on perception in creativity evaluation research. I intend to do this by looking at how an evaluator's beliefs, in the form of their creative mindsets, affects their growth creativity evaluations. While identifying and examining the existence and prevalence of these mindsets has proven useful thus far, organizations can benefit more by understanding how an evaluator's beliefs regarding creativity may systematically affect how they evaluate various end outcomes. The third contribution aims

at examining how creative mindsets interact with process information to affect creativity evaluations. In particular, this work examines how different types of process information may differentially drive creativity evaluations depending on an individual's growth creative mindset. Thus, this work attempts to add to the discussion of what drives perceptions of creativity as it may differ depending on not only the outcome and the creation process, but also by the evaluator's own beliefs and interpretation of that information.

In the next section, I review research regarding creativity and evaluation. Following this, I discuss relevant theory and develop hypotheses predicting an interaction effect between an evaluator's growth mindset and process information on their evaluation of a product's perceived creativity. I then conduct a pilot validation study to develop a set of process information materials and then test these hypotheses with an experiment. I present and discuss the results of this study in terms of their theoretical and practical implications.

Chapter 2: Literature Review on Creativity Evaluations

Research on creativity evaluations typically falls within the four-P framework proposed by Mel Rhodes (1961). In this framework, creativity is treated as an interconnected and multidimensional phenomenon with the four P's representing product, process, person, and press (environment) and they are related to creativity and one another through their association to novelty and usefulness (Amabile, 1996). Each of these components of creativity are interconnected with one another such that creative persons are those who use creative processes to make creative products, however the research approaches often differs depend on which component of creativity is of focus. For instance, research on press typically investigates environmental conditions to determine what factors are favorable or unfavorable to developing

creative ideas and products (Amabile et al., 1996; Voss et al., 2008). Similarly, researchers have investigated the different types of processes creators use to develop novel and useful solutions (Csikszentmihalyi & Getzels, 1971; Harrison & Rouse, 2014b; Howard et al., 2008). However, while research on press and process tends to examine the conditions and means that yield creativity, research on products and persons has a strong tradition of looking at *perceptions* of creativity (Elsbach & Kramer, 2003; Kay et al., 2018; J. S. Mueller et al., 2014).

The interconnectedness of the four-P concept is particularly useful for understanding the importance of perceptions, as well as why products are key in creativity evaluations. When thinking about evaluating creativity, it is hard to imagine someone receiving attributions as being a creative person if that person has not ever had a creative idea or made something deemed creative. Similarly for processes, it would seem disingenuous to describe a process as a creative process if it did not ever lead to the creation of a novel and useful idea or product (A. Cropley, 2020). However, the reverse is not true for ideas and products because the perceptions of creativity for a product are meaningful even if the evaluator knows nothing about the creator, their process, or the environment the creator made it in (Amabile, 1982; Hennessey et al., 2020). Thus, when it comes to creativity evaluations, the perception of products and ideas is essential (J. Baer, 2020; MacKinnon, 1987).

Perhaps unsurprisingly, one of the major foci of creativity researchers has been the evaluation of creative outcomes, typically in the form of an idea or product (Hennessey & Amabile, 2010). Evaluating creative ideas and how they are perceived is important to organizations because they need some way to assess their ideas or products and need some process of reduction when faced with too many options (M. Baer, 2012; Rietzschel et al., 2010). Further, how ideas are perceived by the decision makers in organizations plays a key role in

determining which ideas receive attention and are chosen to test or implement (Anderson et al., 2014; Frederiksen & Knudsen, 2017; Lu et al., 2019; Rochford, 1991). Ideas that are not perceived as creative, regardless of their "true" creativity, are less likely to receive resources and the support needed to succeed (Bayus, 2013; J. Mueller et al., 2018; Perry-Smith & Mannucci, 2015). However, it is important that those perceptions are correct because an organization's creative ideas and innovative efforts are one of the ways they demonstrate competitive advantage (Bergendahl & Magnusson, 2015; Sutton & Hargadon, 1996; Wernerfelt, 2001). For many companies, their creativity divisions like R&D or Design are an important means for their growth and creativity lies at the heart of that type of work (Andriopoulos & Lewis, 2009; Becker & Dietz, 2004; C. S. R. Chan & Parhankangas, 2017). Although determining the creativity of a given idea or new product is important and a key to success for many organizations, these type of evaluations are difficult as studies suggest that individuals and groups do not perform particularly well at evaluating and selecting creative ideas (Girotra et al., 2010; Piezunka & Dahlander, 2015).

For any type of creativity evaluation, you need reference points because it is difficult to determine the novelty of an idea or product without some comparison point (Zhou et al., 2017). This ability to determine an appropriate reference is also dependent on the evaluator's understanding of the product, which may be influenced by aspects such as domain expertise or familiarity and experience with the product (Csikszentmihalyi, 2014; Franke et al., 2014; Hoeffler, 2003; Peracchio & Tybout, 1996; Soukhoroukova et al., 2012). These difficulties are compounded by the fact that evaluators do not necessarily agree on what creativity is or may focus on features not related to creativity when evaluating creative ideas and products (A. Cropley, 2020; Kaufman & Beghetto, 2009; Runco, 2014; Simonton, 2018). These problems are

in part why Teresa Amabile developed the consensual assessment technique (CAT) as a tool for creativity researchers to investigate creativity evaluations and determine how individuals perceive creativity. Amabile's development of the CAT reflects the importance of perceptions by suggesting that creativity is contextual and socially determined by nature such that an idea or product is creative to the extent that a set of relevant observers agree it is creative (Amabile, 1982; Hennessey et al., 2020).

This importance of context makes creativity evaluations even more difficult for organizations because an idea does not just have to be good, it also needs to be suggested at the right time and to the right people to be perceived and recognized as such (Csikszentmihalyi & Robinson, 2014; Howell & Boies, 2004; Paletz & Kaiping Peng, 2008; Sgourev, 2013). Unsurprisingly then, when we look at evaluations within organizations, we find considerable evidence that forecasting the success of any given idea or product is difficult, even with expertise (Berg, 2016; Blattberg & Hoch, 1990; Cho et al., 2012; Song & Montoya-Weiss, 2001). Further, even with the right conditions, appropriate setting, and knowledgeable evaluators, assessing an idea or product's creativity remains difficult due to creativity's inherent novelty and association with uncertainty.

Individuals tend to have an implicit bias against uncertainty and would prefer to reduce it, which leads to individuals outwardly seeking creative ideas, but often rejecting the more creative ideas or rating them poorly because novel ideas are too uncertain (J. S. Mueller et al., 2012; Staw, 1995). It is unsurprising then that individuals are predisposed to be wary of creative ideas because their association with uncertainty also has strong associations with fear (Y. S. Lee et al., 2017). This general fear then leads to individuals who evaluate ideas to dismiss potentially great ideas due to uncertainty in their implementation (J. S. Mueller et al., 2012, 2014). This is

important for organizations interested in innovating because assessing ideas and potential new products does not necessarily tell you about the execution to develop the final product (M. Baer, 2012; Bird, 1988; Dailey & Mumford, 2006; Mortara & Minshall, 2011; Škerlavaj et al., 2014; Voss & Voss, 2013; Watts et al., 2019). Not only that, but evidence suggests individuals have difficulty recognizing the long-term implications of new ideas in terms of the resources needed, so the fear of uncertainty is not unreasonable (Dailey & Mumford, 2006).

While we understand a fair amount about evaluating creative products and the nature of creativity, there are other important pieces related to evaluation that we know less about. Although research on evaluation tends to focus on products and ideas, creativity is fundamentally a multidimensional phenomenon because every outcome comes from some sort of creation process. However, the effect of an evaluator's knowledge of that process on creativity assessments remains vastly understudied compared to research focused solely on outcomes such as ideas and products (Harrison & Rouse, 2014a; Hennessey & Amabile, 2010; E. Rouse, 2013; Sgourev, 2013). In the following section, I describe both the research that does exist in regards to creative processes and evaluations, as well as the more extensive work on what creative processes there are and how they relate and differ from one another.

2.1 Creative Process Information and Creativity Evaluations

Although research sheds light on *what happens* during the creative process, the literature has less to say about how knowledge of that process affects evaluation. Despite this, creativity scholars have argued that processes matter and disparities in knowledge of the process could potentially lead to different understandings and judgments of the finished product (Birney et al., 2016; Kim, 2020). Further, while perceptions of a process are not necessary to understanding a product's creativity, research has demonstrated that individuals still hold perceptions of process'

creativity, which relate to the products produced (J. Baer, 2020; Elsbach & Flynn, 2013; Hennessey, 1994). We also know that perceived effort and quality of the process matters as findings in engineering have shown that the quality of a sketch accompanying an idea (i.e., its line work, perspective, and proportions) affects the evaluation of the idea's creativity, even if it is made clear that the sketch represents work in progress (B. Kudrowitz et al., 2012). The better the sketch that the individual saw earlier then the more likely the end idea was going to be rated as creative. Additionally, if an individual sees the development of an idea then the initial novelty and utility may serve as an anchor and make various features of the idea more salient when assessing the final product (Mussweiler & Strack, 2000; Tversky & Kahneman, 1975). While the work on how exactly different creative processes may affect an idea or product's perceived creativity remains limited, the evidence is clear that individuals surely make judgments of the finished product beyond just the product itself.

It is curious that creativity research rarely includes the work process as part of the evaluation of the outcome because the process is often so key to understanding the end result for the creators themselves (Amabile, 2001; St-Louis & Vallerand, 2015). Further, at least for the creators themselves, evaluations occur throughout the creative process and some creators may view the rating of an end outcome in isolation as akin to assessing a film by the final frame of the movie (Harrison & Rouse, 2014a; Harvey & Kou, 2013). Research also tells us that how creators interact during the process often has serious implications for the quality of the finished product. For instance, conflict is inevitable in the course of risky, creative work, yet not all creators deal with the interpersonal conflicts equally. However, research indicates that successful design teams are those that can use those moments of conflict to reduce uncertainty, which allows for forward progress in the project rather than letting an error derail the entire project or letting emotions

fester, which can undermine performance (Paletz et al., 2017). Creative processes clearly matter and in order to address the gap in the literature regarding their role in evaluations, we can look at how scholars have previously characterized these processes.

Creative processes are generally messy, but researchers have established that most creative work follows a few key stages, with creators sometimes having to "loop" back through the process as they learn more or things do not go as planned (Chicago Architecture Center, 2019; Clinton & Hokanson, 2012). As part of her componential theory of creativity, Amabile described not only the skills needed to be creative, but also what this general process looks like (Amabile & Pillemer, 2012). The first step in most creative work is simply identifying some problem to solve or task to undertake and a preparation stage follows this whereby the creator gathers relevant information and possibly refines or learns new skills to help with the project. After this, the creator typically engages in a generation step where they develop ideas and solutions, which connects closely to the evaluation stage where they determine the appropriateness, utility, and novelty of the solutions they have generated. After going through these stages, either the creator eventually succeeds in making an outcome that satisfies the problem/task requirements or they realize that the current solutions did not work and they have to go through the process again with their new knowledge. Although this simplifies the process, these five stages are generally how a creative process progresses and much of the research on processes examines the idiosyncrasies of the creative process across domains and industries like product development (Courpasson & Younes, 2018; Elsbach & Flynn, 2013; E. Rouse, 2013), entertainment (Elsbach & Kramer, 2003), engineering (Daly et al., 2014; Howard et al., 2008), and the arts (Getzels & Csikszentmihalyi, 1966; Harrison & Rouse, 2014b).

Although research has looked at creative processes across domains, a common way to characterize creative processes has emerged in terms of describing the processes of an adaptor vs that of an innovator (Kirton, 1976). Although creative behaviors and styles fall along more of a spectrum, processes of an adaptor are more iterative and closer to a continuous refinement of creativity, while processes of an innovator are more insightful and discontinuous shifts in creativity (Goswami, 1988). Although scholars do not always use the terminology of adaptors and innovators, other frameworks such as Galenson's experimental and conceptual creator perspective aligns with this view, as well as Madjar's discussion of incremental vs. radical creativity in organizations (Galenson, 2011; Madjar et al., 2011). According to these views, both types of creators are important to society, but experimental creators rely more on the incremental creativity processes by developing many options and engaging in trial and error, while their conceptual creator counterparts focus more on their own instincts and unique insights to create radical, paradigm shifting solutions. These characterizations are not only found amongst creativity scholars, but also in laypersons' implicit beliefs regarding creativity (Puccio & Chimento, 2001).

Considering that we do know a fair amount about the processes that go into developing creative outcomes, but know little about their influence on evaluations, this dissertation intends to address this gap. Given the distinctions that exist in the literature between incremental and radical creativity, continuous and discontinuous processes, and adaptors and innovators, in this dissertation, I define and focus on the availability or two different types of process information, iteration and insight, which I will introduce and discuss in greater depth in the theory and hypotheses section. Importantly though, if we introduce process information into creativity evaluations, we cannot assume that everyone will view that information similarly. Rather, we

need to consider whom the evaluators doing the assessment are because their beliefs could change how they attend to, interpret, and judge the information. The role of evaluators is important to understand on the part of organizations because decision makers' interpretations and opinions determine how effort is directed in organizations (Klingebiel & Rammer, 2014; Voss et al., 2008). Even if an individual has an incredibly creative process and product, if the supervisors and key decision makers in their organization do not perceive and recognize it as creative then it will ultimately fail.

In the following section, I describe the critical role that the evaluators themselves play in evaluations, as well as how their personal characteristics, experiences, and perspectives affect their perception when assessing creativity.

2.2 Evaluators and Creativity Evaluations

While some objective means exist to determine creativity such as patents, most considerations of creativity are to some degree contextual and socially determined. Because of this socio-contextual aspect, what an evaluator knows and believes is fundamental to understanding perceptions of creativity (Getzels & Csikszentmihalyi, 1966; Long & Runco, 2020). This has been long recognized by creativity researchers and one of the earliest applications of this idea was in determining how domain knowledge and expertise play a role in evaluations (J. Baer, 2012; Kaufman et al., 2009). In the original conception of the CAT, domain expertise was considered a necessary characteristic for the evaluators because without expertise, it was argued, individuals may not have any idea of what is novel in a given domain nor what those users would find useful (Amabile, 1982; Hennessey et al., 2020). However, researchers have challenged this notion and found evidence that with a brief introduction to a domain, non-experts creativity ratings correlate strongly with those of experts (Dollinger & Shafran, 2005).

Also with the rise of technology and the availability of crowdsourcing evaluation, evidence suggests that crowds' judgments are as effective as that of experts (Bayus, 2013; Mollick & Nanda, 2015).

For organizational researchers, a more practical problem arises such that the evaluators and decision makers in organizations do not necessarily have relevant domain expertise, but their perceptions obviously matter greatly in the organization. Because of this, organizational creativity researchers often uses individuals like managers or supervisors as the relevant evaluators because their opinions are ultimately what affects the company as opposed to an unrelated third party who has relevant domain expertise (Kim, 2020; J. Mueller et al., 2018). We see similar reasonings in domains like advertising or product development where the focus on consumers' perceptions is more important and relevant than solely the opinion of marketing and product design experts (Koslow et al., 2003; West et al., 2008). In any of these cases, the interesting implication on perception research is that one can compare how ratings of experts compare across group of interest like domain experts, customers or managers (Galati, 2015; Runco & Smith, 1992).

Interestingly enough, in cases where the ratings disagree, there's a tendency to conclude that the comparison group formed inaccurate perceptions of the ideas compared to the experts, yet that does not fully explain why the perceptions differ (Franke et al., 2014; Galati, 2015; Kaufman et al., 2008). One of the important differences between evaluators beyond their knowledge and expertise is their beliefs, particularly those related to creativity. As previously described in the introduction, researchers have long recognized the importance of beliefs and examined quite a number of them such as styles of creativity (Runco & Bahleda, 1986; Spiel & Korff, 1998), types of creativity (Beghetto & Kaufman, 2007; D. H. Cropley et al., 2014; Glück

et al., 2002; Kaufman & Beghetto, 2009; Nicholls, 1972) and cross-cultural beliefs (Lim & Plucker, 2001; Loewenstein & Mueller, 2016; Paletz & Kaiping Peng, 2008; Puente-Diaz et al., 2016). However, understanding that these beliefs exist is not enough because while investigations into the content of an individuals' beliefs may offer us some idea of what they may care about or pay attention to, they do not explain how they actually affect an evaluator's perception of the outcomes like products and ideas. Researchers have begun making the connection of examining how specific beliefs affect creativity evaluations themselves and this dissertation intends to build on that tradition.

For instance, researchers have found that early adopters of innovations have a particular taste for new products that push boundaries and have less bias against uncertainty (Ram & Jung, 1994; Schreier et al., 2007). Evidence also shows that cross-cultural beliefs regarding the nature of creativity affect what individuals judge and perceive as creative, with only novelty having the same importance across cultures (Loewenstein & Mueller, 2016; McCarthy et al., 2018). From an organizational perspective, recent research has questioned whether supervisors are biased against creativity and found evidence that those in decision-making roles adopt an economic mindset, which leads to them disliking creative idea that lack social approval (J. Mueller et al., 2018). While this research demonstrates that evaluator's beliefs can alter or bias perceptions of creativity, only a few beliefs regarding creativity have received attention in evaluation research.

When considering what other beliefs or schemas may have an influence on evaluator's perception of creativity, we would expect that beliefs regarding what creativity is and how creativity works should have the most potential relevance. Recent work has identified and examined the fixed and growth mindsets of creativity, which revealed that creativity behaves a bit more complexly than general fixed and growth mindsets. While the original conception of

fixed and growth mindsets concerned beliefs about intelligence and were treated as two ends of a spectrum (Dweck, 2008), researchers have found that when applied to creativity, individuals actually consider them as two separate constructs (Hass et al., 2016; Karwowski, 2014; Karwowski et al., 2019). Creative mindsets are basic ways in which people think about how creativity functions—the growth mindset is the belief that creativity is either the result of hard work and skill development, while the fixed mindset is the belief that creativity comes from good fortune and innate talent. Building upon previous work on creativity assessments, I intend to use these creative mindsets as a key variable in understanding how individuals evaluate outcomes and how those mindsets interplay with process information when making those evaluations.

One of the complexities in understanding evaluations of creativity is that, as demonstrated by the four-P approach, creativity is an interconnected and multidimensional phenomenon and when we discuss creativity it is appropriate to think of the creator, their process, their products, and/or their environment and all of these relate to and affect one another (Amabile, 1996; Runco, 2004). For instance, when we think of a product, it does not just exist on its own, but rather had to come from somewhere and how individuals judge the creator and their process has implications for how they judge the product, and vice versa (Harvey & Kou, 2013; Kay et al., 2018). As a field, we need more research considering multiple pieces of creative work in conjunction because of creativity's multidimensional nature (Kim, 2020; Sternberg, 2020). This is particularly important when also considering that creativity has a socio-cultural component such that something is deemed creativity to the degree that the right people are evaluating it at the right time and right place (Amabile & Pillemer, 2012; Csikszentmihalyi, 2014; Sgourev, 2013). In line with these arguments, researchers have begun to make calls and suggestions to take a more holistic approach to researching creativity and I intend to contribute

to this effort (Birney et al., 2016; Caroff & Lubart, 2012; Plucker & Makel, 2010; Simonton, 2003). Thus, rather than simply consider a product in isolation, this work considers how an individual's mindset and information regarding the creation process change how evaluators interpret and understand the finished product and in turn perceive and evaluate creativity. In this dissertation, I argue that he way in which we think about the genesis of creativity work has implications for what process information we are likely to be more or less receptive to and this has implications for how creative we think an outcome is.

In the next section, I discuss the relevant theory to understand the evaluation of creativity and build my hypotheses with the intention of looking at the interplay of creative process information and an evaluator's mindset on the perceptions of a product's creativity. To do so, I will first describe how I consider process information in this dissertation and then I will describe information processing and schema theories as a way to better understand how people perceive and interpret information. After this, I focus on the specific beliefs of growth creative mindsets, then describe and predict how they would influence the perception of the process information and in turn affect a product's perceived creativity.

Chapter 3: Theory & Hypotheses

3.1 Process Information of Creative Work

As discussed in the previous section, creativity is a judgment that is driven by the perceiver's ability to evaluate features of the product as well as their insight into the process (Birney et al., 2016; Hennessey, 1994). Given the constraints of perception and bounded information availability (Kahneman, 2003; Simon, 1972; Tversky & Kahneman, 1974), it is clear that an evaluator's understanding of a creative process is in part reliant on how the creator wants to describe it. In many instances, evaluators may not have any firsthand understanding of what

occurred and are entirely reliant on what the creator tells and shows them (Dutton & Ashford, 1993; Garud et al., 2014; Stafford, 1993; Young et al., 2013). However, we lack a complete understanding of how this information is weighed, and what mental models evaluators may rely on in weighing this data (Lodge & Hamill, 1986; Mumford & Standish, 2020). For these reasons, this research focuses on narratives shared by the creator about their work process and the perceptions the evaluator reaches as a function of the evaluator's mindset and the content of the narrative.

The types of work processes and behaviors you need in order to develop creative ideas are often exploratory, risky, full of set-backs or changes, and are overall more uncertain (Harrison & Rouse, 2014b; Howard et al., 2008; Sutton & Hargadon, 1996). Perhaps unsurprisingly, firms have difficulty creating cultures that encourage these behaviors, not only because of the difficulty in implementation, but also because this type of uncertain work is difficult or unsettling for many individuals (J. S. Mueller et al., 2012; Staw, 1995). Even though creative work often requires multiple iterations and the need to discard work, creators do not necessarily see evaluations as an honest discussion of their process and fear individuals may judge them for aspects that are fundamental to their creative process (Catmull, 2009). This is because this information can affect not only the perception of the work itself, but also the creator's reputation and status (Detert & Edmondson, 2011; Miron-Spektor et al., 2015). Further, all of the evaluators and decision makers within an organization will not necessarily know or understand what high quality creative work requires. This has huge implications for how the creator discusses and describes their work because the evaluators may not view all processes as equally appropriate and in accordance with their beliefs regarding creativity. While researchers have not specifically examined the effect of narratives of process information on creativity, we

can make inferences from the literature to help predict how including process information in creativity evaluations generally affects an evaluator's perception.

In regards to process information, one aspect is that the process information should give evaluators a clearer understanding of how the product functions. When individuals have a greater understanding of a product's functions then they then have a better understanding of the potential uses of the end outcome, which should relate positively to the end outcome's utility (Adamson, 1952; Sutton & Hargadon, 1996; Sutton & Kelley, 1997). Further, the evaluator learning about the creator's work process gives the evaluator a much better understanding of what type of work and effort the creator put into the project. When individuals receive a finished product, it is not always clear what the creator had to do to make it a reality. However, introducing information about the work process will show that effort, which should send a signal regarding the creator's competency and demonstrate they are capable of making useful products (Alvesson, 2001; Ashforth & Kreiner, 1999).

In addition to the greater understanding of the functions and possible boosts to utility, the process information also provides the evaluator an opportunity to learn about the details not readily apparent in the final product (Harrison & Rouse, 2014a). For instance, without some understanding of the process, the evaluator may not know about any novel problems that the creator had to solve or what inner workings of the product offer beyond other existing solutions. By introducing information about unobservable details and uses, this should give the creator a greater understanding of the new approaches that were needed to develop the product or how exactly the product is novel (Csikszentmihalyi & Getzels, 1971; Koslow et al., 2003).

While process information can give the evaluator greater understanding of the potential utility and novelty, the additional knowledge about the process should increase the evaluator's

relation to the outcome and should make them more invested in the outcome and enhance their psychological ownership (Kirk et al., 2018; E. Rouse, 2013). This enhancement of their psychological ownership should illicit a boost to the evaluator's general preference for the outcome and positively affect their perceptions of the outcome's creativity (M. Baer & Brown, 2012). While the general effects of introducing process information to an evaluator gives the potential to improve perceptions of novelty, utility, and overall creativity through improving understanding of and investment in the product, this research focuses on two types of process information, iteration and insight. In the next section, I describe both of these creative processes.

3.1.1 Two Process Information Types: Iteration and Insight

Considering the pre-existing frameworks distinguishing creativity along the similar forms of incremental vs. radical (Madjar et al., 2011), experimental vs. conceptual (Galenson, 2011), adaptive vs. innovative (Kirton, 1976), and continuous vs. discontinuous (Goswami, 1988), this work intends to utilize process information that reflects the different solution identification methods: iteration and insight. Iteration and insight are two known means of producing creative products. This is the case both in creators' own descriptions of their experiences, as well as in researchers' investigations into creative capabilities(Kaplan & Simon, 1990; Smith & Tjandra, 1998; Weisberg & Alba, 1981; Wynn & Eckert, 2017). While both insight and iteration represent common means that individuals use to develop creative solutions, iteration relies more so on continuous, productive effort and comparing lots of alternatives to incrementally refine ideas, while insight relies more on discontinuous, sudden breakthroughs and making new connections from shifting perspective to identify brilliant ideas (Goswami, 1988; Kahneman & Klein, 2009; Skaar, 2019; Zander et al., 2016). Iteration is essentially trial-and-error whereas insight is the lightbulb moment.

In regards to iteration, this involves the creator trying out multiple ideas, revising and refining concepts, and overall engaging in experimentation until one achieves the goals they are seeking (Cooper et al., 2008; Howard et al., 2008; Jin & Chusilp, 2006). Iteration is seen as more representative of the incremental, continuous improvement method of creativity, which fits with the more analytic style of adaptors (Elsbach & Flynn, 2013; Kirton, 1976; Madjar et al., 2011). In contrast to the hard work and effortful process of iteration, insight has more association with an intuitive style that relies on the identification of new connections and flashes of sudden thought (De Dreu et al., 2008; Kaplan & Simon, 1990; Sun, 2010; Zander et al., 2016). Insight problems themselves are based on testing cognitive flexibility and finding new uses or "thinking outside the box" (Dow & Mayer, 2004; Duncker, 1945; J. Guilford, 1971). Further, insight is not concerned with working towards some refined solution, but finding the single "correct" answer and seeing novel connections that were previously unrecognized (Ansburg & Dominowski, 2000; Runco, 1993; Weisberg & Alba, 1981). This distinction also implies a fluency difference between iteration and insight such that iteration always relies on trial and error and testing lots of ideas, but insight relies on the "correct" solution suddenly springing to mind and creating an "Aha" experience (Skaar, 2019).

While many problems requiring creative solutions often do not have a demonstrable "correct" answer, there is a tradition of creativity research that treats insight this way such as the nine-dot problem, Duncker's candle problem, or the myriad of association tests (Burnham & Davis, 1969; Clapham, 2020; Duncker, 1945; Mednick, 1962). For these types of tests, they are often treated such the creative solution requires a perspective shift and once the new perspective is adopted, then the solution is obvious. While many creative problems do have multiple solutions, these types of tests demonstrate that there are degrees of "correctness" when dealing

with creative solutions. Further, even if insight is not necessarily always the identification of the "correct" solution, the characterizations of the "aha" experience and cultural symbols of things like light-bulbs moments or an apple falling onto someone's head give insight that reputation, particularly in comparison to narratives depicting an iterative, trial and error method (Benedek et al., 2021; Stukeley, 1752; Zedelius & Schooler, 2015).

While iteration and insight are distinct means of developing solutions, in real life work they can often relate to one another during the course of a project (R. Costa & Sobek, 2003; Moore et al., 2016; Sun, 2010). For instance, an individual may spend an entire working day iterating new design concepts and then the next working day have a moment of insight spurred on by that previous process. One can also envision the reverse whereby an individual has a moment of inspiration and a brilliant new idea, which they then receive feedback on from their peers and the creator then iterates and refines the idea. Thus, when we think of narratives of creative work, it is hard to imagine a complete absence of insightful thought or some degree of iterative refinement. Rather, it is more appropriate to think of which method was more dominant in the narrative.

For the purposes of this dissertation, I consider both iteration-dominant and insight-dominant narratives in comparison to receiving no process information. For iteration-dominant narratives I define this as a narrative where iteration processes are depicted as an important role in the development of the product, but insight processes as unimportant or serving a minor role. In this case, evaluators should agree that iteration processes played an important and critical role in the development of the finished product, but the evaluator should also believe that insight processes played a less important role, such that insight was only used slightly or not all. The reverse is true for insight-dominant information such that evaluators should consider insight

processes as important, but consider iteration processes as less important or insignificant to the development of the product. For insight-dominant narratives, I define this as a narrative where insight processes are depicted as an important role in the development of the product, but iteration processes are depicted as unimportant or serving a minor role.

In the next section I describe theory related information processing and schemas in order to understand how individuals understand and perceive creativity.

3.2 Information Processing, Schema Theory, and Creativity

To understand how individuals evaluate creativity, I draw on information processing theories, which describe how an individual's existing knowledge influences what an individual sees and remembers, as well as how they interpret the world. Although scholars recognized the existence of some type of knowledge or memory structures in our minds during the early 1900s (Bartlett, 1932; Lippman, 1922), the topic received much more attention during the cognitive revolution later in the century (Massaro & Cowan, 1993; Minsky, 1975; Simon, 1979). Within this extensive body of research, psychologists and cognitive scientists have developed a variety of detailed models that specify the fundamental processes of information processing such as attention, encoding, memory, and retrieval (McClelland, 1988; Rumelhart & Ortony, 1977; Shiffrin & Schneider, 1977). However, the findings most relevant to this research stem from schema theory, which focuses on the social cognition of information processing (Alba & Hasher, 1983; Axelrod, 1973a; Fiske & Linville, 1980).

Schemas guide our attention and both change what we use as diagnostic as well as how we interpret information (Brewer & Treyens, 1981; Koppman, 2016). Further, comparing new products to pre-existing schemas forms the basis for product evaluations and evaluators are also prone to general cognitive biases such as the tendency to prefer and like ideas and products that fit into their pre-existing knowledge structures (Meyers-Levy & Tybout, 1989; Peracchio &

Tybout, 1996). We see this in creativity evaluations such as when an individual encounters a novel product, individuals with more entrenched knowledge structures have more difficulty understanding it (Moreau et al., 2001).

Schema theory considers schemas as cognitive frameworks or concepts we have about some entity, such as creative work, that guides how we interpret and use information (Bartlett, 1932; Brewer & Treyens, 1981; Alba & Hasher, 1983). Our schemas come from the entirety of our experiences and vary greatly in their content and complexity across individuals (Axelrod, 1973b; Bingham & Kahl, 2013). Further, schemas are one of the most important tools that people use to make sense of their world and are essentially the image or concepts in our head when we think about the entity in question. It is also important to note that a variety of labels exist in the literature that would appropriately describe schemas, such as beliefs or mindsets. Mindsets of any kind are implicit theories, which past work has defined as "schema-like knowledge structures that individuals use to effortlessly process current stimulus cues and choose responses (Ross, 1989: 342). Thus, it's appropriate to discuss a schema as an implicit theory, belief system, or mindset, as they all refer to how someone sees the world in regards to the concept at hand (Sternberg, 1985).

When individuals receive new information they can either add or assimilate it into their current conceptualization, change the interpretation of the information, or just ignore it. (Hashtroudi et al., 1984). As Axelrod put very succinctly when introducing schema theory, "If the new information does not fit very well, something has to give." (Axelrod, 1973, p. 1248). This is particularly relevant for this research because the degree that the work process information matches or does not match fit the evaluator's schema should affect how they ultimately view the final product (Koslow et al., 2003; Meyers-Levy & Tybout, 1989; West et

al., 2008). For instance, while the schemas initially guide attention to relevant information for encoding, they subsequently are used to interpret the new information, as well as provide a structure in memory that one can use like a scaffolding to integrate the new information (Johnston, 1996; Koppman, 2016). These schemas evaluate the goodness of fit of the information to the existing data and function like something akin to a computer processor (Rumelhart, 1980). To the degree that a creator's work process fits with an evaluator's beliefs and expectations regarding creativity then their work should receive stronger perceptions of creativity.

Further, while we can expect some schemas to change and develop in the long term, we must recognize that the most common response to conflicting information is not to integrate it, but to conclude that the entity is not representative of the concept in question. (Merriam & Caffarella, 1991). For instance, if someone gets conflicting information regarding their schema of creativity, they are more likely to say something such as "This conflicts with my beliefs about creativity, but rather than updating my schema and admit I may have the wrong view of creativity, I'm just going to keep my existing beliefs and say this isn't creative." This is important for our understanding of evaluators because the schemas they have regarding creative work should be relatively stable in the short term in the absence of some motivating factor to learn more and further develop their schema (Bastian & Haslam, 2007; Bingham & Kahl, 2013).

Schema theory has received particular attention in political science as means to understand how an individual knowledge about politics influences how they seek out, respond, and interpret the behavior of political candidates as well as the messaging disseminated through advertisements and mass media (Entman, 1989; Lodge et al., 1989; Lodge & Hamill, 1986). Schema theory offers similar benefits for this dissertation in determining how individuals seek out, respond, and interpret the information of creators' behaviors. In particular, researchers have

found that schemas affect individuals' categorization and labeling, chunking or grouping of information, and the attention, encoding, and recall of schema-relevant information (Alba & Hasher, 1983; Fiske & Taylor, 1991). Further, schemas also affect the evaluation of creativity because they allow individuals to make inferences or best guesses and provide a knowledge structure to compare evidence to and evaluate probabilities (Sanbonmatsu et al., 1992). Thus in order to predict how individuals evaluate creativity, having some understanding of their relevant schemas regarding creativity would greatly inform how they may interpret and perceive an end outcome, as well as the creator's work process information.

In regards to existing research on creativity beliefs, it is unlikely there is a single agreed upon conceptualization of creativity among most individuals, particularly when considering the role of characteristics like domain expertise (Amabile, 1996; J. Baer, 2015; Puccio & Chimento, 2001). However, in order to make predictions regarding how individuals may evaluate creativity, we need some understanding of what they believe and expect regarding creative individuals and their work behavior. Recent research examining individuals beliefs' regarding both creativity myths, as well as scientifically supported facts gives us some insight into what a general schema for creativity may entail (Benedek et al., 2021). For instance, it appears that there is some support among Americans that creativity is a special process with around 50% of respondents agreeing that, "creative accomplishments are usually the result of a sudden inspiration" and around 40% agreeing that, "creativity is a rare gift." An average person also does not necessarily conceptualize of creativity in the way that's meaningful to organizations and business as only about 25% of the individuals agreed that "to be considered creative, something has to be both novel and useful or appropriate." However, most individuals do believe that individuals can improve their creativity with only 25% of respondents agreeing that "people have a certain

amount of creativity and cannot do much to change it." We also know individuals tend to place greater emphasis on novelty and perceive of innovators as more so a "true" creative as opposed to an adaptor (Puccio & Chimento, 2001). Further, while characteristics like novelty are ubiquitous across all creative endeavors, evidence suggests that an average person has different expectations across creative domains like art and science in regards to characteristics like conscientiousness, autonomy, and self-expression (Runco & Bahleda, 1986; Spiel & Korff, 1998).

Schema theory suggests that without some idea of an individual's schema, then their preferences are too idiosyncratic to predict what information the evaluator may deem relevant and meaningful to the evaluation, particularly something as subjective as creativity. Thus, in order to build hypotheses regarding the effects of process information on creativity evaluations, I must have some understanding of the evaluator's beliefs to predict how they will interpret different types of process information. To do so, I introduce and focus on growth creative mindsets, which is an ability mindset regarding the belief of whether there is a skill-based component to creativity, such that individuals can improve and develop their creativity given enough effort, training, and practice .

In the following section, I consider how growth creative mindsets would affect how an evaluator understands and interprets the process information when making evaluations. In particular, I make predictions regarding how the work process information may align or conflict with a growth creative mindset and in turn affect the perceptions of the end outcome's creativity either positively or negatively.

3.3 Connecting Growth Creative Mindsets and Process Information with Evaluation

The original conception of mindsets came from work by Carol Dweck and focused on individual's beliefs about intelligence. These early efforts identified two types of mindsets, fixed and growth, which were treated orthogonally such that one's ability is either fixed for one's life or capable of growing with effort (Dweck, 2008). While this distinction proved useful in domains such as motivation and education (Dweck & Leggett, 1988; Mangels et al., 2006), researchers within the creativity domain questioned whether this orthogonal treatment was appropriate for creativity as well (Karwowski, 2014). These recent research efforts in the creativity domain have argued and found evidence that due to the complexity of creativity, individuals think of fixed and growth mindsets as separate constructs for creativity. In particular, the fixed creative mindset concerns whether individuals believe that there is an innate, talent-based component to creativity, such that some individuals are naturally more creative than others are. In contrast, the growth creative mindset concerns whether individuals believe that there is a learned skilled component to creativity, such that any individual can develop competencies in creative domains given enough practice, education, and effort (Hass et al., 2016; Karwowski et al., 2019; Puente-Díaz & Cavazos-Arroyo, 2017). For the purposes of this research, I focus on the growth creative mindset. While mindsets typically refer to theories of the self, evidence shows that mindsets also affects what behaviors we expect to see in others and affects how we interpret those behaviors to the degree they fit and match with our existing beliefs (Butler, 2000; S. Y. Lee et al., 2019; Rucker & Galinsky, 2016).

For individuals who endorse a growth creative mindset, they believe that effort and persistence are important to being creative. These individuals believe that creative abilities are something that you can teach and learn, as well as something that you can struggle with and improve over time (Karwowski et al., 2016). Further, individuals with stronger growth creative

mindsets should understand and expect depictions of creative behaviors that highlight the uncertainty and error prone nature of creative work because those obstacles and setbacks provides opportunities for growth (J. Chan & Schunn, 2015; Frese & Keith, 2015; Klein et al., 2017; E. Rouse, 2013; Simonton, 2003). Individuals who have strong growth creative mindsets do not believe that creativity is something that "just happens" and depictions of creative work that focus solely on the mystical, special qualities of creativity, as well as portrayals of a gifted, lone-genius creator should mismatch with the evaluator's expectations and beliefs (Elsbach & Flynn, 2003; Kay, Proudfoot, & Larrick, 2018).

Although the research on creative mindsets remains limited, we would expect these individuals to rely on different cues and information when evaluating an entity's creativity depending on if they have a stronger or weaker growth creative mindset. In the following section, I describe how the different types of process information, iteration and insight, align and conflict with growth creative mindsets. In doing so, I argue that iteration will align with a strong growth mindset and receive more favorable perceptions of creativity, while insight will conflict with a strong growth creative mindset and receive more negative perceptions of creativity.

3.3.1 Evaluation Cues that Align with Growth Creative Mindsets

In regards to cues that align with growth creative mindset beliefs, I propose that narratives detailing iteration processes will lead to stronger perceptions of creativity to the degree the evaluator has a stronger growth creative mindset. I argue that this will happen through three mediating mechanisms working in parallel: by improving perceived effort of the creator, making a match between expected and observed behaviors, and increasing the evaluator's confidence that the final product is the best possible solution. For creators relying on iteration, this involves developing multiple alternatives and engaging in trial and error, which produces

tangible evidence of work and should appear effortful to evaluators with strong growth creative mindsets (Conti et al., 2014; Lucas & Nordgren, 2015). Individuals with growth creative mindsets should see processes like trial and error or iterative, experimentation as useful and as an opportunity for the creator to learn and improve their work (Gerlinger, 2018). If a creator is perceived as having exerted more effort then this should improve perception of the finished product because it was the result of hard and thoughtful work, which should be particularly helpful for improving perception of utility which is closely associated with persistence and effort (De Dreu et al., 2008; Lucas & Nordgren, 2015).

In addition to sending signals to the evaluator about the creator's perceived effort, iteration process information should also positively affect creativity by matching with the expectations of evaluator's with stronger growth mindsets. For those who believe in the skill-based nature of creativity, they are less likely to perceive tinkering and refining ideas as wasting time, but as part of the general ethos that "practice makes perfect" (Beeftink et al., 2008; Csikszentmihalyi & Getzels, 1971). Evaluators with strong growth creative mindsets recognize that it takes lot of effort to produce something creative and iteration processes have the potential to improve creativity evaluations by matching that belief and expectation of behavior. Further, when creators iterate and go through the analytic process of discarding the ideas that did not work and keeping the pieces that did, the evaluator can see that the final product is the result of continuous improvement, which aligns with the beliefs, and expectations of those with strong growth mindsets. Individuals who believe strongly in growth creative mindsets recognize that all individuals can improve their abilities and would expect that trying multiple times is expected and the norm in creative work (Gerlinger, 2018). Accidents and hiccups are necessary for growth and research on growth mindsets shows that those with stronger growth mindsets are more likely

to pay attention to errors, but also more likely to see errors and setbacks positively and as opportunities to improve from rather than a failure that dismantles the project (Heslin & Keating, 2017; Klein et al., 2017; Moser et al., 2011). Thus, errors and some ideas not working out from iteration processes are expected and even beneficial in the course of creative work for evaluators with strong growth creative mindsets.

In addition to these potential positive interpretations on the part of evaluators with strong growth creative mindsets, engagement in iteration also signals that the creator did their due diligence and thought through both the good and bad possible solutions. This could positively affect perceptions of creativity in the final product by affecting an evaluator's confidence that this is in fact the best possible solution, which is important in evaluation (Steele et al., 2018). Although perceived effort and confidence in the product are mechanisms that should have some positive relationship with one another, the benefits to the evaluator's confidence also come from the sheer options compared with iterative processes. One of the major benefits of iteration is that multiple alternatives allows the creator to compare and select the option with the most useful and appealing applications (De Dreu et al., 2008; Howard et al., 2008; Watts et al., 2019). For the evaluators with strong growth creative mindsets, narratives about an iteration process should signal that the chosen idea was not chosen because it was the first one that worked, but because it worked better than the other alternatives considered (Csikszentmihalyi & Getzels, 1971; Grohman et al., 2017). This shows that the individual was willing to try risky ideas or solutions that might not work and aligns with strong growth mindset's belief that although creativity can be difficult, it generally improves with time and effort (Rucker & Galinsky, 2016; Vongkulluksn et al., 2021). Taken these arguments and evidence together, I predict the following:

> Hypothesis 1: The relationship between process information and a product's perceived creativity will be moderated by the perceiver's growth

creative mindset such that the relationship will be more strongly positive for individuals with a stronger growth creative mindset when receiving iteration-dominant information compared to no process information.

In addition, past research has aggregated data across studies on growth creative mindsets and a sample size of nearly 4,000 participants suggests that while individuals are relatively split on strong vs weak beliefs in fixed creative mindsets (54% vs. 46% for strong and weak, respectively), it is not evenly split for growth creative mindset. In contrast, 67% of individuals have a relatively strong growth creative mindset, while only 33% have a relatively weak growth creative mindset. These research efforts have also shown the average belief in growth creative mindset ranging from 3.71–3.78 on a 5-point Likert-type scale, while the average belief in fixed growth mindset is significantly lower and ranges from 3.04–3.16. Given that past evidence suggests that the average individual does hold a relatively strong growth creative mindset, this hypothesis implies a positive main effect of iteration-dominant process information on a product's perceived creativity (Karwowski, 2014; Karwowski et al., 2019). However, this dissertation focuses on the interaction effects between an evaluator's growth creative mindset and process information on a product's perceived creativity.

In the following section, I describe how insight processes conflict with strong growth creative mindsets and have the potential to affect perceptions of creativity negatively. As I argued for iteration, I similarly argue that these perceptions will change by insight process information negatively affecting the perceived effort of the creator, causing a mismatch between expected and observed behaviors, and decreasing the evaluator's confidence that the final product is the best product possible.

3.3.2 Evaluation Cues that Conflict with Growth Creative Mindsets

As opposed to iteration, the process information for insight has more of a mystical quality to it because the "how" is more so based on intuitive thought and the means of identifying new connections left as a black box in the creator's mind (Newman & Bloom, 2012; Seifert et al., 1995; Young et al., 2013). Because insight happens through discontinuous and sudden flashes of brilliance, there is a lack of tangible evidence of work taking place and the act of thinking doesn't necessarily "look like" effortful work (Kahneman & Klein, 2009; Seifert et al., 1995; Young et al., 2013). For individuals who have a strong growth creative mindset, this lack of tangible, observable work has the potential to affect the perceived effort of the creator and has the potential to be interpreted as laziness or lack of effort because they would prefer to see errors rather than nothing at all (Dweck, 2008; Vandewalle, 2012). This perceived lack of effort should function as a mediating mechanism and in turn negatively affect perceptions of the final product because the evaluator will not believe the creator gave their best effort and there are potentially problems with the product due to lack of care.

In addition to possibly affecting the perceived effort of the creator, insight involves the identification of the "correct" solution and this does not necessarily match the "practice makes perfect" style that those with strong growth creative mindsets endorse (Ansburg & Dominowski, 2000; Dow & Mayer, 2004; Weisberg & Alba, 1981). This mismatch may work in parallel with decreasing the perceived creativity of the product because although an evaluator with a strong growth creative mindset may recognize the quality of the "correct" solution that solution does not get the benefit from comparing it to ideas that did not work. Narratives depicting insight also do not allow the evaluator to see the final idea develop after multiple improvement attempts, which allows the finished product to compare naturally and favorably to earlier iterations. Further, given the lack of alternatives considered, narratives depicting insight may make it

appear to an evaluator with a strong growth creative mindset that the creator did not do their due diligence or use a thorough process to develop ideas and possible solutions (Piezunka & Dahlander, 2015; Sutton & Hargadon, 1996). This lack of thoroughness should be particularly problematic for evaluations of creative work because the work is supposed to be novel and should necessitate more due diligence than routine work (El-Murad & West, 2003; Madjar et al., 2011; Parmigiani & Howard-Grenville, 2011; Toh & Miller, 2016). For those with strong growth creative mindsets, they are more likely to interpret this as the creator not giving himself or herself the opportunity to fail or try things that are risky, which are behaviors they would expect to see. Taking creative risks are important for those with stronger growth mindsets because that is when you can grow and develop creativity and these evaluators are more likely to see a lack of those behaviors as not matching their expectations and negatively affect perceptions of creativity.

In general, narratives depicting insight work processes would show that the creator relied on their instincts and intuition, which are generally hard to describe to others and based more on feeling (Blattberg & Hoch, 1990; Huang & Pearce, 2015; Janesick, 2001). For instance, Steve Jobs unveiling the original iPod in part relies on this process information style whereby solutions were offered and described as of almost singular thought and of insightful understanding into the nature of product design which improved the reception of the product by aligning with individuals belief in genius creators (Kay et al., 2018). However, those with strong growth creative mindsets do not necessarily believe in the lone, genius creator who relies on inspiration and good luck as depicted in more mythical stories of creativity (J. Guilford, 1971; Kaufman et al., 2006; Simonton, 2020). Rather, evaluators with strong growth creative mindsets would expect creators to have setbacks and errors or struggle (Klein et al., 2017; Moser et al., 2011;

Schroder et al., 2017). By depicting the development of solutions as a discontinuous, intuitive process relying on flashes of inspiration, this may undermine the confidence evaluators with strong growth creative mindsets have because it removes the agency from creativity and goes against the fundamentals of what a growth mindset says is possible for our creative abilities (Karwowski et al., 2019; Puente-Díaz & Cavazos-Arroyo, 2017). Thus, for evaluators with stronger growth creative mindsets, in addition to insight information potentially diminishing the perceived effort of the creator and mismatching with an evaluator's expectations, it may also undermine their confidence in the final product. Taking these arguments and evidence together, I make the following hypothesis:

> Hypothesis 2: The relationship between process information and perceived creativity will be moderated by the perceiver's growth creative mindset such that the relationship will be more strongly negative for individuals with a stronger growth creative mindset when receiving insight-dominant information compared to no process information.

Similarly to Hypothesis 1, because past research shows that the average individual does hold a relatively strong growth creative mindset, this hypothesis implies a negative main effect of insight-dominant process information on a product's perceived creativity (Karwowski, 2014). However, as previously stated, this dissertation focuses on the interaction between the mindsets and process information, as opposed to predictions for main effects. In the following section, I describe my research methods and study designs used to test these two hypotheses.

Chapter 4: Research Design & Methods

4.1 Experimental Study in Design Context

4.1.1 Pilot Validation Study

In order to study how different types of process information affect evaluation, I developed a set of materials to use as manipulations for the process information conditions in an

experiment. I wrote these materials as a set of three interview questions asking about a creator's design process, with the creator's answers differing depending on the process information condition. Below are the manipulation materials, with the three conditions identified by unique font styles and the key differences marked with underlines (No Process Information; **Insight-Dominant;** *Iteration-Dominant)*:

Q1: How would you describe your design process overall?

No Process Information: I thought it went well. It was fun to do a logo design for a coffee shop. I am happy with the final design and had a good experience with the project.

Insight-Dominant: I thought it went well. A lot of great ideas seemed to just come to me during this project and I didn't have to rely much on trial and error. I felt inspired and there were quite a few moments of insight where good ideas just popped into my mind. More of an insightful, intuitive process as opposed to an iterative, developmental one.

Iteration-Dominant: I thought it went well. I tried out all sorts of options for this project and relied a lot on trial and error rather than just inspiration. I liked iterating and there were quite a few moments where good ideas just came from trying lots of ideas and seeing what worked.

Q2: Where did your design ideas come from?

No Process Information: When it comes to design ideas, I just go with ideas that work well with the project brief. I want to make logos that work well for the client and try to use ideas I think they and their customers will like. I have done other designs before and that gives me an idea of where to go for new projects.

Insight-Dominant: When it comes to design ideas, I spend a lot of time in my own head just thinking deeply. I relied a lot on my own intuition and followed the ideas that stuck out to me. Most of my ideas just came from going with the idea that inspired me and trusting my instincts. Not much tinkering on this one, but I definitely experienced a few "lightbulb" moments.

Iteration-Dominant: When it comes to design ideas, I spend a lot of time just experimenting and trying out lots of concepts. I put a lot of effort into iterating and seeing what stuck out to me. Most of my ideas just came from doing a bunch of versions and keeping the things that worked. Lots of tinkering on this one, but not a lot of "lightbulb" moments.

Q3: How did you go about dealing with the problems or design difficulties?

No Process Information: When I encountered a problem, I just kept working as normal. Problems and difficulties are bound to happen during a project. It's something to just work through and fix.

Insight-Dominant: When I encountered a problem, I took time to think about what solution could solve the issue neatly. I usually had a hunch about what to do and just went with my gut and trusted my instincts. During this project I had a lot of flashes of good ideas for fixes rather than comparing lots of different solutions.

Iteration-Dominant: When I encountered a problem, I took time to list out a bunch of solutions that might work. I usually toyed around and tried out as many alternatives as I could with the time I had. During this project I compared lots of different solutions rather than having flashes of good ideas for fixes.

To determine the efficacy of these materials, I conducted a pilot validation study with 150 participants using the online platform MTurk. I invited the users to participate in a study about evaluating creative work and submissions were restricted to users from the United States who spoke English. I included three attention checks in the study and of the 150 submissions, I removed eight for failing two or more attention checks, which left a final sample of 142.

In the study, the participants read and evaluate each of the three Question/Answer Sets in a randomized order. For each Question/Answer set, the participants indicated their agreement or disagreement to 10 statements related to the manipulations for process information, with five items pertaining to insight and five to iteration. The five items relating to insight included: This individual…"Used their intuition to develop the logo design," "(R) Did not rely on their instincts," "Spent time thinking deeply about their ideas during the project," "(R) Did not experience "lightbulb" moments or flashes of good ideas during the project," and "Predominantly relied on intuitive processes to make the logo." The five items related to iteration were: This individual…"Used trial and error to develop the logo design," "(R) Did not try a lot of options to develop solutions," "Iterated on ideas during the project," "(R) Did not experiment with alternatives during the project," and "Predominantly relied on iterative processes to make the logo." All of these items were rated on a 7-point Likert-type scale (1 =

strongly disagree, 7 = strongly agree) and both the insight measures, as well as the iteration measured showed strong interitem reliability (Cronbach's = .81 and .77 for insight and iteration, respectively).

In order to differentiate between the process information types, I calculated paired t-tests with a Bonferroni adjustment for the ratings of the insight and iteration measures between each of the three materials. For these comparisons, one should expect that the individuals evaluating insight-dominant information show agreement that insight processes led to the creation of the design, while iteration processes played a minor or non-role. Similarly, for the iteration-dominant information, individuals should strong agreement that iteration processes led to the creation of the design, while iteration processes played a minor or non-role. Finally, the filler information provided in the no process information condition should *not* show a strong use of either iteration or insight processes. In accordance with these expectations, all of the manipulations were significantly different from one another as intended and I present the results of these pairwise comparisons in Table 1. Participants agreed that insight processes were important in the insight-dominant materials (*M = 5.42, SD = 1.17),* while they slightly disagreed that iteration processes were important (*M* = 3.84, *SD* = 1.28). Similarly, participants agreed that iteration processes were important in the iteration-dominant materials (*M = 5.30, SD = 1.15),* but neither agreed nor disagreed that insight played a role (*M = 4.07, SD = 1.35)*. The filler materials for the no process information condition also worked as intended whereby participants did not believe that either insight (*M = 4.28, SD = 1.07)* or iteration (*M = 5.42, SD = 1.17)* played an important role in the process.

Insert Table 1 about here

4.1.2 Research Setting and Participants

To understand the effects of process information and growth mindset on creativity evaluations, I conducted a between subjects experiment online using Qualtrics software. In order to determine an appropriate sample size, I conducted an a priori power analysis of a test for the increase in variance explained by the inclusion of the interaction predictors between process information and growth mindset to a model with the main effects and control variable predictors. I used *GPower 3.1* computer software to complete the power analysis using the statistical test F test: linear multiple regression – R^2 increase, fixed model. I calculated this with five tested predictors (two dummy variables for three process information conditions: insight-dominant, iteration-dominant, no information + one continuous variable: growth mindset + two continuous control variables: openness to experience and creative experience) and seven total predictors (five tested predictors + two interaction terms between process information and growth mindset). To better assess the range of samples, I conducted two analyses using different potential effect sizes: a moderate effect with $f^2 = .15$ and a small effect with $f^2 = .05$. Considering that some use .80 as a lower bound and other desire power of .95, I aimed for power of .85 and this yielded samples of 102 and 262 for moderate and small effect sizes, respectively.

Participants came from an undergraduate business school population at a private research university in the Midwestern United States. I invited individuals to participate in a study involving the evaluation of creative work via the business school's participant pool. They received a half hour course credit for their participation and I collected 293 submissions. Of

these 293 submissions, I removed five from the dataset because the participants failed two or more of the attention checks. This left 288 participants in the final dataset, which was well above the suggested sample sizes from the power analysis.

These participants had an average age of 19.21 years old. 56.3% of the sample reported they were Female, 43.4% reported Male, and 1% reported Transgender Male. Participants also reported their race/ethnicities which were 60% White/Caucasian, 6% Black American, 1% Black Non-American (African, West Indian, etc.), 20% East Asian (Chinese, Japanese, Korean, etc.), 1% South East Asian (Cambodian, Laotian, Vietnamese, etc.), 6% South Asian (Indian, Pakistani, etc.), 2.1% Pacific Islander (Filipino, Samoan, etc.), 15% Latino or Hispanic, 1% Native American, 13% Bi-racial/Mixed Race/Multicultural, and 1% Other.

The Qualtrics software randomly assigned participants to one of three process information conditions: Insight-Dominant; Iteration-Dominant; or Control: No Information.

4.1.3 Procedure and Materials

Individuals invited to participate in the study signed up for the study through their school's online participant portal. The participants received a link to a Qualtrics survey and after giving their consent to participate, the participants received the following instructions:

"In this day and age, many creative professionals and hobbyists share their work with others. This allows them both to show off their work, as well as give others a glimpse into what they are working on. For this study, we would like you to view and evaluate an individual's creative work. After you have evaluated the work, we will ask for some brief information about you."

Individuals then received a brief description of the creative work project, which read:

"As noted in the study introduction, individuals often engage in creative work when in their professional pursuits. Below, we provide an example that we would like you to evaluate. The creator was tasked with designing a logo for a business venture and had the following guidelines:

- *Create a logo for a new coffee café business called "*Sleepy Bunny Coffee House"
- *Keep the design relatively minimalist*
- *Document your work"*

Then participants received the following information:

"As part of documenting their work on the logo design, the creator videoed part of their work process. For your evaluation of the logo design, we have provided a 2 minute time-lapsed video clip from the creator's footage, as well as the final design at the end of the video."

You can view the video clip of the logo design here: https://youtu.be/g4eIF_lwH20

Following the viewing of the video and final design, participants then received their first attention check, which asked them to describe what the video depicted briefly, providing at least two specific details. After completing this written attention check, participants then received the following instructions:

"In addition to documenting their creation of the product, the creator also answered some questions about their experiences making the logo. Below, we share both the questions asked and the creator's responses."

The participants then received one of the Question/Answer sets from the pilot validation study depending on their randomly assigned process information condition: No Process Information, Insight-Dominant, or Iteration-Dominant. Software settings ensured that the random assignment resulted in nearly even participant levels across these three conditions.

After the participant received both the video stimulus and their randomly assigned process information materials, they completed a manipulation check using the same 10 items used to measure insight and iteration in the pilot validation study. Both the insight measures, as well as the iteration measured showed strong interitem reliability (Cronbach's = .78 and .83 for insight and iteration, respectively). As in the pilot validation study, the results in this experiment showed the manipulations worked as intended and unpaired t-tests were statistically significantly different across the process information conditions as desired. Participants agreed that insight processes were important in the insight-dominant materials (*M = 5.33, SD = 0.83),* while they neither agreed nor disagreed that iteration processes were important (*M = 4.13, SD = 1.23).* Similarly, participants agreed that iteration processes were important in the iteration-dominant materials (*M = 5.79, SD = 0.83),* but neither agreed nor disagreed that insight played a role (*M = 4.19, SD = 1.23)*. The filler materials for the no process information condition also worked as intended whereby participants did not believe that either insight (*M = 4.39, SD = 1.20)* or iteration (*M = 4.38, SD = 1.42)* played an important role in the process. I present the results of the t-tests between the conditions for both the insight and iteration measures in Table 2.

Insert Table 2 about here

After participants received the process information materials, the study introduced the creative evaluation measures with a still photo of the final logo design and the following information:

"We are hoping to get an understanding of how you felt about the creator's logo design depicted in the video and shown here above."

After evaluating the logo design, the participants then received the following instructions:

"This completes the tasks related to evaluating the creative works. We now would like to ask some questions about yourself in order to get a better sense of your experiences and personality."

The participants then completed the growth creative mindset scale, as well as the control measures related to their personality and experiences and their demographic information. After providing this information, the study concluded and participants received a debriefing page about the study's goals.

4.1.4 Measures

Interitem reliability (i.e., Cronbach's alpha) for multiitem survey measures will be included in the diagonal of the table that lists the summary and descriptive statistics of the data.

Perceived Creativity of the Submitted Work. I measured participants' perception of the submitted work's creativity by asking them to evaluate the novelty and usefulness of the submitted work (Amabile, 1996). Participants were asked the extent to which he or she agreed or disagreed with each of the following statements: "I thought the logo design was… 'novel,' 'innovative,' 'unique,' 'appealing,' 'effective,' and 'useful.'" Each item used a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). I assessed Novelty based on the response to "novel," "innovative," and "unique," while I assessed utility based on their response to "appealing," "effective," and "useful." I calculated the internal reliability of the novelty items (novel, innovative, & unique; Cronbach's alpha = .81), the utility items (appealing, effective, & useful; Cronbach's alpha = .81), and the combination of the novelty and utility items (Cronbach's alpha = .75), all of which had high internal reliability.

Evaluator's Growth Creative Mindsets. I measured participant's growth creative mindsets with a 5-item scale adapted to the creativity domain based on Karwowski's (2014) and Dweck's (1999) previous work. All items were rated on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree) and included: "Everyone can create something great at some point if he or she is given appropriate conditions," "Anyone can develop his or her creative abilities up to a certain level," "Practice makes perfect—perseverance and trying hard are the best ways to develop and expand one's capabilities," "Rome wasn't built in a day—creativity requires effort and work, and these two are more important than talent," "It doesn't matter what creativity level one is at—you can always increase it." The five items had a Cronbach's alpha of .63, which is borderline acceptable and lower than expected for an established scale used in past research. Because growth creative mindset is a key variable in the model, I investigated this further.

A closer look at past research on creative mindsets scales shows that while the fixed creative mindset scale typically shows a strong internal reliability with Cronbach's alphas ranging from .76-.79 (Karwowski, 2014; Royston & Reiter-Palmon, 2019), with only one study reporting an alpha < .70 at .63 (Puente-Díaz & Cavazos-Arroyo, 2017), the growth creative mindset scale generally shows a slightly lower internal reliability ranging from .60-.66, with one study reporting an alpha as low as .50 (Royston & Reiter-Palmon, 2019). Given these past findings, the internal reliability of the scale in my sample is within expectations of what previous findings would suggest. Also, with a large sample of 3,876 participants, researchers did obtain an acceptable internal reliability of .73 for growth creative mindset and past efforts have used factor analysis to establish the independence of the growth and fixed creative mindsets from one another and other related measures like creative self-efficacy and creative identity. This provides a fair amount of evidence that the growth creative mindset scale is relatively reliable and

unidimensional (Hass et al., 2016; Karwowski et al., 2019). However, to examine this further, I conducted a reliability analysis (Field et al., 2012) to determine if dropping any of the items in the scale would improve the internal reliability and I present these results in Table 3.

As shown in Table 3, the internal reliability of the scale decreases if I remove any of the five items, which suggests that the five-item scale provides a better measure than the other options. However, the corrected item-total correlations suggest that the item "Everyone can create something great at some point if he or she is given appropriate conditions" correlates less well with the scale compared to the other items, but removing this item diminishes the Cronbach's alpha from .62 to .60. Given these findings, I then conducted an exploratory factor analysis (EFA) to determine further if my data supports including all five items and treating the scale as unidimensional. Per the recommendation of Hinkin (1998), before I conducted the EFA, I calculated the correlations between the growth creative mindset items and present those results in Table 4. Interestingly enough, although all of the items significantly and positively correlate with one another, all of the items fail to correlate at least .40 with any of the other items in the scale and, according to Hinkin's guidelines, this suggests that none of the items are performing particularly well and are all potentially viable to drop. Given the similarity in results for each of the items, I retained all five items, submitted them to an EFA using maximum likelihood estimation with oblim rotation, and did not specify the number of factors in order to determine whether treating the scale as unidimensional is appropriate.

I present the results of the EFA in Table 5 and the analyses of the five growth creative mindset items resulted in one factor that explained 25% of the variance, which represents the appropriate a prior dimensions. The eigenvalue of this factor was 1.27, however the factor analysis did again show that the item "Everyone can create something great at some point if he

or she is given appropriate conditions" performed worse than the other items and only had a factor loading of .38. I did an additional factor analysis with the other four items, which again resulted in one factor, which explained 28% of the variance and had an eigenvalue of 1.13, which is comparable to the results of the five-item scale. Overall, the results and past research suggest that is appropriate to treat the scale as unidimensional. Due to the possible problems with the item ""Everyone can create something great at some point if he or she is given appropriate conditions," I conducted the hypothesis testing with both the five-item and four-item growth creative mindset scales, but the results did not differ substantively from one another nor change any of the findings' significances. For these reasons, I chose to retain all five of the items in accordance with past research efforts and collapsed the items into one measure for the evaluator's growth creative mindset. I discuss the implications of these measurement concerns further in the limitations of the Discussion section.

Insert Tables 3, 4, and 5 about here

Control Measures. I included openness to experience as a control measure due to its association with creativity and creative personality (Batey & Furnham, 2006). For this measure, I administered ten items from the Openness to Experience portion of the NEO-PI-R Domains scale developed by Costa and McCrae (1992). For each item, the individuals indicated the extent to which he or she agreed or disagreed with whether a characteristic applies to them. The items included: I… "Believe in the importance of art," "Have a vivid imagination," "Tend to vote for liberal candidates," "Carry the conversation to a higher level," "Enjoy hearing new ideas," "(R) Am not interested In abstract ideas," "(R) Do not like art," "(R) Avoid philosophical

discussions," "(R) Do not enjoy going to art museums," "(R) Tend to vote for conservative political candidates." These items were rated on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree) and had an acceptable internal reliability (Cronbach's alpha = .78)

I also included the evaluator's experience in visual arts as a control measure with participants indicating their level of experience in Visual Arts (e.g., painting, sculpture, graphic design, etc.) on a 5-point Likert-type scale (1 = no experience at all, 2 = a little experience, 3 = a moderate amount of experience, 4 = quite a bit of experience, 5 = a great deal of experience).

Demographics. Participants provided their age, gender, and race/ethnicity and I previously described these figures in the section regarding the research setting and participants.

4.2 Results of Experimental Study in Design Context

4.2.1 Descriptive Statistics

Insert Table 6 about here

Table 6 provides descriptive statistics for and correlations among the study variables. For all of the hypotheses, the key measures are related to creativity and as expected there were significant positive correlations among each of the combinations for these three measures with novelty and utility (r = .47, $p < .01$), novelty and overall creativity (r = .91, $p < .01$), and utility and overall creativity (r = .79, $p < .01$). Further, the means and standard deviations of these measures suggest the average evaluator considered the design somewhat creativity as intended and not overwhelming so such that ceiling effects might be of concern. This is the case for the novelty, utility, and combination of novelty and utility measures (M = 5.39, SD = 1.11; M = 6.04, SD = 0.75; M = 5.72, SD = 0.80).

Although creativity measures are of importance for all of the hypotheses, the growth creative mindset of the evaluators also matters as well. Similarly to past research he participants tended to have a stronger growth creative mindset (M = 5.51, SD = .72) (Karwowski, 2014; Karwowski et al., 2019). Interestingly enough, the growth creative mindset did not have a significant correlation with the evaluator's visual arts experience (r = .04, $p > .10$), but did have a significant positive correlation with openness to experience (r = .21, $p < .01$). In regards to growth creative mindset's relationship to the various creativity measures, the results suggest that growth mindset is important for creativity and particularly so for the perceived utility. The evaluator's growth creative mindset had a significant positive correlation with creativity and utility (r = .15, $p < .05$ and r = .21, $p < .01$, respectively), but did not have a significant relationship with novelty (r = .08, $p > .10$).

4.2.2 Hypothesis Testing

In order to test the hypotheses, I conducted a series of multiple OLS linear regressions predicting a product's perceived creativity by using the combined measures of novelty and utility and report these results in Table 7. For these analyses, the models included the process information conditions using dummy coding with the no process information condition as the reference group, the participants' growth creative mindset, and the interaction between process information condition and growth creative mindset. Additionally, I included both the evaluator's openness to experience and visual art experience as control variables. Because this dissertation focuses on interaction effects, to avoid potential multicollinearity issues and to help with the interpretation of the effects, all of the continuous predictors, (i.e., creative growth mindset, openness to experience, and creative experience) were grand mean-centered and the results I report are unstandardized coefficients (Baguley, 2009; Preacher et al., 2007).

In Hypothesis 1, I predicted that in the iteration-dominant condition, compared to the no process information condition, the product's perceived creativity will be higher when individuals have a stronger growth creative mindset. In contrast, in Hypothesis 2, I predicted that in the insight-dominant condition, compared to the no process information condition, the product's perceived creativity will be lower when individuals have a stronger growth creative mindset. As shown in Model 2 of Table 7, neither the interaction of growth creative mindset and iteration process information (b = -0.24, p > .10) nor the interaction of growth creative mindset and insight process information were significant (b = -0.11, p > .10). Inconsistent with Hypothesis 1, a simple slopes analysis (Aiken et al., 1991) showed that when evaluators had stronger growth creative mindsets, the relationship between iteration process information and a product's perceived creativity was negative, yet insignificant (slope = -0.21, t = -1.28, p > .10). For Hypothesis 2, a simple slopes analysis did show a negative relationship between insight process information and a product's perceived creativity when the evaluators had stronger growth mindset, but the finding was insignificant (slope = -0.20, t = -1.23, p > .10). Although the hypotheses focused on stronger growth mindsets, the results of the simple slopes analysis also showed that when evaluators had weaker growth creative mindsets, neither the relationship between iteration process information and perceived creativity (slope = 0.13, t = 0.78, p > .10) nor insight process information and perceived creativity (slope = -0.05, t = -0.32, p > .10) were significant. Overall, the results do not offer much support of the hypotheses, but I also included a visualization of the examined interaction in Figure 1.

Insert Table 7 about here

Insert Figure 1 about here

In addition to the lack of an observed interaction effect, process information also did not yield any significant main effects on perceived creativity. However, although not predicted, the evaluator's growth creative mindset did show a positive and significant effect on perceived creativity ($b = 0.14$, $p < .05$) and this effect increased when including the interaction terms as shown in Table 7, Model 2 ($b = 0.27$, $p < .05$). Aside from the observed significant effect of the growth creative mindset, none of the other predictors or control variables yielded a significant effect.

In order to determine if control variables had masked any significant or interesting findings, I conducted additional post-hoc analyses utilizing different sets of control variables. Further, to understand better how exactly creativity evaluations are influenced by process information, I also conducted post hoc analyses examining the effects on the perceived novelty and utility, as opposed to the overall perceived creativity. While novelty and utility are both important to creativity, they can be differentially affected during evaluations (Clapham, 2020; Falchetti et al., 2018; McCarthy et al., 2018).

4.2.3 Results of Post-Hoc Analyses

To determine if any control variables had masked significant findings for the variables of theoretical interest, I conducted an additional series of multiple OLS linear regression models similarly to the procedure to test the hypotheses and present the results in Table 8. As before, the models included the process information conditions using dummy coding with the no process information condition as the reference group, the participants' growth creative mindset, and the interaction between process information condition and growth creative mindset, but the models

differed in terms of the set of control variables. I conducted analyses including no control variables, only the evaluator's openness to experience, and only the evaluator's visual arts experience. In all of these models, each of the continuous predictors, (i.e., creative growth mindset, openness to experience, and creative experience) were again grand-mean centered to help with interpretation of their effects.

Insert Table 8 about here

As seen in the previous hypothesis testing, an evaluator's growth creative mindset had a consistent and significantly positive effect on a product's perceived creativity across all of the models. However, as before, there were no significant main effects of process information and no significant interaction effects between an evaluator's growth creative mindset and process information. Thus, unfortunately, the results remain consistent and I still find a lack of support for the hypotheses. Although changing the control variables in the model did not substantively affect the results, I still considered the possibility that the results might differ when looking at utility and novelty individually as opposed to an overall measure of creativity.

To investigate the possible effects of growth creative mindset and process information on a product's perceived novelty and utility, I conducted an additional series of multiple OLS linear regression models with the same procedure used to test the hypotheses, but with a product's perceived novelty and utility as the dependent variables. I present the results of these analyses in Table 9 and interestingly, the models predicting a product's perceived novelty were insignificant, which suggests the variables included in the model are not very predictive of novelty. Further, while the interaction term of iteration and growth creative mindset had a significant effect in the

model predicting perceived novelty because the regression model itself did not provide a significant F-test, I cannot claim any support for an observed effect on perceived novelty.

Insert Table 9 about here

In contrast, the models predicting a product's perceived utility were significant and the results suggest that insight process information has a significant and negative effect on a product's perceived utility (b = -0.25, $p < .05$). Additionally, an evaluator's growth creative mindset appears to improve perception of creativity via improving utility as shown in Model 1 in Table 9 (b = 0.19, $p < .01$), although this effect is no longer significant when including the interaction terms (b = 0.17, $p > .10$). However, I still did not observe any significant interaction effects between an evaluator's growth creative mindset and process information on a product's perceived utility. Although there were no observed significant interaction effects, because this dissertation focused on the interaction between growth creative mindsets and process information, I included plots of the interactions as an exploratory means to better understand and visualize the observed relationship. I present plotted interactions in Figures 2 and 3 for a product's perceived novelty and utility, respectively. Although these results do not show support for the two predicted hypotheses, they do provide some evidence that growth creative mindsets and process information have some effect on creativity evaluations and that this may occur by improving perceptions of utility.

Insert Figures 2 and 3 about here

Chapter 5: Discussion

5.1 Discussion of Study Findings

In this dissertation, I investigated the effects of creative process information and growth creative mindsets on the evaluation of creativity. In particular, I predicted that evaluators' with stronger growth creative mindsets would particularly like iteration-dominant narratives and that would lead to higher perceptions of creativity and also predicted that evaluators' with stronger growth creative mindsets would particularly dislike insight-dominant narratives and that would lead to lower perceptions of creativity. However, the results of the experiment did not offer any support for these predictions and there was only a significant and negative main effect of insight process information on perceived utility. Given these findings, it is unclear if these different types of process information prime and activate an evaluator's growth creative mindset or if other features are more important to the evaluator's perceptions. However, the results did consistently show a positive main effect of growth creative mindset on a product's perceived creativity and the results also show a positive and significant correlation between an evaluator's growth creative mindset and the product's perceived creativity ($r = .15$, $p < .05$) and perceived utility ($r = .21$, $p < .01$), but not perceived novelty ($r = .08$, $p > .10$). This suggests that while I did not observe evidence supporting an interaction effect between mindset and process information, growth creative mindsets are associated with perceptions of creativity and particularly utility.

In addition to the hypotheses testing, I also conducted exploratory analyses in order to get a more holistic understanding of how perceptions of creativity relate and differ according to the two components of creativity, novelty and usefulness. Interestingly enough, the models predicting perceived novelty were not significant, which suggests that these set of predictors are

largely unrelated to changing how evaluators perceive novelty. However, the results did show that growth creative mindset had a significant and positive effect on perceived utility, while insight-dominant process information had a significant and negative effect on perceived utility compared to no process information. This suggests that the more viable route to understanding how both process information and creative mindsets affect creativity evaluations lies in examining how individuals think about the usefulness of the finished product.

Overall, these results did not support the predicted interaction effects of process information and growth creative mindsets on a product's perceived creativity. However, some signs of evidence show that process information and growth creative mindsets have the potential to influence an evaluator's perceptions, particularly via their views of utility. This implies that how a creator presents and discusses their work processes has more implication for how evaluators perceive the usefulness of their solutions as opposed to the novelty.

5.2 Theoretical Contributions

Overall, the findings from this work show some evidence that small changes in narratives about creative processes can have an effect on how individuals evaluate that work. This is important because how ideas or prototypes are evaluated has a strong effect on the trajectory of how it will develop within the organization and could potentially change the trajectory of how that idea or product develops (B. M. Kudrowitz & Wallace, 2013; J. Mueller et al., 2018; Perry-Smith & Mannucci, 2015). Further, how individuals describe their work and create process informations will have an even greater effect in a Post-Pandemic world where many organizations have more robust work from home policies and potential evaluators may have less first person understanding of their individuals day to day work going forward (Carnevale & Hatak, 2020; Patnaik et al., 2021; Von Krogh et al., 2020). Given these changes to organizations,

there is a greater need to have a theoretical understanding of how individuals evaluate creative work and how this might change when they are relying predominantly on the explanations of their creators as opposed to having firsthand understanding of the creation.

This work builds on a tradition of research on creativity evaluations that intends to examine how evaluators' beliefs influence how they interpret information to form judgments and eventually make decisions for their organizations. Although earlier research established understandings regarding the importance of the products themselves (Hoeffler, 2003; Rao & Monroe, 1988) as well as evaluator characteristics such as their domain expertise (Franke et al., 2014; West et al., 2008) or cultural background (Loewenstein & Mueller, 2016; McCarthy et al., 2018), less attention has been paid to how the characteristics of the work process itself impacts the evaluation of the result of that work process, such as an idea or new product. However, investigating these tendencies and interactions is important because there already exist plentiful examples of the biases against creativity and obstacles impeding their implementation (Y. S. Lee et al., 2017; Song & Montoya-Weiss, 2001; Watts et al., 2019).

In this dissertation, I attempted to add to this growing literature by introducing and manipulating the work process informations that accompanied a particular product in order to better understand the multi-faceted nature of creativity (Amabile, 1996; Birney et al., 2016; Caroff & Lubart, 2012; Ranjan, 2014). Although there were not observed effects on perceived creativity, the exploratory post-hoc analyses suggest that process information and growth creative mindsets do have some effect on changing perceptions and more work is needed to understand exactly why this happens and under what conditions it may occur. Researchers have noted the difficulties that arise from the subjective nature of creativity, yet this interconnected

nature adds an additional wrinkle that gives creativity scholars plenty of opportunities to explore (Glück et al., 2002; Kaufman & Beghetto, 2013; Simonton, 2018).

One consideration from these studies is whether the work output itself can stand on its own and individuals can evaluate the product based on its own merits. In my theorizing, I did not consider the quality of the actual finished product and it is possible that my lack of significant findings are due to boundary conditions regarding finished product itself. For instance, if a product is so clearly novel and its uses so obviously apparent (e.g., a real, functioning time machine), then it is unlikely that process information or even creator effects may matter very much in regards to the products evaluations. In contrast, some products may be so obviously non-novel or have such niche uses that anything the creator shares about their work will have a minimal boost on the perceived creativity. Additionally, this also relates to the possibility that the process information may only have relevance when the evaluators are unsure of how they feel about the finished product. If they love the possible uses for the product then the creator likely cannot tell them much of anything that will change their mind, however, if they are uncertain about how they feel then they may continue looking for more information to make a decision (Ederer & Manso, 2013; Piezunka & Dahlander, 2015). Given the lack of significant findings here, future research should explore the conditions when process information matters contingent on the features of the product. This makes it important to understand how the components of creativity relate to one another and when the effects of one component are so impactful such that it dominates the others. Further, although there were no significant findings on the perceived creativity, the observed effects on perceived utility suggest that this space warrants further investigations.

In regards to the post-hoc analyses, the findings that supported the effect of insight process information on evaluations has particular importance due to the frequency of breakthrough ideas and "aha" moments in creative work (Runco, 1993; Skaar, 2019; Zander et al., 2016). Given that the insight-dominant process information had a negative effect on the utility of the designs, this suggests that the process information may exacerbate some concerns regarding the uncertainty in the quality of the finished product as well as cause concerns about effort and due diligence of the creator. Given the fear that uncertainty creates, exacerbating this concern could increase the bias and encourage the evaluator to look for faults rather than focus on the positive aspects and potential applications (Y. S. Lee et al., 2017; J. Mueller et al., 2018). However, this research also adds to the important characteristics of evaluators with the findings related to the growth creative mindsets. While these mindsets have already shown effects on how creators themselves behave, this is the first work to show evidence that they also influence how individuals perceive and evaluate creativity as well, particularly the perceived utility.

This has important implications for how individuals in organizations should frame their work to their superiors or decision makers and implies that creators need a good understanding of how they are describing their work in order to garner the most favorable reception. As described earlier, schemas play a critical role in all of our acts of perception and developing an understanding for creativity based schemas is critical in understanding the evaluation of creativity (Axelrod, 1973b; Bingham & Kahl, 2013). Creators may not always have the ability to change their evaluator's relevant schemas; however, they do have a lot of autonomy in regards to how they may try to describe their work and product. While this work has demonstrated the importance of these types of schemas, future work should continue to identify not only the relevant schemas, but also the behaviors and process information elements that are most

impactful and activating of those schemas. This work attempted to identify those elements in the form of iteration-dominant and insight-dominant process narratives and offered some evidence that these narratives affect evaluations and perceptions differently.

5.3 Practical Implications

This research's most practical takeaway is that the process information creators share with others about their work process, even small changes in details, can affect how they perceive a finished product regardless of that finished product's actual quality. While this may seem obvious, based on the findings related to the insight-dominant condition, it appears that simply telling an evaluator that you had moments of insight and relied on an intuitive style can send negative signals to evaluators. This appears to occur particularly for perceived utility, which may be a function of the perceived effort and care put into the work process. It is possible that firms that have a high number of creative professionals, like an architecture firm, will have lower chances of encountering these issues because they understand the complex nature of creative work, but there are many creative jobs in firms not specializing in creativity. Many organizations have employees with mixed specialties who may not recognize all styles of creative work as equal. Further, in large corporations, the creative professionals have an important role, but they have to work with other divisions of the company and appeal to many different types of audiences (Howell & Boies, 2004; Perry-Smith & Mannucci, 2015; Sutton & Hargadon, 1996).

The results of this study should also have more relevance for the average employee in a Post-Pandemic world as opposed to just a few years ago with the increased changes to workplace cultures and work from home policies (Patnaik et al., 2021; Von Krogh et al., 2020). As individuals increasingly work from home that means that their managers, colleagues, and other potential evaluators will have less firsthand knowledge and experience of that individual's work

process. Without the instances of casually walking by someone's desk or watching them build a prototype in a group setting, evaluators will increasingly evaluate work products that they are less familiar with. Because of this, the details and information that the creators share will have an even more important role and potentially serve as the only knowledge the evaluator knows about its creation. So while the studies in this dissertation do not emulate all potential scenarios, real life work has lost some intimacy in knowledge about other's day-to-day work lives, which the work in this dissertation more closely resembles.

Further, examples from individuals working in creative domains already demonstrate the importance of crafting the narratives of their process information. For instance, take entertainment industries like music or Hollywood where it is common knowledge that public relations are a key component and what individuals share regarding their work process and themselves has strong implications for how they are categorized (Elsbach & Flynn, 2013). When actors and actresses in Hollywood give interviews for new films and televisions shows, the interviewers often ask questions about their time filming and what working on the project was like. Publicist and PR members of the team manage these interviews carefully and, presumably, they want to create some idea or vision about the film in the potential audience's mind. This suggests that how actors worked on the movie and what that process was like is a key part of crafting that perception in the potential moviegoer's mind, which this work attempts to emulate.

5.4 Limitations and Future Research

One of the major limitations of this work was the rather low internal reliability observed in a key variable in the model, the evaluator's growth creative mindset. While the results did suggest that growth creative mindset did have a significant and positive effect on perceived creativity, the lack of observed significant interaction effects and questionable internal reliability

call into question whether this experiment provided the best test of understanding the role of growth creative mindsets in evaluations. While the internal reliability of the fixed creative mindset scales appears relatively stable across populations, the evidence here suggests this may not hold for growth creative mindset. For instance, considering the sample used undergraduate students who are actively learning more about their own skills, beliefs, and identity, their beliefs regarding growth creative mindset may be in more flux than the average individual and thus less internally reliable when completing a survey for research purposes. Given that fixed creative mindset scale tends to have a more consistent internal reliability across studies and populations, including the fixed creative mindset in future work may offer more fruitful opportunities for researchers (Karwowski, 2014; Karwowski et al., 2019). At a minimum, researchers could examine how fixed and growth creative mindsets differentially affect evaluations even if further evidence shows they do not have an interaction effect with process information on perceived creativity. While I did not observe a significant interaction effect between growth creative mindset and process information in this experiment, I still believe that the fundamental way in which beliefs about creativity influence perceptions of creativity remains and future work should determine what exactly these mindsets encourage evaluators to pay attention to.

While I included iteration and insight process information in this dissertation because they contrast and are well establish in the creativity literature, it's possible that the growth creative mindsets encourage the individuals to focus on other features of the process besides the identification of the solutions. Further, it may be particularly difficult to observe an effect with individuals who do not have domain expertise and are thus much more likely to have varying ideas about what a creative process looks like. While creative mindsets vary across all populations, when individuals develop domain expertise they also are developing expectations

about what the work in that domain looks like and what the appropriate processes and best practices are. It is possible that the theorizing described in this dissertation does not apply to all populations, but rather is more likely to function when looking within those who have domain expertise or when comparing non-experts with experts. For instance, an interesting future direction could examine this in an organization where some decision makers have domain expertise, while others have none or very little. In both populations, we would expect to see variation in the growth creative mindsets, however they may have different rules and beliefs about the processes of creative work such that the experts have clear expectations of what the individuals should do, while the novice has little to no idea. By comparing these different populations, researchers could determine if domain expertise is a necessary condition to observe the prediction interaction between growth creative mindset and process information on perceived creativity. Thus, while I still support the underlying logic in the theory, the lack of evidence in the experiment suggests that other boundary conditions may exist or that this experiment did not give the creators enough experience and view into the creator's process to illicit a noticeable effect.

Related to these boundary conditions, another limitation of this research was the relatively short experiences the evaluators had with the product's development. Although not addressed in the theory, this short experience only gives the evaluator a brief glimpse into the process, which may not give the evaluator enough time or evidence to change how he or she understands and views the finished product. While this approach of using a brief exposure to the creative process worked well for an experimental setting, this is closer to the experience of interacting with a new product on an internet platform like Instagram as opposed to a colleague who sees the individual work on the project over the course of weeks or months. Thus, although

this research has generated potential process information elements and behaviors that may influence the evaluation, this research cannot speak to how these effects may differ in the course of a long-term project. Future work in this domain should consider how to incorporate more longitudinal methods such as a diary study to investigate these effects with a long-term perspective. For instance, viewing a new product develop over the course of months may provide a much more rich and detailed account of how knowledge about the process differs and how this affects creativity evaluations.

In addition to the shorter time frame, something also not considered in this research was the creators themselves and what relation, if any, the evaluator has to the creator. In the case of an actual organization, the evaluator may be a colleague that you have worked with or have at least heard about and chatted with over email. This familiarity and potential reputation effects may drastically alter how an individual would interpret a work behavior, particularly if it does not fit their expectations and pre-existing beliefs regarding that person (Ames, 2004; Bingham & Kahl, 2013). Further, if the creator has a role as something like an artist or engineer then they also may have some type of reputation or associated stereotypes, which have their own associations with a "correct" work process. However, examining these effects with evaluators who have longer-term relationship with the creator would add deep understanding to how these perceptions develop and change. In particular, while a long-term view would certainly introduce more familiarity, the level of familiarity could still vary greatly across evaluators. For instance, a group of people could work on a project for a year, but what they saw and experienced may differ because of their project responsibilities or even where they sit in the office. Future research could use naturally occurring differences like this, which may help determine how much an evaluator saw of the process beyond the weekly and final deliverables.

Another thing that this study lacks is examples of poor creativity. For the purposes of this research, I had intended to use examples that individuals would find to some degree creative and these effects might differ for a product that is low in creativity. For instance, it is possible that the way the individual presents the process information has more influence on products low in creativity because individuals are less convinced of the novelty and utility. For products already considered highly creative, the product itself might stand on its own and override any effects that process information may have on the evaluation. However, for products with lower creativity, seeing the work that went into it may encourage an evaluator to not think of it as poorly because when people put work and effort into something that makes us have more of a tendency to give them rewards for their efforts.

Finally, this work also generates a number of potential questions that pertain to the delivery and timing of the process information. As a general question, does *how* you learn about the process information matter as well. For instance, does it matter if the information comes in written vs spoken vs. visual form? Alternatively, does it matter if it is coming from the creators themselves or if it is a reporting on the process? In terms of timing, there are potentially differences if you learn about the work process after the fact or while the project is ongoing. Further, if you get multiple reports over time, is that different from receiving one final presentation at the end that covers it all? These are some of the potential questions that would go deeper into the details of this presentation and use of the process informations to influence evaluations and efforts towards these ideas would help creators and researchers better understand how these work together to influence the final evaluations.

5.5 Conclusion

In my dissertation, I investigated the role of work process information and growth creative mindsets on the evaluation of a product's perceived creativity. In doing so, I made predictions regarding two types of work process information, iteration and insight. I chose to focus on how these process information types interacted with an evaluator's growth creative mindset and tested their effects in an experimental study in a design context. However, I did not find support for any of the hypothesized interaction effects, but did find some evidence of main effects of process information and growth creative mindsets with exploratory analyses examining a product's perceived utility. These results have implications for researchers in terms of better understanding the important characteristics of a creativity evaluation, but also for creators who are hoping to have their work assessed fairly and favorably. Further, I showed evidence that an individual's growth creative mindset matters for not only themselves and their own creative ability, but also how they view and evaluate others' behaviors and creativity. The relevance of this research increases as we move increasingly to more remote work situations in a Post-Pandemic world and adds to a growing literature that seeks to understand creative evaluations in a multi-dimensional way.

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Figures

Figure 1. The Effects of the Interaction between Process Information and Growth Creative Mindset on a Product's Perceived Creativity

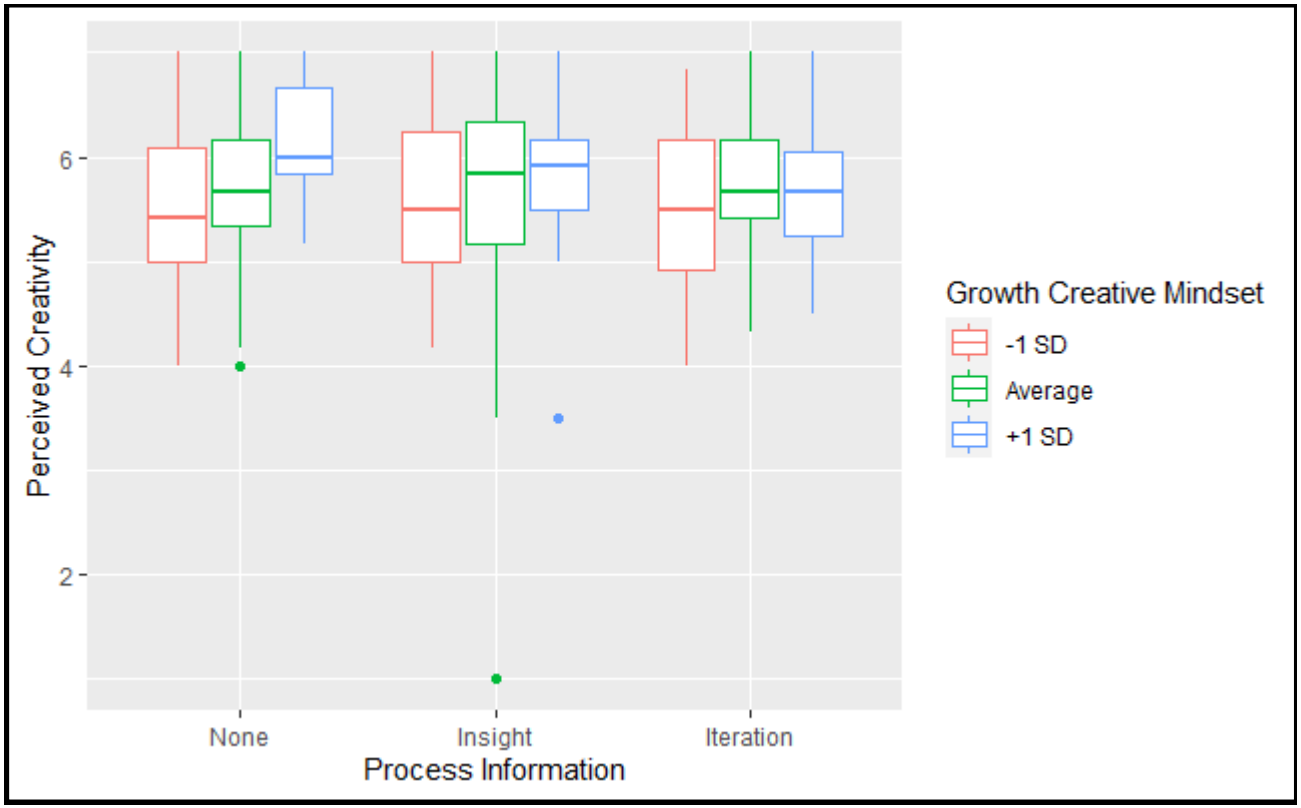


Figure 2. The Effects of the Interaction between Process Information and Growth Creative Mindset on a Product's Perceived Novelty

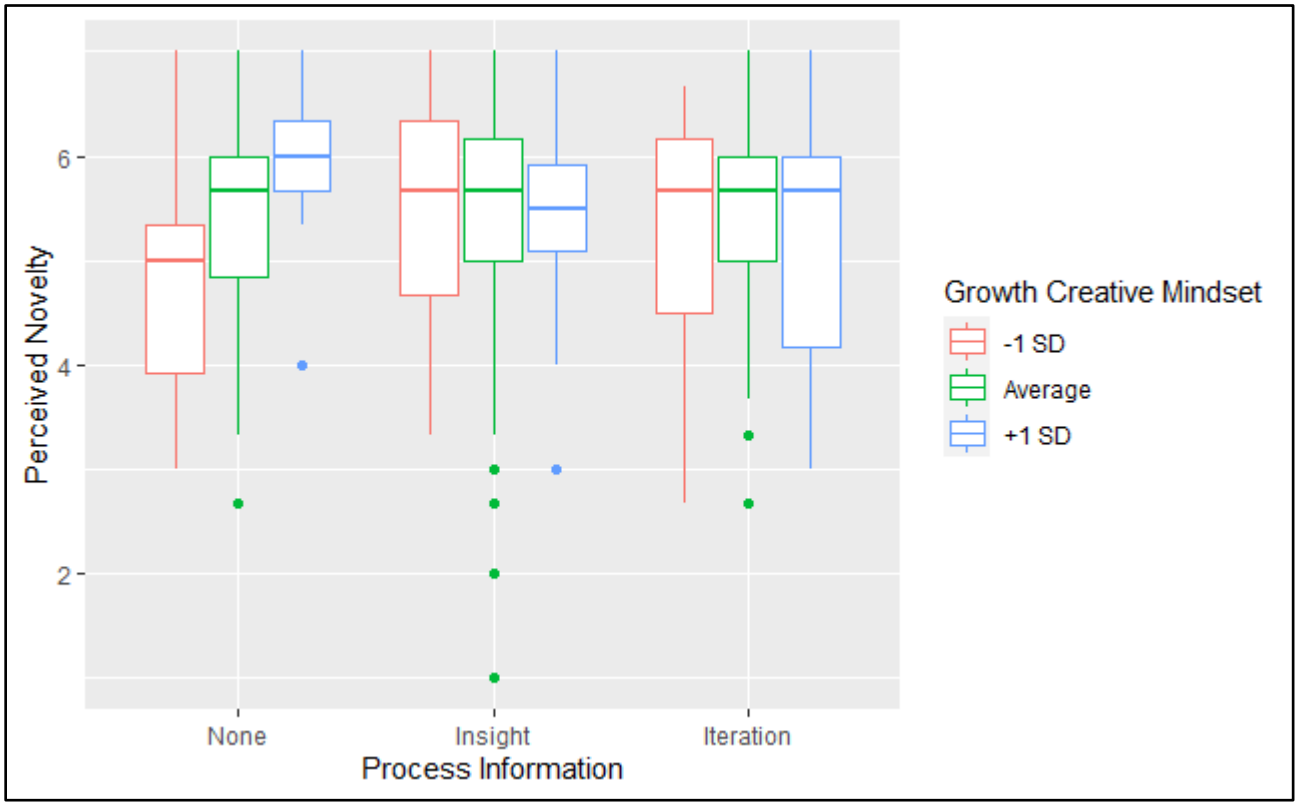
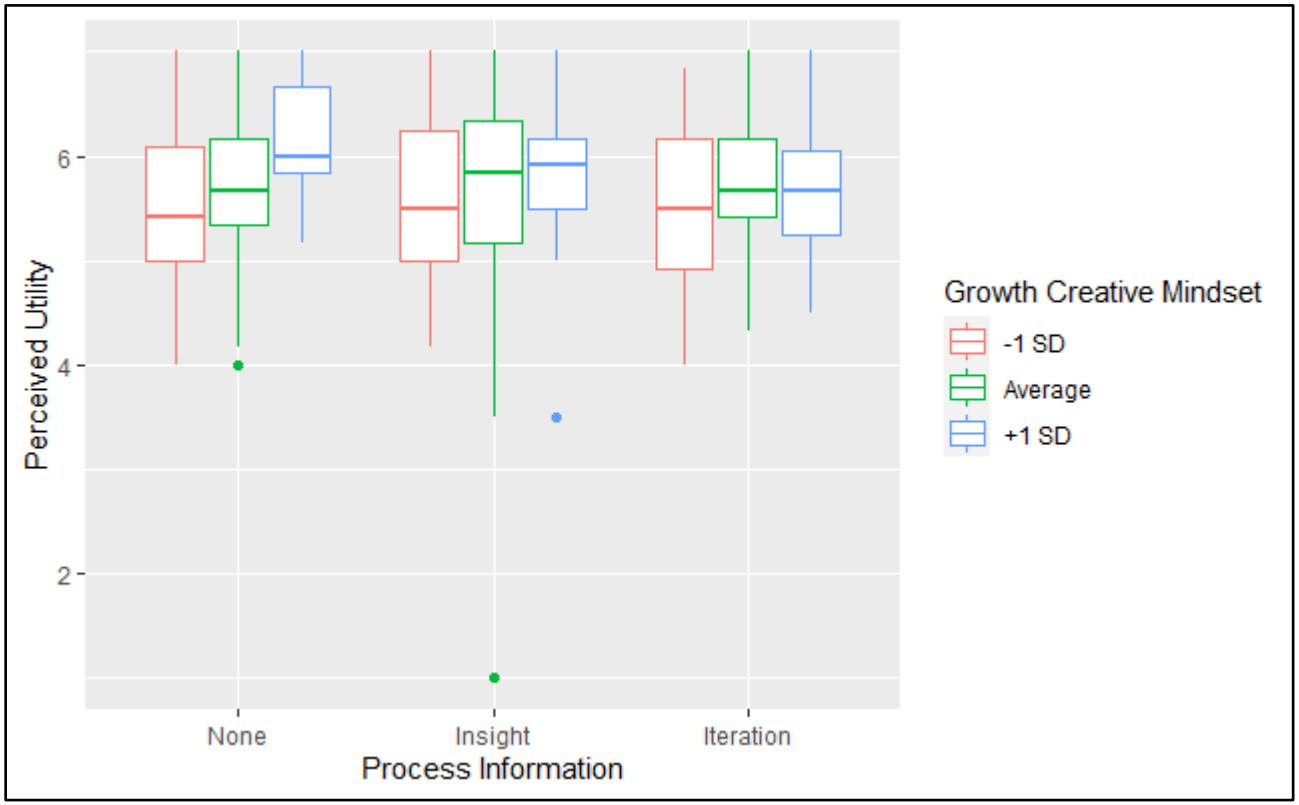


Figure 3. The Effects of the Interaction between Process Information and Growth Creative Mindset on a Product's Perceived Utility



Tables

Table 1. Results of Paired t-tests between Process Information Manipulation Materials for Pilot Validation Study

Dependent Variable	*Condition 1*	*Condition 2*	M_1	M_2	*t*	df	*p*
Insight	Insight-Dominant	Iteration-Dominant	5.42 (1.17)	4.07 (1.35)	8.24**	141	<.001
Insight	Insight-Dominant	No Information	5.42 (1.17)	4.28 (1.07)	8.87**	141	<.001
Insight	Iteration-Dominant	No Information	4.07 (1.35)	4.28 (1.07)	-1.74**	141	<.001
Iteration	Insight-Dominant	Iteration-Dominant	3.84 (1.28)	5.30 (1.15)	-8.98**	141	<.001
Iteration	Insight-Dominant	No Information	3.84 (1.28)	4.25 (1.00)	-4.18**	141	<.001
Iteration	Iteration-Dominant	No Information	5.30 (1.15)	4.25 (1.00)	8.53**	141	<.001

Note. N = 142 and SD are in parentheses. † indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 2. Results of Unpaired t-tests between Conditions of Design Study for Process Information Materials

Dependent Variable	*Condition 1*	*Condition 2*	M_1	M_2	N_1	N_2	*p*
Insight	Insight-Dominant	Iteration-Dominant	5.33 (0.83)	4.19 (1.23)	96	98	<.001
Insight	Insight-Dominant	No Information	5.33 (0.83)	4.39 (1.20)	96	94	<.001
Insight	Iteration-Dominant	No Information	4.19 (1.23)	4.39 (1.20)	98	94	.20
Iteration	Insight-Dominant	Iteration-Dominant	4.13 (1.23)	5.79 (0.83)	96	98	<.001
Iteration	Insight-Dominant	No Information	4.13 (1.23)	4.38 (1.42)	96	94	.14
Iteration	Iteration-Dominant	No Information	5.79 (0.83)	4.38 (1.42)	98	94	<.001

Note. SD are in parentheses. † indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 3. Results of Reliability Analysis of Growth Creative Mindset Items

Items	Cronbach's α if Item is Dropped	Corrected Item-Total Correlation
1. Everyone can create something great at some point if he or she is given appropriate conditions.	.60	.30
2. Anyone can develop his or her creative abilities up to a certain level.	.54	.41
3. Practice makes perfect—perseverance and trying hard are the best ways to develop and expand one's capabilities.	.53	.45
4. Rome wasn't built in a day—creativity requires effort and work, and these two are more important than talent.	.58	.33
5. It doesn't matter what creativity level one is at—you can always increase it.	.56	.37

Note. N = 288.

Table 4. Descriptive Statistics and Correlations of Growth Creative Mindset Items

Items	M	SD	1	2	3	4
1. Everyone can create something great at some point if he or she is given appropriate conditions.	5.69	1.12				
2. Anyone can develop his or her creative abilities up to a certain level.	5.32	1.17	0.27**			
3. Practice makes perfect—perseverance and trying hard are the best ways to develop and expand one's capabilities.	5.74	1.03	0.22**	0.29**		
4. Rome wasn't built in a day—creativity requires effort and work, and these two are more important than talent.	5.54	1.16	0.19**	0.16**	0.34**	
5. It doesn't matter what creativity level one is at—you can always increase it.	5.27	1.22	0.13*	0.33**	0.31**	0.21**

Note. N = 288. † indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 5. Results of Exploratory Factor Analysis of Growth Creative Mindset Items

Items	E1	E2
	1	1
1. Everyone can create something great at some point if he or she is given appropriate conditions.	0.38	
2. Anyone can develop his or her creative abilities up to a certain level.	0.53	0.50
3. Practice makes perfect—perseverance and trying hard are the best ways to develop and expand one's capabilities.	0.61	0.63
4. Rome wasn't built in a day—creativity requires effort and work, and these two are more important than talent.	0.45	0.45
5. It doesn't matter what creativity level one is at—you can always increase it.	0.51	0.53

Note. N = 288. E1 = first EFA, E2 = second EFA; EFA factor numbers are noted above the EFA results.

Table 6. Means, Standard Deviations, and Correlations of Design Study Variables and Post-Hoc Analysis Measures

Variable	*M*	*SD*	1	2	3	4	5	6
1. Product's Perceived Creativity	5.72	0.80	(.81)					
2. Product's Perceived Novelty	5.39	1.11	0.91**	(.81)				
3. Product's Perceived Utility	6.04	0.75	0.79**	0.47**	(.75)			
4. Evaluators' Growth Creative Mindset	5.51	0.72	0.15*	0.08	0.21**	(.62)		
5. Evaluators' Openness to Experience	5.34	0.85	0.12*	0.08	0.13*	0.21**	(.78)	
6. Evaluators' Visual Arts Experience	2.55	1.17	0.08	0.04	0.11†	0.04	0.29**	(.65)

Note. N = 288. *M* and *SD* are used to represent mean and standard deviation, respectively. Cronbach's alpha is provided for multi-item scales in parentheses along the diagonal. † indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 7. Results of Multiple OLS Linear Regression Models Predicting a Product's Perceived Creativity

Variable	Model 1	Model 2
	Main Effects & Controls	Add Interaction Terms
Intercept	5.77 (0.08)**	5.78 (0.08)**
Iteration-Dominant Process Information	-0.04 (0.12)	-0.04 (0.12)
Insight-Dominant Process Information	-0.13 (0.12)	-0.13 (0.12)
Evaluator's Growth Creative Mindset	0.14 (0.07)*	0.27 (0.12)*
Evaluator's Openness to Experience	0.08 (0.06)	0.09 (0.06)
Evaluator's Visual Arts Experience	0.03 (0.04)	0.03 (0.04)
Iteration X Growth Creative Mindset		-0.24 (0.17)
Insight X Growth Creative Mindset		-0.11 (0.17)
df	5, 282	7, 280
R^2	.037	.044
F	2.15†	1.83†
p	.06	.08

Note. All continuous predictor variables are grand-mean centered. Entries represent unstandardized regression coefficients and standard errors are in parentheses.

† indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 8. Results of Multiple OLS Linear Regression Models for Post-Hoc Analyses Predicting a Product's Perceived Creativity with Different Sets of Control Variables

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	No Controls	Add Interaction Terms	Only Openness	Add Interaction Terms	Only Visual Arts Experience	Add Interaction Terms
Intercept	5.76 (.08)**	5.77 (0.08)**	5.78 (0.08)**	5.78 (0.08)**	5.76 (0.08)**	5.76 (0.08)**
Iteration-Dominant Process Information	-0.03 (0.12)	-0.02 (0.12)	-0.05 (0.12)	-0.05 (0.12)	-0.03 (0.12)	-0.02 (0.12)
Insight-Dominant Process Information	-0.11 (0.12)	-0.11 (0.12)	-0.14 (0.12)	-0.14 (0.12)	-0.11 (0.12)	-0.11 (0.12)
Evaluator's Growth Creative Mindset	0.17 (0.07)*	0.27 (0.12)*	0.14 (0.07)*	0.26 (0.12)*	0.16 (0.07)*	0.28 (0.12)*
Evaluator's Openness to Experience			0.09 (0.06)†	0.10 (0.06))†		
Evaluator's Visual Arts Experience					0.05 (0.04)	0.05 (0.04)
Iteration X Growth Creative Mindset		-.21 (.17)		-0.23 (0.17)		-0.22 (0.17)
Insight X Growth Creative Mindset		-.09 (.17)		-0.10 (0.16)		-0.10 (0.17)
df	3, 284	5, 282	4, 283	6, 281	4, 283	6, 281
R^2	.026	.031	.035	.042	.031	.037
F	2.52†	1.83	2.55*	2.03†	2.24†	1.79†
p	.06	.11	.04	.06	.07	.10

Note. All continuous predictor variables are grand-mean centered. Entries represent unstandardized regression coefficients and standard errors are in parentheses.

† indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$

Table 9. Results of Multiple OLS Linear Regression Models for Post-Hoc Analyses Predicting a Product's Perceived Novelty and Utility

Variable	Perceived Novelty		Perceived Utility	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Intercept	5.39 (0.12)**	5.39 (0.12)**	6.16 (0.08)**	6.16 (0.08)**
Iteration-Dominant Process Information	0.01 (0.16)	0.02 (0.16)	-0.10 (0.11)	-0.10 (0.11)
Insight-Dominant Process Information	0.00 (0.16)	-0.01 (0.16)	-0.26 (0.11)*	-0.25 (0.11)*
Evaluator's Growth Creative Mindset	0.10 (0.09)	0.36 (0.17)*	0.19 (0.06)**	0.17 (0.11)
Evaluator's Openness to Experience	0.08 (0.08)	0.10 (0.08)	0.07 (0.05)†	0.08 (0.06)
Evaluator's Visual Arts Experience	0.01 (0.06)	0.05 (0.07)	0.05 (0.04)	0.05 (0.04)
Iteration X Growth Creative Mindset		-0.34 (0.17)*		-0.01 (0.15)
Insight X Growth Creative Mindset		-0.20 (0.17)		0.06 (0.15)
df	5, 282	7, 280	5, 282	7, 280
F	0.62	1.02	4.64**	3.33**
R^2	.01	.03	.08	.08
p	.68	.41	<.001	<.01

Note. All continuous predictor variables are grand-mean centered. Entries represent unstandardized regression coefficients and standard errors are in parentheses.

† indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$