



Furor Poeticus: Fine Art Exposure's Impact on Creativity on Demand

by

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Abstract

Fostering employee creativity is crucial for the success of modern organizations. One emerging avenue of inquiry on promoting employee creativity has examined how physical spaces can increase creativity, and initial work suggests art exposure could elicit greater employee creativity. However, some researchers posit that art may not be equally inspirational for all. In this study, I examine how, why, and for whom art exposure can foster individual creativity. I propose and show that the effects of art exposure on creativity are dependent on the individual's perception of creative ability - that it can be learned (growth mindset) and that they are competent at it (creative self-efficacy). I find that exposure to fine art (rather than 'boring' or no art) engenders greater creativity on demand and that the effect is greater for those with a more growth-oriented mindset or high creative self-efficacy, while fixed mindset serves as a detriment to creative efficacy.

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Introduction

“To my mind, the truth seems to be that imaginative talent stems more from environment than heredity, and that its conscious use is a far greater factor than either.”

- Alex Osborn, founder of BBDO

Creativity used to be the pet concern of the creative industries, traditionally considered as encompassing advertising, studio production, theater, and fashion, along with like fields (Dunlop & Galloway, 2007). Globalization of markets since has had an effect that is two-fold. For one, access and advertising has made consumer preferences more nuanced, and these nuances are changing at an accelerating rate (Bessant, Neely & Whyte, 2005). This results in increased firm competition over consumers, leading to an increasingly incessant stream of new products, rendering originals antiquated (Berg, 2022; Jones et al. 2016). Thus, success belongs to those firms in fast-paced markets that create new products to suit these ever-iterating preferences better than others (Hirsch, 1972; Bielby and Bielby, 1994; Klepper, 1997). As a result, the industries thought to have cornered creativity have experienced the construct more than spill over the edges, as the new economy in Western culture is thought to be a “creative economy”, one based on workers who provide creative goods and services (Lee, Florida, & Acs, 2004).

The second consequence of global markets, and the competition that accompanies globalization, is a flattening of individual identity. Markets have been theorized to adversely structure individual identities towards passivity and reduced expression (Firat & Venkateshk, 1995). Further theorization has the effect spreading to individual and familial distinction and

uniqueness, studied through the effects of the popularization of nationally branded foodstuffs (Wallendorf & Arnould, 1991).

The distance between these two effects is large: the commoditization and globalization of the markets have resulted in a more rapid turnover of consumer preferences, leaving consumers comparatively lacking in individual identity. Management literature has focused much on how to tackle new problems with innovation in the organization, overshadowing literature on the creative individual (Adams, Bessant & Phelps, 2006; Tidd, 2001). The traditional definition of creativity, during the advertising boom, was that creativity involves the production of new ideas (Guilford, 1950). However, what is “new” is difficult to measure, and thus a definition of creativity as the production of high quality, original, and elegant solutions to problems developed (Besemer & O’Quin, 1999; Christiaans, 2002; Ghiselin, 1963; Mumford & Gustafson, 1988). These solutions among experienced individuals are potentially of great value, stemming again from globalization and uncertainty (Ericsson & Charness, 1994).

However, mandating that a problem must exist for creativity to be spurred doesn’t apply to the lone and non-commercialized artist and thus is not broadly applicable for the individual, leading to the definition this paper subscribes being that creativity involves the interactions among aptitude, process and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context (Plucker, 2010; Mula & Hermann 2016). Otherwise, the discussion would have to be split between pure creativity as process-oriented without a cemented final objective and applied creativity as product-oriented (Powell, 2008). The social context is an important demarcator as originality is oft just reworking, and even when considering traditional art, rare is the artist, however hermitted, who rewinds themselves out of modern contexts, mediums and techniques and reverts

to marking cave walls - and the same goes for innovative teams (Jelinek & Schoonhoven, 1990). Additionally, Plucker's definition tells us more about the context of creation, physically and mentally - an interaction between aptitude, process, and environment - thus hinting at the cognitive work that all creative work is borne from (Finke, Ward & Smith, 1995; Marcy & Mumford, 2007).

These physical and psychological interplays of creativity at the individual level are overly layered and intertwined due to the related innate unpredictability and related difficulty of capture (Cowan, 2006). The layers discussed here are only a selected few, and others as well as their competing theories will be investigated later on. Creative problem solving is typically viewed as a form of "high-level" cognition, making this function more taxing than lower-level activities such as recall and recognition (Brophy, 1998; Mumford, 2012). This leads to the employment of an active decision on the part of the individual to deplete resources in pursuit of a creative solution (Mumford, 2012). This active decision to engage in creative action is the interaction of whose articulation will be a focus, and distilled in experimentation, and further, appears to be an ability placed paramount by contemporary executives. A 2010 IBM interview study of over 1,500 CEOs displayed their conclusion that creativity was the most important quality to guide through new uncertainty, and McKinsey surveyed that ninety-four percent of executives are unhappy with the creative performance of their companies (IBM, 2010; McKinsey, 2014). Based on the unfulfilled desires of leading corporations' generation of novel solutions, this ability to actively engage in creative thought, and the emergence of a lack in the skill, that I believe to be limiting the innovative potential of business organizations, but more importantly handicapping the business and personal abilities of our individuals. In fact, eighty percent of the US workforce

see creativity as vital to growth, yet only a quarter feel as if they're living up to their own creative potential (Shambaugh, 2019).

This significant disparity between corporate desire and individual potential is again related to the decision to engage in the high-level cognition that is creativity, thus directing us to an understanding of how and why the decision is made. Motivation influences creativity, and at the most basic level is either intrinsic or extrinsic - for example one either wants to become a professional musician because of their love of the expressionism (Miles Davis), or because their father forces them to sit at the keyboard from infancy (Beethoven) (Jausi, Randel & Dionne, 2007; Greene, 2013; Palmer, 1991). Intrinsic motivation that has been identified as the most powerful motivator for creative types, and also can serve as their most powerful impediment (Amabile, 2017). Forced extrinsic motivators have been shown to have severe negative impact upon creative performance, and mismanagement of the preservation of intrinsic motivation in creative employees has been found to have similar negative results (Amabile & Pillemer, 2018).

Motivations play at the level of both environment and process, but aptitude originates at the broader mindset level. In early studies of intelligence, two mindsets distinguished themselves, that of entity versus incremental: entity belief system is the idea that intelligence capacity is innately fixed, while an incremental view believes that intelligence is dynamic, malleable, and developable (Dweck, 1995a). The distinction of these views of intelligence apply also to intellect's high-level cognitive cousin, creativity, and have significant impact on motivation - why try to become smarter (or more creative), or the smartest (or the most creative), if someone else was born with a greater natural gift? An incremental view of intelligence has been proven to lead to the choosing of more mastery goals, displaying more resilience, obtaining

better grades and reporting fewer depressive symptoms than those possessing an entity view (Dweck, 2000; Yeager & Dweck, 2012).

The reason to attempt believing in the opportunity to develop and mold ability, or an incremental view, at least in the creative realm, is that the effort may be the distinction between ability and the lack thereof. Those with an entity, or fixed, mindset of creativity reported lower creative behaviors and interest, as well as demonstrating less creativity on divergent thinking tasks (O'Connor, Nemeth & Akutsu, 2013). Those with an incremental, or growth, mindset of creativity display greater performance on insight problems, and was positively related with creative self-efficacy and creative personal identity (Karwowski, 2014). So not only does believing we're born with as much creative ability as we'll ever hope to possess harm our actual performative creative ability, but holding the opposite provides us access to tremendous potential.

With a preliminary understanding of how and why creativity matters in the corporate environment, a definition, and the basic mindsets that affect its performance, the foundational precepts of this cognitively active trait have been established. This study intends to discover what happens when these different mindsets are put under duress to not only perform, but also have to theorize about something possibly foreign and abstract to them. The goal is to turn over each of the most prominent 'stones' of creativity, as individual creativity is influenced by creative thought (Mumford, 2012), but also expertise (Weisberg, 2006), abilities (Plucker & Renzulli, 1999), and motivation (Jaussi, Randel, & Dione, 2007). I have touched on mindset's influence on ability, but I also find that expertise and ability operate symbiotically, as they underpin creative self-efficacy, and while prior motivations are not studied in the experimental design, they certainly play a large role in personal creativity and will be discussed.

Motivations, Musings, and Personalities of Creative Types

“The only difference between me and a ‘madman’ is that I am not mad.”

- Salvador Dali, Spanish surrealist artist

In observing the dynamic relationship between self-belief and mindset, and which measuring of each may create the most cogent creative individual, certain underlying aspects may either affect the development of stated mindsets and confidences or come as a result of them. If the most novel and potentially market potent creative production is done by a unique, and increasingly rare, balance of these attributes, what may signal or engender this combination?

Firstly, to separate creative action from contributing factors. Creativity is a performance, an effort that results in novel and high-quality problem solutions that can be executed by an individual or a team of them (Plucker, 2010; Mula & Hermann 2016). Therefore, creativity should not be confused with personality, motivation, expertise, and other variables that influence this production (Mumford, 2012). However, these variables do influence this production and although creativity as an individual cognitive function will be held aloft from this discussion, if we are attempting to decipher creativity in order to better our own, any intertwined factor deserves a spotlight, however brief.

Self-efficacy and mindsets, in social psychology, have been framed as motivation constructs (Dweck, 1999). Picking at motivations separate from mindset literature, intrinsic motivation was found to completely mediate the relationship between self-efficacy and creativity, while extrinsic motivations were found to moderate self-efficacy and creative perseverance while being negatively associated with creativity (Prabhu, Sutton & Sauser, 2008).

The difference can be articulated by the locus of causality, for motivations and therefore what results, being intrinsic or extrinsic - one wants to head a large company because they enjoy being able to care for lots of people and provide a platform for social impact, in comparison to one who wants to head a large company so that they can have mansion. This locus becomes more salient when we consider the research that correlates making progress in meaningful work, an internal desire, as the most important contributor to creative employees' psychological positivity (Amabile, 2017).

Intrinsic motivation is defined by the desire to act spurred by an inherent interest or desire to enjoy oneself, while extrinsic motivation leads to an outcome separate from one's immediate self (Ryan & Deci, 2000). Furthering the definition of intrinsic motivation, the traits appear to be a significant contributor to the novel production of ideas and solutions, often described as personally enjoying a challenge, feeling curious, or wanting to increase one self's knowledge or skill (Amabile, Hill, Hennessey, & Tighe, 1994). This internal strategy, or mindset, termed intrinsic motivation, is traditionally considered to be optimal for creativity (Amabile, 1996; Amabile, Hennessey, & Grossman, 1986; de Jesus, Rus, Lens, & Imaginario, 2013).

From a historical workplace motivation perspective, since the hourly wage was invented, one's worth in the organizational environment was determined by the fiscal or substitutable reward tied to that time or effort - termed by Harvard psychologist Teresa Amabile as "contracted-for reward" (Amabile, 2019). The business environment has changed drastically since this inception, splitting into blue and white collar, and creating additional layers of management as well as industries, leading to the need to create other incentives as our society sophisticated beyond such a transaction. As a result, these rewards still include an hourly wage,

but have expanded beyond to salaries and stock options, and beyond that to pizza parties, company take-home vehicles, and airport lounge access, among innumerable others - while they may incentive some, extrinsic rewards can subvert intrinsic motivation (Deci, 1981; Lepper, Greene, & Nisbett, 1973). A recent meta-analysis confirms that almost every type of expected tangible reward that is contingent on performance undermines intrinsic motivation (Deci, Koestner & Ryan, 1999).

Unfortunately for intrinsic motivation, the advent of the wage corresponded with the threat of termination, by no means the only type of danger or threat utilized in the business environment, but substantial nonetheless in the incentive structure of the general workforce. Research has found that rewards are not the only type of organizational incentive that hampers intrinsic motivation, and therefore creative thought. Due to individuals' perception of them as behavior controllers, competition pressure (Reeve & Deci, 1996), deadlines (Amabile, DeJong, & Lepper, 1976), directives (Koestner, Ryan, Bernieri, & Holt, 1984), and threats (Deci & Cascio, 1972) reduce intrinsic motivation. Other reductive extrinsic factors include expected evaluation, surveillance while working, peer competition, and a restricted choice in task materials (Amabile, 2019). As for why these external rewards and threats or impingements seem to have such a drastic effect on the intrinsic motivation that appears integral to productive creative cognition, they seem to be centered on the individual's desire for freedom, both of choice and action.

In peeling back the task confidence (self-efficacy) imperative for creativity, the mindsets that create that self-efficacy, and the motivations that underpin those mindsets, we find in tandem what have been termed "value clusters" (Schwartz, 1992). These values influence motivations, in the way that our beliefs and morals guide our actions, and include those such as power,

achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security (Schwartz, 1992, 1994). Creative accomplishments and novel production have been found to be correlated to stimulation, universalism, and self-direction (Kasof, Chen, Himsel, & Greenberger, 2007), while being negatively correlated with the value clusters of tradition, security, and power, which impinge on personal volition (Dollinger, Burke, & Gump, 2007). Although control, direction, collaboration and cohesion have positive influences on organizational creativity and innovation, the relationship is contrasted for the individual, as they prefer autonomy, or freedom, in both conduct and exploration (Cardinal, 2001; Kessler & Chakrabarti, 1996; Feist, 1999; Mumford, 2000).

This umbrella term of ‘freedom’ can be parsed into the values of self-direction and universalism, but the negative relationships with tradition and power seem to tell us more. While the value of empathy instead of benevolence, and a correlation, would’ve made framing easier, research does display that creative types are highly sensitive to their environment and others, insights that I’m sure account managers on 50s Madison Avenue wish they had. At the individual level, findings display creatives having a special sensitivity to their climate influences, one of the few relationships also found to be true at the team level (Oldham & Cummings, 1996; Hunter, Bedell-Avers & Mumford, 2007). This causal event with climate or environment has been defined as “the perceptual-behavior link” and can be responsible for creativity fluctuations as minor as differences in the brand of computer operating system (Bargh & Chartrand, 1999), this will be examined further in a following section. Amabile & Kramer (2007) performed a field study focused on diary entries by supervisors and peers at creative organizations over the course of 26 creatively demanding projects, finishing with 12,000 diaries from 238 professionals, finding that daily psychological experiences, such as observations, perceptions, emotions and

motivations bear a significant effect on creative performance. Although the relationship between emotional sensitivity and stability may be involute, those in the professions that require more intuitive, subjective, and emotive tenets tend to display less emotional stability than those in professions with logical, objective, and formal focus (Ludwig, 2010). The methods used to identify this discrepancy between intuitive and logical industry fields were also used on 137 visual artists, finding that the more subjective and emotive the portfolio, the further the ‘distance’ from emotional stability (Ludwig, 2010).

Armed with an understanding of the motivations and qualities studied to be more unique to more creative individuals, it is important to emphasize that these are not specially ordained or innate abilities. Creativity is not, as many believe, “a mysterious gift bestowed on an occasional individual by the gods or by heredity and therefore hardly teachable” but is as integral and powerful as other innate human specialties such as intuition and imagination as easily able to be tapped (Arnheim, 1986). Such emphasis is much of the intention of this project, with the hope that the research presented helps managers and recently graduated peers better consider the fostering of creativity within their teams, but also serves to display the values and mindsets most fruitful for the individual’s benefit, whether that be aspiration, relation, or observation I have no preference.

In one of the final stones to be turned over from an individual psychological and sociological perspective, the question of where and how this desire for autonomous action and thought, incremental growth mindset, and emotional and environmental sensitivity originates is relevant.

Imagination and Intuition, a Convoluting Couple

“Imagination is more important than knowledge.”

- Dr. Albert Einstein

Visual imagination is a crucial aspect of design due to enabling the construction of mental pictures of what has never been experienced. Drawing, model-making, and visual sensitivity enables alternative forms, details to be explored, before time and capital is invested in production. (Bessant & Whyte, 2005). Osborn refers to this power however, as laying outside of his prescribed imagination categories, referring assigning the label of Structural Visualization when concerned with design, but does have categories, Speculative and Reproductive Imagination, that serve as stand-ins for the aforementioned visioning as the pondering of possibilities. Reinforcing the discussion of empathy above is his Vicarious Imagination which allows one to imagine what another person may be feeling and why and how those emotions are conducted - an integral skill for advertisers such as himself, but also one needed to be a compassionate human being. Although I've lifted his example of reacting to hot coals for his positing of Anticipative Imagination, it is his holding of Creative Imagination aloft from the rest that provides a unique definition as a two-fold process in which one is concerned with the hunt, and the other to change what is found (Osborn, 1963). In other words, creative imagination is the search and modification of objects of our reality for the furtherance of that reality. Longtime Chicago neurophysiologist Ralph W. Gerard defined creative imagination as “the action of the mind which produces a new idea or insight” (Osborn, 1963). Outside of academic and practice theory, imagination seems to be crucial in the marketplace as well. Not the province of

specialists, some of the best proof of the power of imagination lies in those who stepped farthest outside of their bounds as a result. A professional portraitist was responsible for the invention of the telegraph and another was responsible for the steamboat, while a schoolteacher drafted and designed the revolutionary cotton gin, none of them engaged with technology as a profession but with their minds were able to imagine solutions to fit the needs their perspective identified (Samuel Morse, Robert Fulton, and Eli Whitney, respectively). Imagination seems to be a cognitive function that operates in tandem with creativity, both in academic theory and the marketplace.

The interest now develops into why imagination is in such tandem with such creativity, and I propose that it originated out of an earlier, as important, human cognitive function, that of intuition at a primal locust. The first sharp spearhead was unlikely to be sharpened, but a grade level rock that was noticed by a passerby who intuited that because of its resemblance to predatory features (sharpness and angles disposed to penetration) it may couple well with their developments in tracking. It may be after this development that we see the origin of imagination. These specialized, but natural, rock tools were found to be beneficial but rare in nature, and so intuition led us to recognize that we would need more than what was able to be found. Thus for the first time we had to consider manufacturing, to create something new from something old, to imagine the process that might have us arrive at a greater future - there needed to be a vision. This vision led to the use of harder rocks to chip and parse softer ones into better-shaped, sharper-edged spearheads and carried eventually into the tools that followed.

We developed our intuition to connect happenings in our reality necessary to our survival, and our imagination to craft ideas, thus tools, that improved the shape of our survival.³ However, both functions derived as a result of a much more common relationship, that of the

perceptual-behavioral link where actions are affected by the environmental cues sensed by their participants, which applied to the sensitivity of creatives production to their surroundings prior (Bargh & Chartrand, 1999). These cognitive powers created differences in the brains between homo sapiens and chimpanzees, and areas that have been singled out for further study include the frontal and temporal cortex, cerebellum, and basal ganglia (Mula & Hermann, 2016).

Contemporary times require an addendum to the primal origin of intuition and imagination, a time prior to education and written text. The arrival and prevalence of both allowed for us to catalogue the developments in human's rational thought, if-this-then-that positing, creating our communal ability to build upon prior findings and knowledge. This snowball effect on knowledge allowed us the power of deduction, defined by the Oxford dictionary as the ability to infer solutions or reasoning by way of reference to established general law or principle. The modern duality and importance of both these abilities is summarized by French philosopher Rene Descartes' belief that humans arrive at an understanding of things by means of two kinds of operations, that of intuition and deduction (Descartes, 1701). While deduction grows stronger with each added principal, intuition is at risk as the function is only trustworthy when built upon experiences making judgements in a predictable environment, and there are certainly more factors tending toward unpredictability now than there was in the purer natural kingdom (Kahneman & Klein, 2009). Furthermore, intuition is only reinforced and therefore learned when the environment is defined and unmuddled, where reactions as the result of ideated acts are observable, but it seems that formal instruction tends towards the muddling that depreciates the cognitive function, imposing ideals, boundaries, and 'definite' results and conclusions upon one's subconscious ability to intuit without restriction.⁴ Osborn refers to formal instruction as the "clinkers" that interfere with the good coals stocked by external

education and experience in the memory that fuels our imagination. Perhaps this occurrence is what spurred Plato's meditation that "Experience takes away more than it adds. Young people are nearer ideas than old people." (Osborn, 1963)

It seems as if the more one can preserve their intuition from hampering by formal institutions, the better the chances of maintaining a boundless imagination that lends itself to creative potency across mediums and contexts. However, some research stands in contrast with Plato, and Osborn, with employees over 55 contributing the most and the most valuable ideas when companies put out suggestion boxes in comparison to their younger colleagues (Verworn, 2009). This could mean that the distance from formal education could be important - our youngest and oldest version of ourselves seem to be the most creative - or that shaping our perception of the world as a more predictable place due to accumulated wisdom over time generates higher quality intuition, both being interesting opportunities for further research in the space.

Perspective and Perception

*“The difference between landscape and landscape is small,
but there is a great difference in the beholders.”*

- Ralph Waldo Emerson, American transcendentalist essayist

Leonardo da Vinci attributed all of his scientific and artistic accomplishments to the concept he called Saper Verde or “knowing how to see” (Herman, 2016). Sight seems inherent to the human experience, an ability shared across cultures and continents, and as a sense is relatively objective.¹ Over 65% of our brain’s pathways are dedicated to processing what we see and engages 25% of overall functioning capacity, but the brain also continues into the eye as the retina (Herman, 2016). Caveats exist, yes, children do see things colored differently than adults, and colorblindness or restricted vision can affect individuals in a myriad of ways, but how can something so standard be the keystone to creative brawn? Amy Herman, perceptual consultant for the FBI, NYPD, and notable healthcare systems, believes that knowing how to see allows one to “see what’s there that others don’t. To see what’s not there, that should be. To see the opportunity, the solution, the warning signs, the quickest way, the way out, the win. To see what matters” (Herman, 2016). This type of sight seems to lend itself to the type of novel insights that organizations can innovate upon, but how to recognize, or more importantly, foster one’s own?

Perception is how we interpret the information we gather during observation; consider it as an internal filter; coloring, clouding, and changing what really exists into what we believe we are seeing (Herman, 2016). Perception consists of visually searching for elementary forms in the stimulus material and the imposition of "sensory categories" upon the raw data (Arnheim, 1986).

Don't believe that there is a difference between sight and perception? Take a moment and consider something referred to as the "frequency illusion" which is when you suddenly recognize more similar models on the road after buying a new car (or desiring a specific one), or when you come into grade school with new sneakers after the holidays you suddenly take note of everyone else donning them. The mean market amount of Jeep Cherokees or Nike Airs didn't change drastically suddenly, you're not seeing any more of them than what existed yesterday, the object is more prevalent in your subconscious and thus rises to conscious recognition with increased frequency. However, this example provides a nice example of the unreliability of perception and an impetus to see things more for what they are than what they appear. In other words, perception is reality modified and commoditized to help us make sense of our surroundings and store pertinent information for later.

Visual perception is pattern perception; organizing and structuring those shapes offered by the optical projections in the eye, yielding the concepts that our mind interprets (Arnheim, 1986). While perception seems vital to the creative greats, we all contain learned perception. Although our sight is an inherent sense, perception is developed over time - a good example is things that look "hot" or "sharp" that do not appear so to the naked eye. The most clear example is that of an orange ember laying innocently (not at the bottom of a bonfire) until you are told the coal is hot, or only after you've unknowingly palmed the cherry coal, you would have no way to perceive the heat contained - giving off no smoke and little indication of heat as your hands approaches - but upon every future interaction upon immediate visual recognition, one connects them with being hot, their perception colors their sight (Osborn, 1963). Furthermore, the example serves to display differences in perception precision, "coal" is inanimate and gray coal, but can also be an hot coal primed to incite a blaze at a moment's notice, perceiving the shades in

between informs your brain with the immediate risk or possibility contained in every scenario, coal aside. A perhaps more subjectively articulate definition could be that provided by gestalt psychologist Max Wertheimer:

“The manner in which a visual pattern is seen depends on the stimulus configuration and the formative tendencies of the nervous system - distinguished from the effects of a particular observer’s interests, past experience, or capricious choice” (Arnheim, 1986).

Creativity can be thought of as a novel, productive, and adaptive response to an accurate perception of a changing reality in the world (Mumford, 2012). Sight is objective, but perception is subjective, making accuracy more difficult, and the skills to acquire even rarer. Steve Jobs refers to this skill in his comment: “when you ask creative people how they did something, they feel a little guilty because they didn’t really do it, they just saw something” (Wolf, 1996). As for why everyone doesn’t experience ‘creative lightning strikes’ constantly, can be best done by describing a perception as a narrated interpretation in the present, and of memories in the past, and therefore are selective, or more familiarly, fall under the “unreliable narrator” exemplum (Mumford, 2012). Not everyone has the correct interpretation, or the correct models to perceive them or combinations with others accurately - different people do see different things (Arnheim, 1986).

The human eye works in tandem with the mind in patterning reality in a way that is easier to generate these interpretations, resulting in quicker processing and more readily recall. Perception is supposed to be limited to collecting the raw materials for cognition, with thinking

supposedly entering at a higher cognitive level to process the material: “Perception would be useless without thinking; thinking without perception would have nothing to think about.” (Arnheim, 1986). Perhaps the most pertinent example of this is a jaywalker’s ability to gauge the safety of crossing the street, while impossible to calculate the speed and distance of an approaching vehicle in addition to factors that may affect those tendencies but based on a common ingrained pattern of boundaries of safety and expectation. A technology that the human mind has only had to incorporate into our natural reality in the last three physiologic generations, our ability to pattern our understanding as both driver, passenger, and observer, allows one to make a quick decision, with wherewithal, that allows them to make a safe decision to cross or stay.

From a gestalt psychology perspective, this need to pattern our reality for balanced order relates directly to the balanced order in nature when not disturbed by “culturally inflicted distortions” (Arnheim, 1986). The path towards the aforementioned Saper Verde sight seemingly so potent to creators appears closely tied to perception, and more accurately, the ability of that percept to form accurate interpretations, and step outside contemporary culture and pressure to recognize the patterns important and applicable to one’s, or one’s team, situation. Abraham S Luchins, an early researcher of the Einsellung effect, finds that pre-established mental sets, modeled on patterns, prevents that person from searching for a solution to a problematic situation without restrictions (Arnheim, 1986).

So, an accurate perception of changing reality seems vital to creative potency, but in what ways is this related to fine art and understood within the context of this paper’s experiment? Aesthetic experience involves an active interplay between an artist’s production and the response of the participant - the exploration of a production shapes the freedoms of the explorer’s

perception of the object (Arnheim, 1986). An example is the warped wooded knots in the thick trunk of a tree or the erosion of a rock formation that after one day recognizing their similarity to a face, cannot unsee afterwards - for a murder of ominous birds the example of a scarecrow is even clearer. Art may be a means of distilling this task of perception sharpening, as best described by perceptual psychologist of the University of Berlin, and Michigan, Rudolf Arnheim:

“A much better defined image is needed when we try to see a painting as a work of art. This requires a thorough examination of all the relations constituting the whole, because the components of a work of art do not just label for identification, but through all their visual properties convey the work’s meaning... A permanent tug-of-war between two basic tendencies in cognition, namely, that of seeing every given situation as a unified whole of interacting forces and that of constituting a world of stable entities whose properties can be known and recognized over time” (Arnheim, 1986).

Openness to art as an aesthetic experience means allowing one’s percept to both see the whole as a sum of its parts, and the parts as components of the whole, in other words the ‘whole picture’, but as or more importantly, what isn’t there and the distances between parts and the reason for them. Every work of art is conceived at a certain level of abstraction, leaving one to color the specifics or unanswerable questions with their own perceptive powers.² If one is able to do the same with reality, then creative lightning strikes appear sure to follow.

Vision refers to the ability to see, or to plan the future with wisdom - defined by the Oxford dictionary as the “ability to think about the future with imagination”, appearing not to be

the power of sight, but rather that of vision that seems to be the deliverable here. Not only is seeing integral, but imagining what could be as well. The word “perspective” is defined as the point of view from which something is evaluated or considered, and derives from the Latin word *perspicere*, meaning “to look through” (Herman, 2016). This “looking through” via your perspective allows your percept to romp and investigate both what’s in the shadows and what isn’t in frame, allowing one to ‘consider the future with imagination’ which from my research seems paramount creative power, although one is not limited to the future. The explicit generation of this connection allows for the second half of Steve Jobs’ 1996 interview quotation:

“Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things. And the reason they were able to do that was that they've had more experiences or they have thought more about their experiences than other people.” (Wolf, 1996).

An important note on the accessibility of creative improvement is that thinking more or differently about your experiences is as valuable as having more.

If perspectives embed meaningful relatedness, then they enhance our ability to view things in relation to their true importance, allowing us to create paradigm-shifting ideas and new possibilities from seeing tiny details anew (Herman, 2016). Ultimately, the relationships explored above imply that a cognitive awareness or curation of one's perspective to understand and perceive our reality more accurately can empower our creative potential at the individual

level. The 19th-century German philosopher Friedrich Nietzsche believed that truth is a matter of perspective, not an objective reality, a belief he labeled perspectivism. He postulated that we are all blinded by some form of dominant logic and worldview imposed on us by a combination of educational and religious institutions (Nietzsche, 1990). These relative views are mistaken for absolute truth and stop us from exploring alternatives that we formulate for ourselves based on our real experiences (DeGraff, 2020).

Why is art important to business? Aside from art's symbiotic relationship with creativity, art can aid in the most vital part of nearly any organization, that of communication. If one can describe their considerations concerning a piece of art, then one is also able to talk about any scene in everyday life from boardrooms to crime scenes to production floors (Herman, 2016). Often the most disruptive organizational events are those not predicted, black swans, but how can one describe something totally new if they don't have the proper language tools to reduce abstraction?

In addition to articulating communication, exposure to art positively influences profitability and marketing persuasiveness, external and internal company relationships, the development of leadership and organizational culture, self-discovery and personal growth, collaboration, activation of emotions and energy, and creativity through openness to new experiences and widened perspectives (Artlab, 2009; Berthoin, Antal & Strauß, 2013; Eriksson, 2009; Katz-Buonincontro, 2008; van den Broeck, Cools & Maenhout, 2008). Examples at the individual level of art exposure's impacts upon the leader are difficult to attribute as the number of museum visits are rarely summed by biographers, but we can assume that those who were artists have been highly exposed and find that many leadership positions at the tip of the hierarchy require many, if not all, of the aforementioned effects. Examples include, but are not

limited to, Winston Churchill, Ulysses S Grant, Jimmy Carter, and George W Bush, dynamic leaders that presided over some of the most tumultuous times the world has experienced over the last two centuries. Queen Victoria is also known for her pencil drawings, although her position doesn't lend itself to much grounded or legitimately active leadership and thus was not included with the other examples.

As for why exposure to art can create greater leaders or organizational environments, I theorize that this generation has to do with the confrontation that art contextualization provides to the viewer. When we are confronted with a piece of art, the viewer's mind is challenged to make sense of the coagulation of foreign forces and as a result, made uncomfortable. Slowly we are able to identify certain elements and ascertain as to how they came to be included, using cognitive functioning to encircle the piece with possible contexts and intentions. In other words, art contextualization is like a math problem for the other side of your brain, one where there isn't a single answer. The artwork as a problem is not only communicating historical, emotional, or aesthetic aspects to us, but forcing us to imagine what they may be and weighting their relevance and potential.

To maintain engagement, allow the employment of imagery, as the process can be imagined as an hourglass on its side, with the artwork serving as the skinny pinch point suspended in the middle. With us as an observer on the broad left side, we observe the artwork as the amalgamation of an innumerable number of features contained in a relatively small object and through its properties, understand better the reality of the time of production that stands on the broader right side of the hourglass. Personally, the metaphor of a convex lens allows me better visualization, but I intend on creating visualizations for both. I believe this confrontation with artwork that forces our cognition to make sense of this compressed reality, and in doing so

makes our mind, and our intuition, better at making sense of our more general and immediate reality. The more intuitively and accurately one can understand and perform within our reality, the better their chances at success - one could therefore make the argument that Churchill or Grant were not great leaders so much as they were the premier perceivers of the reality of their time and skilled enough to communicate or strategize upon these soundings of their surroundings.

Much of this theory of art serving as a transmissionary medium for reality is built upon the German perceptual psychologist and theorist Rudolf Arnheim, who spent much of his time after immigrating at the University of Michigan. His chapter *The Double Edged Mind*, discusses the viewer of art experiencing the image as a system of forces, that like any field of forces, strive towards equilibrium while the components within serve a dual role of identification and conveyance of meaning. Even more poignantly:

“Every detail of information about the representational content of a picture not only adds to what we know but changes what we see. It is psychologically false to assume that nothing is seen but what stimulates the retinae of the eyes.” (Arnheim, 1986).

Much of the language appeared to me as symbolic or interchangeable with the concept of reality, as there is more to reality than what meets the naked eye and harkens on precepts of perception discussed next. My extension is that this field of forces exists ‘behind the canvas’ as well given the construction of them by another under the influence of a different time and therefore different reality, with every detail adding and changing our ability to weigh the relevancies of what is contained, and equally important, what isn’t.

Finally, the type of art matters as well, and so does the cultural connection exerted from it - both informing the selection of which art pieces were to be included in the intervention. As for the type, research has found that those participants exposed to comparatively deviant art produced more creative ideas than those exposed to art considered more conformist (Forster, Friedman, Butterbach & Sassenberg, 2005). This finding impacted the art pieces included in Condition 1, as the more deviant offerings from the selected artists were picked to observe the effect while the most deviant were avoided due to inappropriateness or distraction from the exposure at hand. As for the importance of cultural connection, a finding that the Apple logo, perhaps the symbol currently most associated with creativity in design, primed participants to generate more novel uses of objects than those primed with IBM's logo in Guilford's Alternative Uses Task (Guilford, 1967; Chartrance & Fitzsimons, 2008). As a result, art pieces related to formal institutions were avoided in the intervention in order to avoid external influences on the participant's contextualization experience.

Creative Self-Efficacy and Entity vs. Incremental Mindsets

“When we marvel at the original individuals who fuel creativity and drive change in the world, we tend to assume they’re cut from a different cloth... programmed to be iconoclasts, rebels, revolutionaries, troublemakers, mavericks, and contrarians who are impervious to fear, rejection, and ridicule.”

- Adam Grant, Organizational Behavior Professor and Researcher

The discussion of mindsets was a necessary prerequisite for that of creative self-efficacy, for both general and specific reasons. Self-efficacy is defined as an individual’s belief in their capacity to perform behaviors necessary for the production of specific performance attainments (Bandura, 1977). Rather powerful personality trait, past theory concludes that much of people’s actions and behaviors are guided by their belief in their ability to successfully complete a task (Bandura, 1997). Those persons with high self-efficacy, who believe they can be successful at a task, tend to perform better at the given task in comparison to those with low self-efficacy (Lane & Lyles, 2001; Pajares, 2003). Although there won’t be an extended discourse on metacognition and mastery goals, they’ve been found to be significantly related to self-efficacy, while performance goals are not nearly as strongly correlated (Al-Baddareen, Ghaith, & Akour, 2015). Stimulation, self-direction, and universalism have been found to relate to both creative performance (Kasof, Chen, Himsel, & Greenberger, 2007) and self-reported creative achievement (Dollinger, Burke, & Gump, 2007; Mumford, 2012).

In other words, analyzing one’s own thoughts and their patterns with more deftness and choosing individual and encompassing goals, rather than goals based on comparison to others,

leads to greater ‘confidence’ regarding potential performance, and that confidence yields increased novel solutions when put to the test. A positive relationship between creative self-efficacy and creative performance has been demonstrated in varying studies across multiple organizational environments (Hirst, van Knippenberg & Baer, 2012; Jaussi, 2007; Tierney & Farmer, 2011). Provided the intended audience and the focus on the individual’s creativity of this paper, this positive relationship has been identified in university students (Reiter-Palmon, 2012), as well as stretching outside of an employment role (Tierney & Farmer, 2002). The assessment of individuals setting goals to become more creative may be related to creative self-efficacy, but this study’s limits do not include analysis of participants' goal setting strategy, but rather the mindsets that govern these strategies. However, learning goals set by individuals do influence their motivations, actions, and reactions, presenting an opportunity for further research (Shim & Ryan, 2005).

If high task self-efficacy is related to high performance on said tasks, the relationship seems predisposed to translate to the creative realm. To reemphasize, growth creativity mindsets are positively related to creative self-efficacy and personal creative identity (Karwowski, 2014). To better understand the self-efficacy and identity that generates creativity, we need to turn to the foundational mindsets with the understanding that the myth that one is born creative (i.e., entity mindset) is one of the most detrimental and harmful beliefs if one wishes to enhance creative performance (Plucker, Beghetto, & Dow, 2004). Entity mindsets lend themselves to “all-or-nothing” or black-and-white characterizations of others, leaving those containing them with little reason to seek or spur change regarding the specific other or at large (Dweck & Leggett, 1988).

Conversely, we know that an incremental creative mindset positively predicts creative problem solving, as well as task-approach achievement goals (Puate-Diaz, 2018). Additionally,

incremental mindsets engender learning goals and mastery orientation, and have a negative relationship with performance goals and dead-end strategies (Burnette et al., 2013). Furthermore, although the context is within the field of organic chemistry, it relates to deeper learning strategies and goals, and higher comparative performance as a result (Grant & Dweck, 2003).

Richard Hass finds what we can presume from the transitive property, that creative mindsets are clearly related to creative self-efficacy, meaning that an individual's internal perception of creativity is greatly related to their self-perceived creative competence (Hass, 2016). To believe that one can consistently grow more creative results in being more confident in their ability to enact creativity; this confidence results in greater performance on creative challenges.

The underlying motivation for these hypotheses is to better understand which parsed pieces of mindsets foster the most novel and volumetric production, so that we can more accurately examine the great creatives of our past, but more importantly so that anyone can have confidence in growing their creativity if they're open to it. Some of the most popular creative literature focuses on singular creative talents and the upbringing and maladies they suffered from, rather than a more academic psychological analysis. Mindsets are generated as a response to experiences, and the more that people experience the more they cling to the particular view of the world they developed early, making the gaining of knowledge more of a prisoning (Dane, 2010).

This self-reinforcing cycle is difficult to break as a result of compounding over time, but with the correct steps and proper motivations that realign experiences, one's possibility increases drastically.

Why Art and Why this Art?

*“No one to whom a work of art has truly spoken,
talks back to it an analytical prose without apprehension.”*

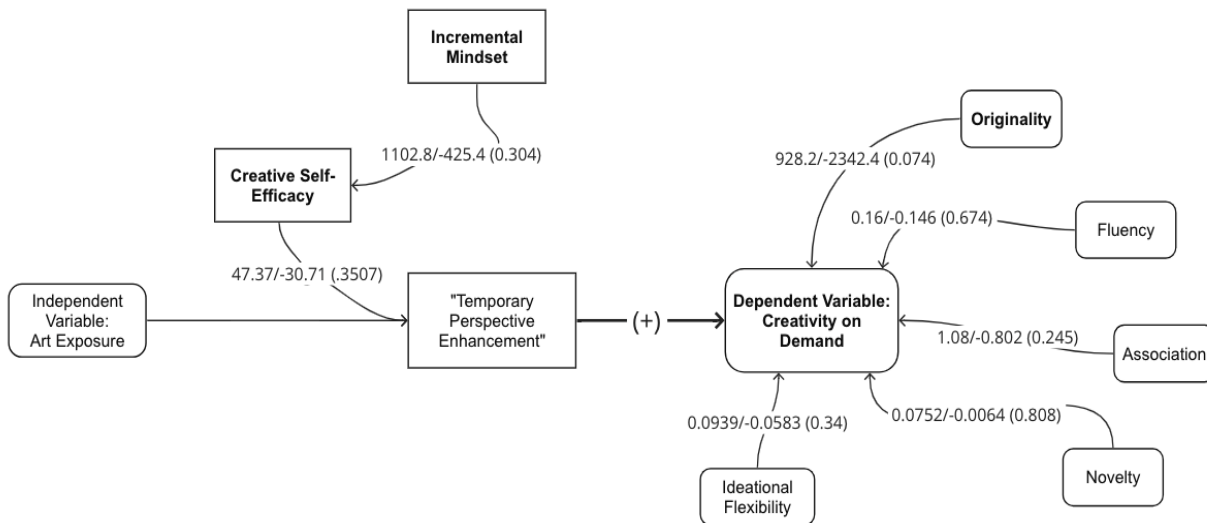
- Rudolf Arnheim, Gestalt psychologist and perceptual theorist

Much of contemporary personality psychology revolves on the tenets used to describe the dimensions of individual personality, referred to most commonly as the ‘Big 5’. The five personality traits referred to by the label are agreeableness, conscientiousness, neuroticism, extraversion, and openness (Digman, 1990). Openness to experience broadly relates to the ability and interest in attending to and processing of complex stimuli, and more specifically intellectual curiosity and imagination (Weisburg, DeYoung & Hirsch, 2011). Individuals containing a high amount of openness to experience actively seek experiences for their personal reasons, have rich and complex social lives, and are sensitive and imaginative towards art and beauty (Costa & McCrae, 1992). More open individuals have also been found to display a greater capacity for divergent and imaginative thinking which can assist in fluid idea generation (McCrae, 1987; Furnham & Avison, 1997; Feist & Brady, 2004). A facet of the more general ‘openness’ was termed “openness to aesthetics” and defined as a “deep appreciation for art and beauty” (McCrae & Costa, 1987). Individuals more open to aesthetics were found to engage in more divergent thinking, but also more creative behaviors and interests and experience more inspiration (Griffin & McDermott, 1998; Thrash & Elliot, 2003).

In summary, the more that one is open to experience, the more they are likely to engage in imaginative thought and idea generation, and further those more open to aesthetics are more

likely to act more creatively with greater inspiration. If one could make themselves more open to the experiences of art and aesthetics, would creativity follow?

Overview of the Study



The key objective of my research was to empirically assess whether exposure to artwork cultivated a briefly enhanced perspective that would lend itself to easier access to imaginative and abstract thought, therefore enhancing creativity on demand. Particularly, this study was interested if there was a difference in creative results when participants were provided with the exhibition label attached to the piece of art in comparison to previous art primers. Furthermore, focus was placed on creative self-efficacy and fixed v. growth as mediators that served the dual purpose of factoring into the outcome themselves, but also allowing for validity comparison to previous studies that have investigated their relationships.

Hypothesis 1: Creative self-efficacy moderates the effect of art exposure on creativity on demand, such that creative efficacy is most related to creativity on demand when creative self-efficacy is high.

Hypothesis 2: Growth mindset moderates the effect of creative self-efficacy on creativity on demand, such that creative efficacy is most related to creativity on demand when growth mindset is high.

Hypothesis 3: Fixed mindset moderates the effect of creative self-efficacy on creativity on demand, such that creative efficacy is negatively related to creativity on demand when fixed mindset is high.

Methodology

The Health Sciences and Behavioral Sciences Institutional Review Board at the University of Michigan assessed the present research and classified the intervention as exempt. Participants were informed about the study and had to behaviorally consent to participate (pressed “next” button to consent, then continued to the task). The informed consent included that the study was “interested in understanding your ability to deliver creativity” and that they’ll “be presented with information relevant to the arts”, but nothing else indicating the specific focus of the content to avoid any prior bias.

Once having confirmed their informed consent, all participants in the study were directed to first the Short Scale of Creative Self (Karwowski, 2012), a five-point scale, and then the Creative Mindset Scale on the next page, a two point scale (Karwowski, 2014). Then they were presented with one of three potential conditions, that of fine art, blasé art, or no art at all. Those randomly selected for either the fine art or blasé were presented with a slide depicting the text: “Over the next several slides, you will be shown a selection of fine artwork. We ask that you contemplate the dynamics, context, qualities, and possible intention behind them as you will be asked associated questions afterwards, but without being able to see the art pieces again. You are welcome to take notes.” Those participants subject to the control were not shown the message out of concern for confusion, and the laboratory protocol has been listed in the appendix.

Participants:

We recruited 180 participants from the Prolific platform who were administered the intervention through Qualtrics survey software. The survey and included intervention were distributed via Prolific with an anonymous link, and all users had their age verified by the platform as over 18. There were no other criteria stipulated, other than that it be taken and administered in its native language of English, and thus no non-English responses were generated. This lack of criteria implemented is certainly a limitation placed upon the study by the author/principal investigator and will be referenced in the associated section.

Out of 180 participants who began the online experiment on Mechanical Turk, 31 did not complete the study, 24 of which were a result of no response submission for the novelty and originality measures, 6 were excluded for not providing a response to any of the creativity on demand tests, and 1 failed to respond to the RAT assessment. There is little evidence of any server timeouts. An additional 3 participants were removed from the data set due to providing responses to all creativity on demand tests but employing text-responses such as “I don’t know” and “As many as you want to give them” that would have made them invalid if scored and run through regression performances.

Condition One: Fine Artwork with Contextual Features

If selected for Condition One, participants were first presented with a page that informed them: “Over the next several slides, you will be shown a selection of fine artwork. We ask that you contemplate the dynamics, context, qualities, and possible intention behind them as you will be asked associated questions afterwards, but without being able to see the art pieces again.” The intention of this statement was to make the participants aware that the content of the survey was

changing, but also to prime them for reception and potential contextualization. Although the “associated questions afterwards” do not make any specific reference or ask related to individual art pieces, the intention was that the impetus would encourage participants to engage with the artwork in a more active manner than if they knew they weren’t going to be asked about it.

The next slides depicted the visual element of each art piece, as well as their exhibition label above the piece, listed below in the order that participants were presented with.

Additionally, each page containing a visual element utilized a timer that prevented the participant from moving to the next page for 40 seconds. This came as a result of the concern that without in-person lab oversight, participants would move themselves all the way through the intervention as fast as possible and not spend the time or attention necessary on the art exposure to generate an effect. Aside from the non-visible timer and the exhibition label, there was no other information or task provided for this condition other than the viewing of the visual components. Participants, after the allotted time, did have to press “next” in order to transition to a new page.

1. Winslow Homer (American, 1836 - 1910), *The Gulf Stream* (1899), Oil-on-Canvas
2. Rocco Morabito (American, 1920 - 2009), *The Kiss of Life* (1967), Film Photograph - 1968 Pulitzer Prize for Spot News Photography
3. Vincent Van Gogh (Dutch, 1853 - 1890), *Head of a Skeleton with a Burning Cigarette* (Early 1886), Oil-on-Canvas
4. Houman Pirdavari (Art Director at Fallon), Penn 1988 Advertising Campaign
5. Hosokawa Masaumoto (Chief Patron) / Sōami (Ashikaga Shogunate artist), Ryoanji Temple Stone Garden (c. 1488)
6. John Singer Sargent, *Madame X* (1883)

7. Tom Sachs, *Chanel Chainsaw* (1996) - cardboard and thermal adhesive
8. Henri Matisse, *The Open Window, Collioure* (1905)
9. Henri Matisse, *French Window at Collioure* (1914)

Condition Two: Strukturfremd

Condition Two functions in the exact same manner as Condition One, with the same priming script and time requirements. The only difference is that of the subject matter of the art. The intention of this condition was to serve as a control for the provocative artwork aspect interaction potential within the study, as it would be difficult to say that exposure to fine art increases creativity on demand, when there is a possibility that any artwork causes enough distraction away from external stimuli and engenders focus on the task at hand. Thus the decision to include blase art was made. The origin of the term “strukturfremd” is German, and refers to artwork placed in pre-established frameworks that are alien to the structures they concern (Arnheim, 1963).

1. Traditional Wall Clock
2. Globe Map
3. Wristwatch
4. Desktop Calendar
5. Nike Cortez sneaker (traditional colorway)
6. Regional map of Iceland

Condition Three: Control

Condition Three serves as a control for the other two conditions within the study. Participants are not presented with any visual material, nor labels, nor priming paragraph. Instead, they are directed to the RAT task and other Dependent Variable assessments immediately after completing the Creative Mindset Scale. Any future design of mine would seek to divide these conditions into separate studies as the multiple regression analysis functions

Measures:

Independent Variables:

Short Scale of Creative Self (SSCS)

This questionnaire uses eleven items, and one additional, to assess creative self-efficacy, utilizing a scale of “1 (definitely disagree)” to “5 (definitely agree)”. Sample questions include: “I am sure I can deal with problems requiring creative thinking” and “Creativity is an important part of myself”. Scores have displayed adequate psychometric properties, including evidence for factorial validity and internal consistency (Karwowski, 2012). Important to note is one question traditionally found on the CMS described below was added to this scale to gain a finer understanding given its more diverse response categories, that being “Everyone can create something great at some point if he or she is given appropriate conditions”.

Only half of the items on the scale are used traditionally in determining creative self-efficacy (Karwowski, 2012). Six applicable items each with a five-point scale resulted in a maximum creative self-efficacy expression score of 30, with “definitely disagree” serving as a 1 and “definitely agree” serving as a score of 5.

Creative Mindset Scale

This questionnaire uses ten items to assess fixed and growth mindsets maintained by participants, utilizing a scale of “1 (Yes)” and “2 (No)”. Sample items include: “Rome wasn’t built in a day - creativity requires effort and work, and these two are more important than talent” (growth mindset) and “Some people are creative, others aren’t” (fixed mindset). Scores have displayed adequate psychometric properties, including evidence for factorial validity and internal

consistency (Karwowski, 2014). Again, it is important to note the transition of one question from this scale to the previous one.

Half of the scale items are employed in determining the level of growth mindset, and the other half of the scale employed in fixed mindset determination. As a result, each mindset had a maximum score of 5 and binary responses were coded as such.

Dependent Variables:

Creativity on Demand

Word Association: Association

The RAT, standing for Remote Association Task, is a conceptual insight task which forces participants to identify correlatory aspects and relationships between nouns that are normally not associated with one another (Dreu, Nijstad & Baas, 2011). Broadly applied in psychology as well as creative studies and was originally developed for the purpose of determining differences in associative processing. Although the RAT task is often employed in creativity studies, the task is not to be confused with divergent thinking assessments, as RAT employs analytical and convergent thinking (Lee, Huggins & Therriault, 2014). While RAT tests exist on a scale, and there are 10 that are considered ‘difficult’, the one employed in the study being “car, swimming, cue” (i.e., pool).

The responses for the RAT assessment were coded on a binomial scale, an accurate response of “pool” or “Pool” resulted in a score of “1”, any scores that did not provide this response were given a “0”. Based on the statistical analysis presented below, we know that over half of all validated participants generated the correct associated word.

How many uses for a Brick?: Fluency and Ideational Flexibility

As divergent cognitive functions have been posited as uniquely important to the creative process, they seemed vital to include one in assessing creative abilities on demand. Guilford further posits with “divergent thinking is a matter of scanning one’s stored information to find answers to satisfy a special search model” reinforcing his belief that the key to divergent production ability is variety (Guilford, 1968). Divergent thinking becomes an interesting response to assess, as they are intended to go in all different directions as a reflection of the cognitive function (Russ, 1993). The most common task to generate divergent responses for assessment, and the one employed in this sample, is “list all the uses for a brick you can think of”. This is a variation of the original question posed by Russ which employed “how many” rather than the list function, and as this was an online intervention there was concern that participants may enter a number, nominal or otherwise, and void the response data. The adjective often used to label quality and variety of divergence is “fluidity” derived from early theorizing that divergent thinking is dependent upon one’s ability to fluidly move down or along the associative currents of cognition (Wallach, 1970).

Fluency, as a derivative of divergence, was measured based on the volume of responses each participant generated. Despite any internal relatedness, those listed ideas that were fully formed were each given a score of “1” while rare incomplete answers were given a “0”, allowing us to interpret the mean of 3.907 as participants averaging almost 4 unique ideas as a result of this given task. This scoring matrix mirrored the method employed in the original implementation of the test, as penned by Guilford in 1967 (Guilford, 1967).

Ideational flexibility was assessed again with inspiration from Guilford’s scoring methodology (Guilford, 1967). The scoring is concerned with their being separate categories of

‘applicability’ in the solutions that the ideas derived served to meet. However, despite a deep search, the exact labeling of these categories was not able to be specified, and in the time since scales upwards of 20 categories have been employed, although the original functioned with only 5. As a result, 5 categories determined to be the most relevant and broadly encompassing was created. The categories determined are as follows: Building instrument, Weapon, Tool, Solution to acute problem, and Other. The inclusion of “Other”, while very broad, was included to encompass solutions such as the actual responses of “make a pencil holder out of it” or “grind it down into powder for pigmentation” that seemed to go beyond the scope of the prior four categories.

Bubble Wrap: Originality

This measure was created as a business-focused extension of the “How many uses for a brick?” assessment. While the previous test was intended to explore general divergent cognitive functioning abilities, the goal of this task was to measure the convergent ideational ability of the participant when applied to a specific issue. The specific task was as follows: “List ideas for 250 commercial rolls of leftover bubble wrap”.

Originality was scored using a multi-step approach. First, all of the text responses were combined in a cumulative body of text, and then submitted to a Word Frequency Calculator. As a result, the occurrences of employed words were listed with their associated frequencies, for a score total of 6710. Prior to this summing to determine a score for each novel term, words that were verbs associated with listed nouns were combined. The reason for this is based on the scoring of originality coded for unique nouns employed in other studies, and helps to clear the grey area created by the difference in constructed originality between “a raft to float on” and “a

float for rafting”, both being direct examples from text responses to this task. The cumulative shared frequency of 6710 was then divided by each noun’s separate frequency score to create a scale that increased in value as the utilization of a certain noun grew rarer. For example, the ideas of recycling them into “galoshes” or “parachutes” were completely unique to the rest of the responses, and thus both received scores of 6710, while use as “insulation” was found in 35 separate responses, thus receiving a score of 191.71.

TV Show Penning: Novelty

This measure was employed with the intention of being able to determine novelty as a comparison to relevant English-speaking cultural artifacts. While not being present in research studies or journals that were accessible to this research team, the task was inspired by Stanford assistant professor and researcher Justin Berg’s utilization of the measure in a pilot study which provided applicable, comparable and inspired results. The task was as follows: “Create a TV Show in 300 words”.

Given the inability to score such a large volume of text in the manner which the bubble wrap task was, an alternative assessment technique needed to be developed. The one arrived at utilized OpenAI’s Artificial Intelligence platform as an objective rater. However, rather than simply feeding the engine responses and having it gauge a subjectively human construct, the engine had to first be trained and tested, as well as the questions modified. In order to ensure the engine’s accurate perception of television content, the engine was asked to generate first a list of the 50 most popular english-language television programs of the last 35 years. Once this list was generated, and audited outside of the engine for accuracy, and then tasked with creating 300-word summaries of each of the 50 shows previously listed. Once this was completed, the

summaries were again audited for accuracy to the show they referenced and found once again to be valid.

Artificial intelligence is unable to generate an ‘originality rating’ or ‘novelty rating’ as they are a subjective measure of humans thus not able to be performed. However, the AI was able to objectively compare participant submissions relatedness to the television data it had already generated in the same thread. As a result, I tasked the engine with “describing the similarity of following submission to the concepts and themes employed in the previously listed 50 shows on a scale of 10, with 0 being completely similar to past shows, and 10 sharing no commonalities with past shows”. This task would be immediately followed with a participant's idea, and the scale, while for the AI engine is a measure of similarity, for the researchers was considered a novelty score. Private and separate originality rankings and comparisons of submissions correlated strongly with similarity scores provided by OpenAI’s platform. As a whole, participant responses were more novel as a standalone in comparison being more similar to previously popular television based on their average scores.

Results

The means, maximums, and independent variable validity scores for Study 1 are presented in Table 1. Although mostly displayed for the reference of the reader due to the varied scoring scales, the skewing of participants towards a growth mindset in comparison to fixed mindset indicates potential respondent bias. As a result of the limitations and statistical significance to be discussed later on, the substantial validity of the independent variables are encouraging as an indicator of successful survey protocol. Beyond variation calculations, the first substantial analysis conducted was that of a regression to measure the effect of the multiple conditions on the creativity on demand dependent variables. Prior to respondent data being collected, the intention of analysis was to have creativity on demand function as a cumulative variable of the separate task measures. However, given the variance of statistical significance eventually determined, treating each dependent variable measure separately in analysis allowed for a more transparent treatment. The results of the regression comparing conditions 1 and 3, or fine art and no art, are displayed in Table 2. While originality is the only measure found to contain statistical significance, the positive effects found for fine art exposure and the negative effects displayed by no exposure to art are encouraging in their relatedness to art exposure findings in studies that inspired this research (An & Youn, 2017).

Table 1: Study 1 means, maximums and Cronbach scores of independent variables

Variable	Mean	Max	Cronbach α
1. Short Scale of Creative Self (CSE)	8.563	15.00	0.8460**
2. Creative Mindset Scale (Growth)	4.471	5.00	0.8981**
3. Creative Mindset Scale (Fixed)	1.704	5.00	0.8232**
4. Remote Association Task	0.6369	1.00	
5. Divergence: Fluency	3.907	26.00	
6. Divergence: Ideational Flexibility	1.853	5.00	
7. Originality	6244	44615	
8. Novelty	6.171	9.00	

Cronbach: *0.8 > α > 0.7 **0.9 > α > 0.8 ***1.00 > α > 0.8

Table 2: Regression Descriptive Statistics — Effect of Art Exposure on Creativity on Demand Tasks

Measure	Origin Task	No Art; Descriptive Statistics:	p- value	Fine Art; Descriptive Statistics:	p- value
Originality	Commercial Bubble Wrap Ideation	Estimate: - 2342.4 Cluster S.E.: 1448.3	0.074*	Estimate: 928.2 Cluster S.E.: 1443.3	0.074*
Novelty	Theoretical Television	Estimate: -0.146 Cluster S.E.: 0.379	0.7	Estimate: 0.160 Cluster S.E.: 0.379	0.674
Fluency	Brick Use Task	Estimate: -0.802 Cluster S.E.: 0.920	0.385	Estimate: 1.08 Cluster S.E.: 0.920	0.245
Ideational Flexibility	Brick Use Task	Estimate: - 0.0064 Cluster S.E.: 0.308	0.983	Estimate: 0.0752 Cluster S.E.: 0.308	0.808
Association	RAT	Estimate: - 0.0583 Cluster S.E.: 0.0987	0.555	Estimate: 0.0939 Cluster S.E.: 0.0981	0.34

*p < .10, **p < .05, ***p < .01

Table 3: Multiple Moderator Regression of Independent Variables on Creativity on Demand Tasks

Variables	Growth Mindset		Fixed Mindset		Creative Self-Efficacy	
	Fine Art	No Art	Fine Art	No Art	Fine Art	No Art
	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Originality	1102.8 (1306.8)	-425.4 (2125.2)	1079.7 (908.4)*	-623.4 (1010.8)*	47.37 (348.2)	-30.71 (383.49)
Novelty	-0.3622 (0.442)	0.48704 (0.5529)	0.42046 (0.23754)	-0.12542 (0.261)	-0.04641 (0.09194)	0.03310 (0.10103)
Fluency	0.6951 (0.1352)	-0.1098 (0.1352)	-0.5345 (0.5874)	-0.7986 (0.6442)	0.07073 (0.22342)	-0.15660 (0.2455)
Ideational Flexibility	0.1086 (0.3625)	-0.2687 (0.4532)	-0.1904 (0.1977)	-0.2082 (0.2168)	0.02214 (0.07498)	-0.05194 (0.0824)
Association	0.1547 (0.1128)	-0.0687 (0.1036)	-0.105108 (0.06456)	0.037004 (0.0718)	-0.004714 (0.0232)	-0.00216 (0.0255)

* $p < .10$, ** $p < .05$, *** $p < .01$

In order to examine effects beyond those created by independent conditions, we used multiple moderated regressions to determine the effects of the interactions hypothesized in Hypotheses 1, 2 and 3.

In Hypothesis 1, I proposed that creative self-efficacy moderates the effect of art exposure on creativity on demand, such that creative efficacy is most related to creativity on demand when creative self-efficacy is high. In slight support of Hypothesis 1, the interaction of creative self-efficacy and exposure to art resulted in a positive effect on originality efficacy within creativity on demand measures ($\beta = 47.37$, $p = .35$, $R^2 = 0.03$; see Table 3). The originality measure produces the most relevant alpha level and therefore has the greatest chance at not being a chance interaction. As a result, to further understand this interaction and its significance we made a graphical depiction of the creative self-efficacy interaction with conditional art and

originality efficacy (see Figure 3). While difficult to assess the level of imposition that the conditions independently had upon creativity on demand visually, the increase in original production being positively correlated with increases in reported creative self-efficacy is apparent.

In Hypothesis 2, I proposed that growth mindset moderates the effect of creative self-efficacy on creativity on demand, such that creative efficacy is most related to creativity on demand when growth mindset is high. In support of Hypothesis 2, the interaction of growth mindset and exposure to art resulted in a positive effect on originality efficacy within creativity on demand measures ($\beta = 1102.8$, $p = .303$, $R^2 = 0.04$; see Table 3). An important note is that although this effect is not statistically significant, the effect does represent the lowest p-value for the regression performed to assess the moderating effect, and thus was perceived as the most relevant to perform further analysis upon. To further understand this effect, we made a graphical depiction of the growth mindset interaction with the originality measure (see Figure 2). When a participant's mindset is highly growth oriented, their relationship to originality efficacy is positively related, as presented with the bars of purple and blue, regardless of conditional art exposure. Furthermore, another important note is that when parsed for conditionality, those exposed to fine art who also have a highly growth oriented mindset produced the largest volume of originality as a creativity on demand measure, exceeding all cumulative originality scores of those growth mindset participants exposed to boring or no art. Additionally, those with the lowest display of a growth mindset experienced the greatest increase in original production when exposed to fine art when compared to those with low growth mindsets exposed to boring or no art, as displayed with the red bars.

In Hypothesis 3, I proposed that fixed mindset moderates the effect of creative self-efficacy on creativity on demand, such that creative efficacy is negatively related to creativity on demand when fixed mindset is high. In support of Hypothesis 3, the interaction of fixed mindset and exposure to art resulted in a negative effect on originality efficacy within creativity on demand measures ($\beta = - 623.4$, $p < .10$, $R^2 = .065$; see Table 3). As for the specific creativity on demand, we find statistical significance with exclusively the originality measure, although the fluency measure provides an observable effect as well but is not statistically significant. To further understand this effect, we made a graphical depiction of the interaction with the originality measure (see Figure 1). As predicted, when participant's mindset was highly fixed, their relationship to originality efficacy was negative. An interesting insight borne out of the visualizations is that the negative effect is greater for those exposed to fine art, perhaps indicating that those with fixed mindsets have a low 'openness' ability (big five personality indicator) or low 'openness to aesthetics' thus compounding the effect when provocative art is introduced.

Figure 1. Effects of Fixed Mindset and Art Exposure on Originality (Stacked Bar Plot)

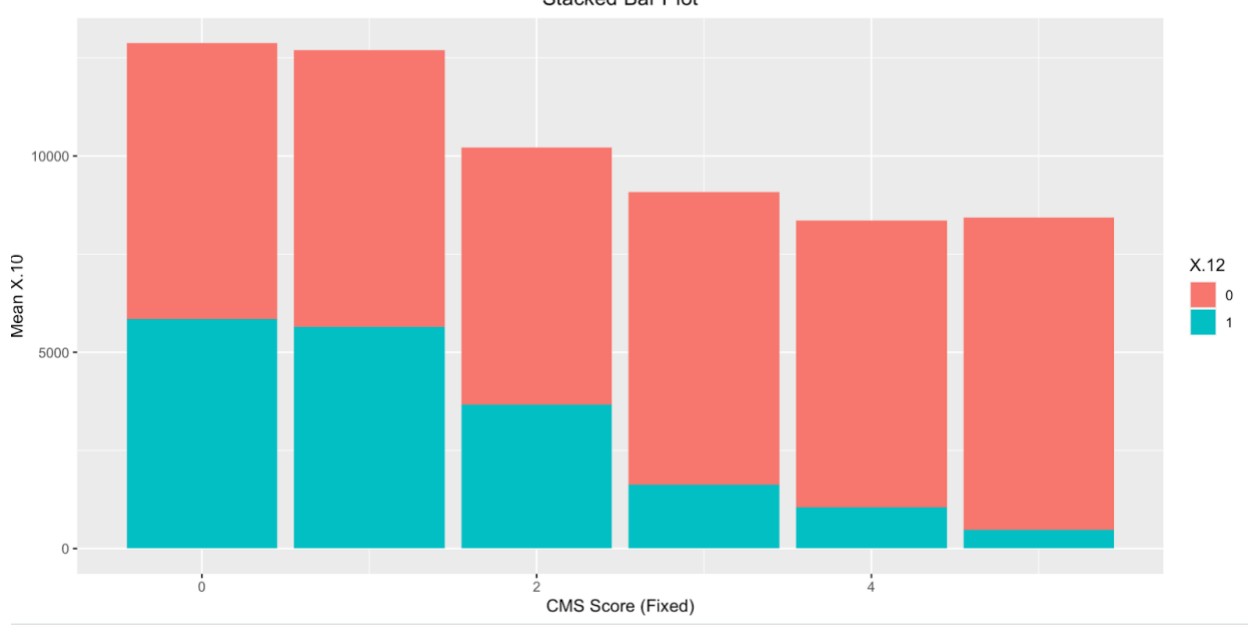


Figure 2. Effects of Growth Mindset and Art Exposure on Originality

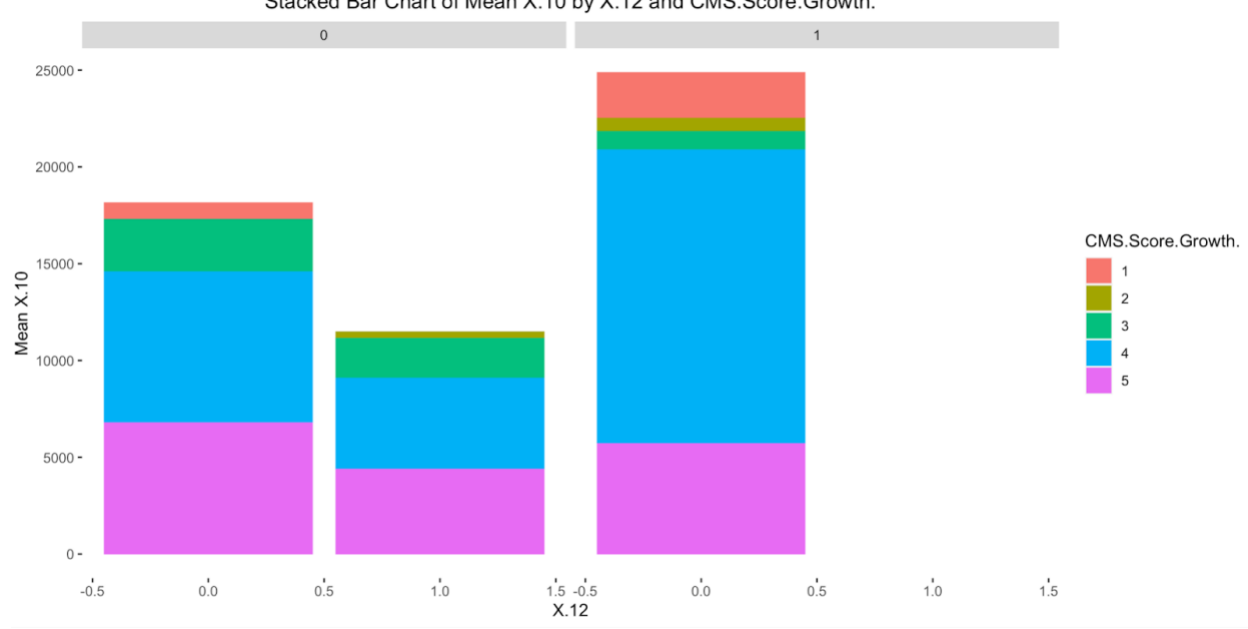
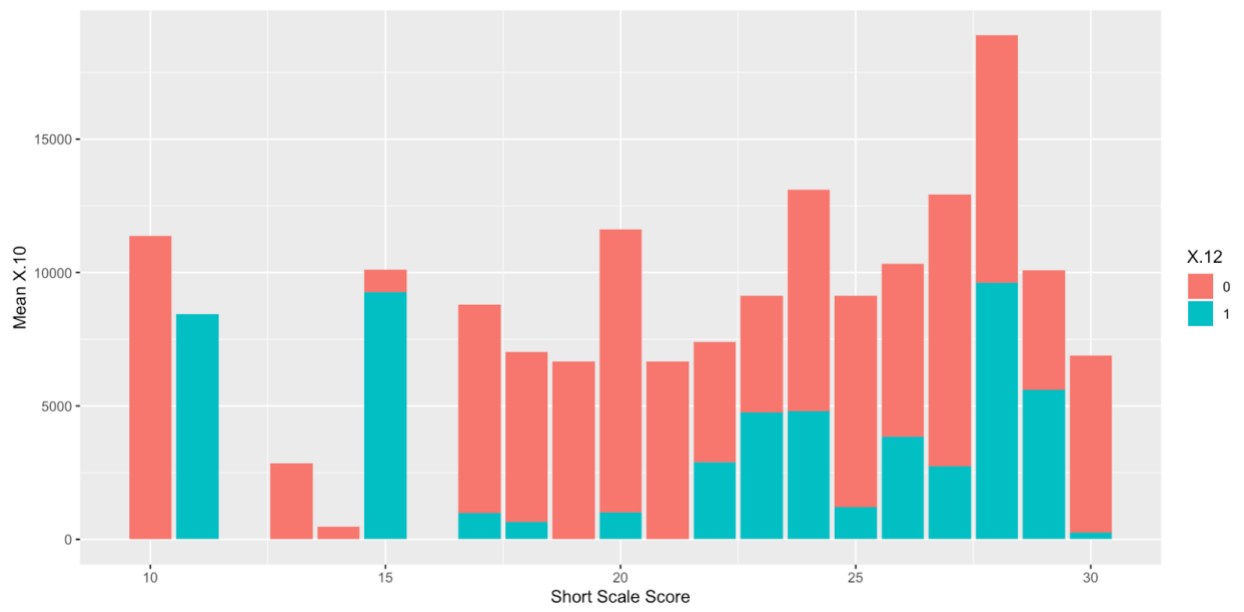


Figure 3. Effects of Creative Self Efficacy and Art Exposure on Originality (Stacked Bar Plot)



Discussion and Conclusion

The ultimate goal of this study was to assess if a greater effect on creativity on demand could be engendered by not only an art intervention, but one that provided participants with the opportunity to contextualize the pieces that were displayed in hope of precipitating increased creative potency. This served as a means of building on prior research that had displayed the desired effects of an intervention but was concerned more with display of the work than the viewer's contextualization of the piece (An & Youn, 2017). Unfortunately, the significance of the findings were not great enough to presume that contextualization and thus perspective enhancement serve as greater instigators than exposure in general. However, effects of the originality measure serve as encouragement that the interaction may exist, although a lack of a condition with the fine art pieces without their gallery exhibit labels prevents immediate comparative analysis. The distinct effects of growth and fixed mindsets mirrored the findings of past research and support the execution of the study design, as do the Cronbach scores of the independent variable scales.

The practical implications of both study results, but also the theory and findings discussed in support, are quite varied. For one, based on the results of the regression concerned with the effects of the art conditions (see Table 2), we can surmise that exposure to fine art can cause viewers to express greater originality on, timely, tasks. Although the theoretical review for this paper was more immediately concerned with the interaction of creativity, underpinning psychology, and art, I have discovered more minimal than expected research or field studies concerned with the effects of office design incorporating art pieces. While I presume that a body of research does exist, the most applicable and paramount example I could find was present as a

tangential focus in the book *The Best Place to Work* by Ron Friedman, Ph.D.. Most work seems to center on the effects of what are considered artistic interventions within organizations, that consist of artists coming in as consultants to flex the staff's perspectives (Berthoin, Antal & Strauß, 2013) or in analyzing the corporate bodies that serve as this go-between (van den Broeck, Cools & Maenhout, 2008).

While this is a field certainly of interest for future studies, the question of the effects that could be borne out of a long-term intervention remains. Could a smattering of hung fine art in the workplace make a firm more creative or innovative, and if so, what teams are most predisposed to an effect? Does industry type or team mindset type affect the effect, for example does some art carry more of an effect for engineers than others, or for those with fixed mindsets. While intuitive that if participants experience an increase in creative efficacy after a short exposure, greater effects may result from extended and organic ones, testing has not been conducted. However, that is not a means of preventing you from doing so, as many of the challenges discussed concerning art contextualization and perspective in the theoretical review have the potential to enkindle positive externalities regarding individual and thus firm creativity.

An additional practical implication would be that of screenings during hiring processes. While not applicable to all industries, as those with fixed mindsets exhibit comparative superiority in certain fields, the ability to assess growth mindset for firms that are within the creative economy, or have creative or innovative cultures and output, could help prevent the inefficient allocation of funds to those with lesser potential given the context of the work. Identification of myself as not an expert on the precise legal definitions of hiring discrimination is pertinent, but for as much of a controlling effect as growth mindset exerts on creative efficacy it would be a plausible action.

As for now, the most succinct advice I can offer is a reiteration of Leo Burnett's, founder and longtime chief of the namesake advertising behemoth that spurred icons such as Tony the Tiger, the Jolly Green Giant, and the Marlboro Man, comment:

“Curiosity about life in all its aspects, I think, is still the secret of great creative people.”

Limitations and Future Directions

To first investigate the lack of statistical significance prevalent in some of the interactions, there are several possible considerations. First, is that the design of the study did not achieve its intended goal in promoting an effect via the artwork intervention. Future designs could increase the amount of time each participant is required to view the displayed artwork, or potentially increase the provocativeness of the pieces selected. Another possible design change would be to administer the intervention in person so as to guarantee that participants are not using smartphones or other device applications while the intervention is occurring, as the effect could have been mitigated by remote Prolific participants distracting themselves during the static and time-release nature of the art display. Finally, not only administering the intervention in person, but having the intervention as a physical paper copy could engender greater creative differences due to the physiological connection that occurs when the hand is used as an instrument - a connection more curated in artistic individuals.

Study design aside, a lack of demographic stipulations during the interventions administering on Prolific could also have negatively impacted the effects. A lack of focus on what population was best to be studied is what allowed this discrepancy to occur, as the original focus of the study was to administer to undergraduate business students in-person but ended up being infeasible. In light of research highlighting the creative potency of older individuals within the organization (Verworn, 2009), future demographics could split the Prolific groups into an 18-25 year old group and one between ages 55 and 65 in order to gain more clarity on the interaction and increase the study's relevance.

Although previously mentioned, the classification of the ideational flexibility measure categories based on Guilford's pilot implementation was difficult to ascertain (Guilford, 1967). Thus, five applicable categories were created with the intention of being as accurate to the descriptions in the research as possible, but there is still the possibility that the scale was inaccurate and debased the validity or accuracy of the specific scoring of ideational flexibility. The other creativity on demand measure of concern is that of the television prompt as a novelty measure. Although the artificial intelligence didn't appear to display any bias, the engine's training may have been biased resulting in non-objective results, or the training inaccurate to begin with. Running a separate study in which participants rate a varied selection of the responses based on their novelty, and then averaging those scores to mitigate bias creep, may prove to be more effective or more accurate in future iterations.

Regarding the discussion of the effects found in Figure 1, as fine art exposure being mitigated by the potential of those with fixed mindsets having a negative linearly related openness trait. A measure of openness to experience and/or aesthetics was to be included, and was removed in order to facilitate timing that would allow for a more substantial data set allowing for more comprehensive analysis of more prominent study focuses. However, in retrospect the action would have allowed for insight into how creative self-efficacy and openness are related, as well as mindset and openness, interactions that when applied to creativity on demand efficacy, to my knowledge, do not have much research background.

In consideration of measuring openness, the measuring of aggression as a relation to fixed mindset was also weighed. Although it was not intended to be a standalone scale of assessment or task, it had the potential to be coded as a 'side-effect' of text responses for creativity on demand tasks. Furthermore, aggression was present and coded for in the fluency

and ideational flexibility measures. Due to ‘weapon’ being a category used in indexing the scoring of flexibility, those who suggested using it as such were not deemed aggressive, but other more specific illicit uses or as a means of physical violence towards others were tagged as aggressive. However, this was the end of the aggression analysis as time constraints made further coding futile. Identification could be continued within other creativity on demand tasks, as some of the suggested television shows centered on violence as a plot driver, as well as some ideas for bubble wrap involving using the bubble wrap as ‘armor’ for interpersonal violence. Openness and aggression variables potentially being present in this study serves as a means for more native inclusion in future studies, as aggression could be considered as being present on the nervous side of the big five personality trait of neuroticism.

Paul Torrance (1962) identified and synthesized studies of creative individuals, and found them to contain the following attributes: tolerance of incongruity, conceptual fluency, conceptual flexibility, originality, preference for complexity, independence from judgment, deviance, questioning of authority, impulse acceptance (Torrance, 1962). These attributes seem to share a kinship with the relationships found from the value cluster assessments and further our understanding of the desire for personal and ideological freedom and uniqueness of creatives. In a psychological meta-analysis of famed poets, it was observed that poets did express “exquisite sensibility” but also a “delicate poise of nervous structure”, a cognitive organization that produced tendencies towards suffering, discontent and others, all having a negative effect upon mental health of the penman (Sully, 2018). Their evidence within creativity on demand measures inspires future investigation of the personality traits as they relate to business applicable creativity, as I theorize that it could lead to interesting findings given past research on the mental states of past creatives.

Multiple studies have yielded evidence of a high prevalence of mental illnesses among famous creative people, as well as alcoholism and illicit drug use (Andreasen, 1987; Post, 1994; Ludwig, 1995). Many of these studies do not encompass modern inclusions in the creative sphere, such as software developers, UX designers, or ideators, and focus mainly on writers, poets, painters and composers (Mula & Hermann, 2016). Additionally interesting is that those creatives in the architecture, design, actors, and non-fiction writing industries display very few signs of mental instability (Ludwig, 1995). These mental illnesses often displayed themselves as mood disorders (Jamison, 1989). Through a meta-analysis of over one thousand biographies, Arnold Ludwig finds that poets display a high prevalence of mania and psychosis, while composers and artists tend to suffer from long term alcoholism and depression. Fiction writers, entertainers, actors and poets are all more likely to commit suicide (Ludwig, 1992, 1995; Mula & Hermann, 2016).

A more contemporary investigation of the interaction between mental uniqueness or instability and potency of creative efficacy could reveal relationships that have been historically theorized, perhaps inaccurately. Of additional importance, results could display that historical annals of the craze of great creatives are random and help to eliminate the associated stereotype for those who manage or hire them.

As our perspective on the reality we are presented with governs many of the facets of cognitive human experience just mentioned, is self-reinforcing, it is intuitive to track back to the formation of perspective to understand the formation of the facets. Autonomy may be the simplest to track back, and in a study parents of ordinary children maintained a mean of six rules, and were specific in their content; parents of highly creative children maintained a mean of less than one rule (Amabile, 1989). Entrepreneurs, those which could be considered at one of the

leading-edge intersections of autonomy and creativity within an organizational context, were 3 times more likely to engage in rule and law breaking as teenagers than their peers (Originals). So growing up with fewer rules creates people that don't like them later on - but that sounds more 'raised by wolves' outcome than what actually occurs. Those same budding entrepreneurs that seemed to contain such a freer hand when deciding what statutes apply to them, were not more likely than their peers to engage in hazardous acts such as drunk driving, illegal drug use or purchase, and stealing valuables (Ruef & Xu, 2004). Found in the same study of the difference in parenting shaping creative production, the parents that averaged less than one rule, those with more creative children, tended to make that rule centered on moral values rather than the specific homework and bedtime strictures popular in the opposite population (Amabile, 1989). The association is identified in another study, finding that among highly skilled American architects those with the most novel product had parents that exercised discipline with explanations (MacKinnon, 1965).

This explanation or moral-based rule gives a higher quality landscape of right and wrong, and what lies in between, and as importantly, how they affect you and those around you, which I theorize leads to more empathy within the rapidly developing brain. Future research concerned with child rearing precepts and their relation to openness and empathy as predictors of high creative efficacy could help to inform many fields, from early child psychology to its effects within society.

Finally, it is important to note that not all organizations are pursuing a strategy where innovation is likely to prove of value in enhancing organizational performances (Miles & Snow, 1978). Although creativity and innovation may be valued in organizations that succeed through production of innovative products, creativity may not prove of much value in those where

success is based on cost control (Hitt, Hoskisson, Johnson, & Moesel, 1996). While true for cost control, I also argue that innovation does not prove much worth in organizations with high regulations or tradition. An early iteration of this paper discussed these specifics at length, but the examples used were that of the Japanese Bluefin tuna fishmarket and Moroccan Zellij tile making. Bluefin tuna fetches meteoric prices in Japanese auction houses due to the meat's vitality within luxury sushi establishments but is globally only allowed to be fished with a rod and line. Given the ocean-spanning migratory patterns of the species and the difficulty in landing them effectively for commercial profit, the species has been protected after overfishing while standing as one of the few remaining lucrative fish markets. As for the Zellij tile, they are produced in many of the same kilns and primitive chemicals and artisanal processes as they were when created by the Moors in the 10th century, thus utilizing the tiles' lack of innovation to drive the demand to top-dollar as one of the most expensive tile producers in the world.

Footnotes

¹ : This comment and comments similar to regarding the ability or possession of sight is by no means to discredit those without, these are generalizations and unfortunately this author does not have much perspective or academic background on creativity and the sightless, but certainly contains respect.

² : Not every art form is conceived at a level of abstraction, the top-of-mind example being photography. While the definition and value of the medium was not comparable to what it is today at the time of many of the cited publications, the essence “is not to be found in the result achieved but in the way of achieving it” - Bazin. However, for the purposes of this experiment the abstraction provided in the context of acquiring the photo is thought to be sufficiently stimulating equal to painting, although the content does not undergo the same privacy from exposed reality that is often prescribed if the subject of a painter.

³ : Two important notes are the ability of humans as the only mammals able to regulate their breath and exertion rate, allowing us to chase down, for example a gazelle, over the course of an entire day and catch it before sundown because it will exhaust itself through repeated sprints, a result of perhaps intuiting that in order to catch up, we needed to slow down but a less clear association than the others. Another is that of fire, as it is difficult to accurately ascribe its origin to human imagination due to the likelihood of inspiration if not adoption from wildfires, lightning struck trees or pyroclastic activity.

⁴ : Important to note the difference between education and formal instruction, as education is inherent to human development, a synonym for learning which is necessary to survival, in comparison to formal instruction referring to that education that occurs unnaturally within the bounds of orthodox scholastic instruction.

Appendix

Condition One Laboratory Procedure:

Step 1: Presentation of Informed Consent document

Duration Expectation: 5 minutes

Page Break

Step 2: Introduction to Survey Study

Page Break

Step 3: Response options will be on a continuum - “Definitely Not”, “Somewhat Not”, “Neither Yes or No”, “Somewhat Yes”, “Definitely Yes”

1. I think I am a creative person
2. My creativity is important for who I am
3. I know I can efficiently solve even complicated problems
4. I trust my creative abilities;
5. My imagination and ingenuity distinguishes me from my friends;
6. Many times I have proved that I can cope with difficult situations;
7. Being a creative person is important to me
8. I am sure I can deal with problems requiring creative thinking;
9. I am good at proposing original solutions to problems.
10. Creativity is an important part of myself
11. Ingenuity is a characteristic that is important to me

Duration Expectation: 10 minutes

Page Break

Step 4: Response options will only be “Yes” or “No”

12. Everyone can create something great at some point if he or she is given appropriate conditions
13. Everyone can create something great at some point if he or she is given appropriate conditions
14. You either are creative or you are not - even trying very hard you cannot change much
15. Anyone can develop his or her creative abilities up to a certain level
16. You have to be born a creator - without innate talent you can only be a scribbler
17. Practice makes perfect - perseverance and trying hard are the best ways to develop and expand one's capabilities
18. Creativity can be developed, but one either is or is not a truly creative person
19. Rome wasn't built in a day - each creativity requires effort and work, and these two are more important than talent
20. Some people are creative, others aren't - and no practice can change it
21. It doesn't matter what creativity level one reveals - you can always increase it
22. A truly creative talent is innate and constant throughout one's entire life

Duration Expectation: 5 minutes

Page Break

Step 5: Preparation for Participants exposure to artwork

Text Presented: Over the next several slides, you will be shown a selection of fine artwork. We ask that you contemplate the dynamics, context, qualities, and possible intention behind them as you will be asked associated questions afterwards, but without being able to see the art pieces again. You are welcome to take notes with the materials provided.

Condition 3: No presentation of above statement

Page Break

Step 6: Display of artwork, in order

23. Winslow Homer, *The Gulf Stream* (1899)
24. Rocco Morabito, *The Kiss of Life* (1967)
25. Vincent Van Gogh, *Head of a Skeleton with a Burning Cigarette* (1886)
26. Houman Pirdavari, *Penn 1988 Advertising Campaign by Fellow*
27. Hosokawa Masaumoto, *Ryoanji Temple Stone Garden* (c. 1488)
28. John Singer Sargent, *Madame X* (1883)
29. Tom Sachs, *Chanel Chainsaw* (1996) - cardboard and thermal adhesive
30. Henri Matisse, *The Open Window, Collioure* (1905)
31. Henri Matisse, *French Window at Collioure* (1914)

Duration Expectation: 20 minutes

Condition 2: Step 6: Display of artwork, in order

1. *Orthodox Wall Clock*
2. *A globular, geographic map of Earth*
3. *Cartier Crash wristwatch*
4. *2022 Desk Calendar*
5. *Sundial*
6. *Regional map of Iceland*

Duration Expectation: 12 minutes

Condition 3: No Art Displayed

Page Break

Step 7: Two Creativity on Demand tests, text entry

32. “Car”, “Swimming”, and “Cue”. Please identify a word associated with all three listed words.

33. How many uses for a brick?

Duration Expectation: 10 minutes

Page Break

Step 8: Two Creativity on Demand tests, business application, text entry

34. Create a TV Show in 300 words

35. List ideas for 250 commercial rolls of leftover bubble wrap

Duration Expectation: 15 - 20 minutes

Page Break

Step 9: Conclusion, Thank you and presentation of applicable gift card or financial reward.

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