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Is the Lightbulb Still-Still on?: Social Representations among Undergraduates, a Replication and Extension

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A Thesis in Creativity and Change Leadership

by

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Dedication

This thesis is written to hold a mirror to your lifetime of creative achievements and accomplishments so you may see yourself as I see you.

You are the epitome of strength, perseverance, and finally, creativity.

I have always looked up to you (metaphorically and literally) as examples of wisdom and kindness. I will forever hold you in my heart and soul.

Nyjah, Mom, I love you more than anything.

Abstract

Research has illuminated the differences between implicit and explicit theories of creativity—though scientific theories have been tested and can be theoretically sound, implicit beliefs among the general population can run contrary to academic theory. As important as it is for researchers to know and understand creativity from an empirically founded perspective, it is equally as important for them to understand creativity theories that come from the general understanding and perspectives of those who aren't associated with academic research. By replicating Glaveanu's 2011 study Is the lightbulb still on?: Social Representations of creativity in a western context, the current study examines perceptions of creativity among laypeople. Extending this work by separating the general sample into the six domains of Holland's Theory of Vocational Choice (as exemplified by undergraduate degree program) delves into the influence of domain on perceptions of the concept of creativity. Analysis showed that laypeople most commonly associate creativity with the visual arts, no matter the domain. This universal understanding of creativity has been a part of our society for thousands of years—though the results also show that there is growing acceptance of creativity in scientific domains, implying more opportunities for interdisciplinary work in the field of creativity studies in the future. These, and other findings, are examined in this report.

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Chapter One: Statement of the Problem

Introduction

The purpose of the present study is to examine implicit theories of creativity among laypeople and whether domain specificity shows any connection to these implicit views. The first chapter provides a statement of significance and evidence of a gap in the current literature regarding implicit theories of creativity. Chapter One will conclude with the research questions and hypotheses of the current study.

Statement of Significance

Psychology research has illuminated the differences between implicit and explicit theories of creativity—though scientific theories have been tested and can be theoretically sound, implicit beliefs among the general population can contradict academic theory. According to psychologist Robert Sternberg, implicit theory has existed longer than explicit theory, in the way that implicit theories are "constructions of people…that reside in the minds of these individuals" (Sternberg, 1985) rather than "opinions and views held by scientists" (Runco, 1999). Because of this, implicit theories "need to be discovered" rather than "invented" and tested like explicit theories (Sternberg, 1985). Implicit theories have a noted impact on individual performance and behavior even without being "remembered in the usual sense" (Greenwald & Lai, 2020). People's tacit knowledge of the world around them is exemplified by implicit theory—some decisions and judgements made are founded in knowledge with unconscious roots. A key instance of this is the implicit theory of creativity.

As important as it is for researchers to know and understand creativity from an empirically founded perspective, it is equally as important for them to understand creativity theories that come from the general understanding and perspectives of those who aren't

associated with academic research. Laypeople's theories and opinions create expectations, which then impact behavior (Runco, 1999). Teachers' theories on creativity, for example, can impact how they teach, affecting their students' success--or lack thereof (Aljughaiman & Mowrer-Reynolds, 2005; Chan & Chan, 1999; Gralewski & Karwowski, 2018; Patston et al., 2018). Parent's expectations can dictate what behaviors they encourage or discourage as their children develop. A leader's ideas of creativity can determine how they run the workplace, affecting everyone on their team or in their organization. With the rise of creativity in multiple facets of society, discovering people's implicit theories and how they may affect behavior is of critical value. An example of work that accomplishes this is Glăveanu's 2011 study examining implicit theories of creativity among laypeople: specifically, the general populations' definitions of creativity (Glăveanu, 2011), which the current study is replicating.

By combining quantitative and qualitative, Glăveanu delved into laypeople's general beliefs about creativity by seeing what concepts people most associate with creativity and why, as well as their perceptions of different dichotomies of creativity such as heredity and environment, inspiration and perspiration, and domain-specific creativity compared to general creativity (Glăveanu, 2011). Glăveanu's results conveyed a general perception of creativity that centered around artistic ability and expression. This was also seen in responses of self-rated creativity; participants directly connected their levels of self-creativity to their artistic ability.

Glăveanu's conclusions echoed Runco's sentiment of the importance of implicit beliefs affecting behavior, stating that "what comes out [...] is the risk of sometimes being discouraged in developing an identity as a creative person by the lack of expertise in the arts" (Glăveanu, 2011, p. 68-69). Creativity researchers have created numerous frameworks teaching creative problem solving (Puccio et al., 2005) reinforcing that all people are creative. While creativity

experts believe that creative ability is possessed by all, if laypeople predominantly associate creativity with the arts, the implication may be that only those with artistic talent would be viewed by laypeople as having creative talent. This implication is critical in determining the field's direction in moving forward and pushing accessibility to creativity in other spaces.

With a rise in demand for creativity in the workplace and academia across domains (Adobe, 2012; Marquis & Henderson, 2015; Puccio & Cabra, 2010; Puccio & Lohiser, 2020), it is also important that we examine how implicit theories of creativity vary across domains. Here lies the gap in the current literature: though there are numerous works examining implicit theories of creativity (Alkeaid, 2004; Gonzalez, 2003; Kirton, 1978; Muneyoshi & Kagawa, 2004; Puccio & Chimento, 2001) as well as numerous works examining domain specific creativity (Armstrong & Anthoney, 2009; Costa et al., 1984; Holland et al., 1991; Kelly & Kneipp, 2009; Larson et al., 2002; Perrine & Brodersen, 2005; Zhang & Fan, 2007), there are few to none that examine the intersection between the two. To achieve this, the present investigation examined a set of diverse and distinct domains individually to find out if each group holds the same implicit theories of creativity, or if there are group differences.

On one end of the spectrum, we may find that every group holds similar implicit views no matter the vocational choice, indicating that the beliefs that people have are so deeply ingrained into our society that it is shared across people in vastly different spheres of influence. On the other end, we may find that there are differences of beliefs between groups, implying that factors of vocational choice and/or domain may also impact implicit views of widespread concepts such as creativity. Either finding would create a wide array of implications that would need to be studied: if there is no universal perception of creativity, what causes these differences in perception? If there's a shift in the symbols commonly associated with creativity, moving the

general consensus away from the symbols that held the majority in the original work—such as the paintbrush and colors, when did a change in opinion begin? If there *is* a universal perception of creativity tied to the arts that carries across all domains, this would not only strengthen our understanding of creativity and implicit theories of creativity, create an opportunity for more customized and targeted creativity research to then show people in different domains the skill of creativity and how it applies to them. Either way, this work will be a starting point for many future endeavors of both practical and theoretical work in the field of creativity studies.

Research Questions and Hypotheses

Though the original work being replicated was exploratory (Glaveanu, 2011), the current study was guided by four research questions: the first one exclusive to the replication study, and the last three including the extension of the literature regarding domain-specificity.

1. Is there a relationship across symbols of creativity among laypeople?

    H0. There will be no significant correlations between symbol ratings.

    H1. There will be significant correlations between symbol ratings.

2. What symbols do laypeople most associate with creativity?

    a. Is there a significant difference across the symbols in terms of creative perception?

        H0. There will be no significant difference between the ratings of the symbols.

        H1. There will be a significant difference between the ratings of the symbols.

    b. Is there a significant difference between majors in terms of the evaluation of ratings of the symbol?

        H0. Overall symbols will not vary by major.

H1. Undergraduate students' majors will show significant differences in how they rated symbols.

3. What are the implicit beliefs about the fundamental nature of creativity among laypeople?
    a. Is there a significant difference across the existing dichotomies of creativity for the entire sample?

       H0. There is no significant difference across dichotomies of creativity for the entire sample.

       H1. There is a significant difference across dichotomies of creativity for the entire sample.

    b. Is there a significant difference across the existing dichotomies of creativity across majors?

       H0. There are no significant differences in dichotomies of creativity across majors.

       H1. There are significant differences in dichotomies of creativity across majors.
4. Does domain, as represented by undergraduate students' majors (i.e., degree programs), relate to their implicit views of creativity regarding self-rated creativity?
    a. Is there a significant difference in self-rating across the majors?

       H0. All majors will have a similar self-rated creativity level.

       H1. Self-rated creativity will significantly vary across majors.

Summary

Chapter One provided a statement of significance, acknowledging the gap in the literature and describing the future implications of this research in the field. It concluded with this work's research questions and related hypotheses. Chapter Two is focused on the literature review for

the main concepts of this work: Creativity, Implicit Theories, Social Representations, and Holland's Theory of Vocational Choice.

Chapter Two: Literature Review

Chapter One set the stage for the present study by presenting a statement of significance and the future implications of this work. It also provided the research questions and hypotheses of the current study. The purpose of this chapter is to review the literature central to this research. Chapter Two explores four concepts: Creativity, Implicit Theories, Social Representations, and Holland's Theory of Vocational Choice. By beginning the review with Creativity and Implicit Theory as key concepts, we are able to detail how perceptions and implicit theories of society have evolved involving the subject throughout the course of human history. As the present study is a replication of work examining social representations of laypeople in western cultures, Social Representations will be the third concept of this literature review. The final section discussing Holland's Theory will detail the timeline of Holland's work until its use in the current study to examine how domain may affect implicit perceptions among laypeople.

Creativity

The academic study of creativity stems from psychology research in the 1950's. The field of creativity studies is nearly a century in the making; but even that is only a blink of an eye compared to how old creativity truly is. A closer look reveals that what is seen as a relatively new area of study was embedded into humanity many generations ago, molding itself into our subconscious perceptions of the world around us. As we are examining current implicit theories of creativity among laypeople, recognizing where those theories come from is critical to this research. Beginning this section at its academic recognition rather than its true origin would be like starting a story in the middle rather than the beginning. By taking a deeper look and examining evolutionary perspectives, this literature review will tell the full story of creativity.

First seen more than 2 million years ago (Gabora & Kaufman, 2010), creativity was what allowed humanity to surpass the other species and thrive. Phylogenic creativity—creativity as it arose in humanity as a species rather than individual people—evolved over millions of years in uneven periods of growth and stagnation, called punctuated equilibrium (Gould & Eldredge, 1977). By using products as an indicator of creative cognition, creativity is seen in our ancestors as far back as 2.8 million years ago with stone tools created by *Homo habilis*, like axes and fire (Kozbelt, 2019). As our species evolved, biological and cultural factors intertwined for thousands of years; the cranial size of the species getting larger and developing more complex parts of the brain, and the tools they used becoming more complex. This continued for millions of years as Homo erectus became more prominent in the African landscape and migrated into Eurasia. Their increased cranial capacity (almost double the size of Homo habilis) and improved memory allowed greater potential for creative connections to be made (Gabora & Kaufman, 2010). Their adaptations to the unfamiliar territory of Eurasia were supplemented by upgraded tools to provide food, warmth, and safety. These innovations gave Homo erectus more neurological capacity to allow further creativity (Livio, 2017) as the evolutionary process made way for Homo sapiens, humanity as we are today.

Homo sapiens arose as a species around 200,000 years ago in east Africa (Lewin & Foley, 2004). Their rise to prominence was not immediate, and their most notable era (of this period) did not take place until 50,000-35,000 years ago. This era was full of novelty that we now see today as artistically creative; body decorations and jewelry, musical instruments, burial rituals, visual art, and other aspects of artistic culture were evident at this time. Though there were scattered pieces of such art in earlier eras, this was much more common during this period, hence the term “Creative Explosion” (Pfeiffer, 1982) has been used as a point of demarcation for

these early humans. Not only did the creative explosion bring about sustained change in behaviors regarding art, but it also brought about more widespread change, rather than the scattered singular bits of art that had been seen before this time. With these changes, the Creative Explosion brought about more creative novelty than the last six million years combined (Mithen, 1996). Creative novelty at this time highly enriched the culture of the Upper Paleolithic/Late Stone Age for *Homo sapiens*, and it is still just as impactful to us thousands of years later. According to Ansary (2019), a critical ingredient to this creative explosion, beyond human's innate imagination, was the development of language. As best described by Ansary (2019),

> We elevated our game to making sounds that conjured up, in our fellow humans' imagination, a simulacrum of the whole world. When two guys talk about getting tacos tomorrow at noon, they're not only interacting in a world they're each imagining: they're imagining the same world. If they weren't, they wouldn't both show up at the same place and time tomorrow. That's the truly incredible thing: they're imagining the same world. (p. 12)

Our species lives in both the physical world and a world existing only in language. That parallel world allowed us to make tools without having to watch every step in order to know what to do, to coordinate and communicate with each other across space and time, and more. Language lit the spark for the culture of humanity in the form of storytelling, crafting, and religion that thrive today.

However, the full story of creativity cannot skip from its anthropological origins to its current state. Creativity as we know it today was a social force, evolving alongside western society from antiquity to today. The word creativity stems from the Latin verb *creare*, meaning "to make" (Young, 1985). Yet, there was an important distinction to be made. *Creare* was a verb

that only applied to divinity, while man was allowed terms such as *ars* and *artis*. This is also of note, being a possible source of the idea of creativity and arts being synonymous. Divine manifestation being the prime example of creativity lead to a strong divide between divinity and man. One society known for their religious practices and how that applied to other aspects of life was the Ancient Greeks. Though we view Greek society as highly creative by today's lens, their views of individual creativity were highly contradictory, and more negative than positive. In Greek society, creativity not only belonged to the gods but was staunchly defended as such. Cautionary tales of divine intervention were so widespread they were deemed legend; as a result, Greek society was wary of creativity.

The realm of Greek mythology is rich in the theme of interference with the divine and the consequences that followed. Take for example, Phaethon in Ovid's Metamorphoses (2004/8 C.E). Revealed to be a son of Apollo, he was promised a single favor from the deity to prove his parentage. His immediate request was to control his father's chariot and horses for a day. Apollo, aware of the consequences of interfering with divine order, tries to dissuade the boy, telling his son that "Your fate is mortal: it is not mortal what you ask. Unknowingly you aspire to more than the gods can share" (Ovid, 2004/8 C.E., bk. II, ll. 57–61). Still, Phaethon persists. Unable to refuse, Apollo gives him the reins, only for Phaethon to immediately lose control. He has grasped a power that does not belong in the hands of man, and he must face the consequence. His mistake leads to the mountains burning, the rivers evaporating, and ultimately, his own death.

Even other deities were not safe, as seen in the legend of Prometheus. The son of a Titan, Prometheus was known for stealing fire from Zeus and giving it to humanity (Hesiod, 2016a/750-700 B.C.E.). Zeus retaliated by chaining him to a mountain and sending an eagle to eat his liver every day, for it to grow back every night. However, punishment was also given to

humanity: to them he sent Pandora, the first woman, who opened a box and unleashed evils like sickness and misery upon man (Hesiod, 2016b/750-700 B.C.E.). However, there were some that were able to toe the line and harness the creativity of the divine.

The Greek poet Homer is still known for his works, the Iliad and Odyssey. Why was he able to get away with creating such works of art? By invocation. Instead of claiming this power of storytelling and artistry as his own, he begins his work by invoking the Muses:

> Sing in me, Muse, and through me tell the story
> of that man skilled in all ways of contending,
> the wanderer, harried for years on end,
> after he plundered the stronghold
> on the proud height of Troy (Homer, 1998/800 B.C.E., ll. 1–5).

By channeling the Muses, Homer paints the individual (himself) as a medium rather than the sole source of the creative power used to make his art. This method of artistry was briefly seen in Greek society, but the division between the divine and the individual was reinforced with the rise of Judaism and Christianity.

The Judeo-Christian faith held major influence over society, impacting ideology and shifting western culture. The Judeo-Christian idea of creativity stems from divinity in the same manner as Greek lore, with divine manifestation being a major source of creation. This is best described in the book of Genesis. The text begins with (as there's no other way to put it,) the beginning, as the Old Testament reads "In the beginning God created the heaven and the earth" (*King James Bible*, 1769/2023, bk. Genesis 1:1). Throughout the text, humanity is only able to make and build out of things that already exist, while God is able to create *ex nihilo*, out of nothing. In the Hebrew text, there are multiple verbs used to describe things being created in

Genesis: *bara*, *asah*, and *yatzar*. In a similar manner to the *creare*/*artis* comparison from Latin texts, one is specifically pertaining to creation that only God can do. In the text, *asah* and *yatzar* are used to describe actions that man and God are capable of. *Bara* is not. The word *bara* is "used exclusively for God's creative activities…[it] is reserved for God" (Stein, 1983, p. 4). The sense of division between what is allowed for humanity and the divine that was present in Greek society was continued in the Old Testament. This theme is connected further when looking at the story of the Tower of Babel.

Genesis chapter 11 details humanity as it rebuilds after the great flood. With man spreading across the land, the text describes the earth as "of one language, and of one speech" (*King James Bible*, 1769/2023, bk. Genesis 11:1). However, the people decided to go against God's wishes to replenish the earth; deciding instead to build a tower for themselves, one tall enough to reach heaven. This is another instance of man wishing to encroach upon the divine's domain, and just like in Greek tales, the divine are not very welcoming to this intrusion. God sees this tower, and scatters the people, confounding their language. With this act, the tower was named Babel, and never completed. With numerous stories in the text that serve to separate the individual from the divine, art itself was still seen as something held only for the divine. This meant that even though the European societies of the Middle Ages were rich in artistic products, they were only encouraged in the context of God's glorification (Glăveanu & Kaufman, 2019). Individuality was discouraged here: though it may have been to exemplify the collaboration between groups to make such great works, it ultimately reinforced a dichotomy that would not fully shift until the Renaissance.

The renaissance was a transitionary period for western culture, and opinions about creativity were not excluded from this change. This period was the beginning of the shift from

divine creativity to the individual creativity of modern society. With individual thinking encouraged by the Reformation, individuals were able to take credit and be acknowledged for their work, both scientific and artistic. This change in accreditation allowed a rise in "geniuses" in different fields such as the arts and sciences. In the previously mentioned eras, an artist like Leonardo DaVinci would not have risen to fame. This era gave creatives accepted recognition that was closer to the divine than ever before. The Enlightenment that followed shifted society's views on individualism once again, reinforcing the foundation for individual creativity that was created by the Renaissance. This allowed western societies of the early 1900's to focus on subjects like genius, giftedness, and intellect until 1950.

In the same manner as the Creative Explosion mentioned in the prehistoric era, the 20th century saw a boom in research pertaining specifically to creativity, sparked by (among many environmental factors,) Guilford's (1950) APA address. Following the call to action from the organization's president, the American Psychological Association began increasing their scope on the previously neglected subject. With Guilford's (Guilford, 1967; Guilford & Hoepfner, 1971) Structure of Intellect model providing the distinctions of divergent and convergent thinking as important aspects of creativity, researchers began to investigate creativity as an empirical phenomenon. And thus, the field of creativity studies emerged. After 1950, creativity studies matured and branched into a range of sub-specialties, such as personality, cognitive, and socio-cultural psychology. The two most relevant to this research are cognitive and socio-cultural, as both strands lead directly to this study. Before discussing distinctions between these subjects, it is essential to first clarify a more precise meaning of the term *creativity*.

An integral part of empirical research is defining terms (as seen in literature reviews). This was a point of contention for the field of creativity study, as creativity is a difficult topic to

define. Though creativity is a distinctive and integral part of humanity, its nebulous nature makes it difficult to succinctly define it. The task may never be fully completed. Though storytellers and poets have described concepts similar to creativity with subjects of originality and genius in the works of Shakespeare (1564) and Bethune (1839), the standard definition of creativity was first explicitly stated by Stein in 1953. In an article titled *Creativity and Culture* (1953), Stein wrote:

> Let us start with a definition. The creative work is a novel work that is accepted as tenable or useful or satisfying by a group in some point in time […] By ‘‘novel’’ I mean that the creative product did not exist previously in precisely the same form […] The extent to which a work is novel depends on the extent to which it deviates from the traditional or the status quo. This may well depend on the nature of the problem that is attacked, the fund of knowledge or experience that exists in the field at the time, and the characteristics of the creative individual and those of the individuals with whom he [or she] is communicating. Often, in studying creativity, we tend to restrict ourselves to a study of the genius because the ‘‘distance’’ between what he [or she] has done and what has existed is quite marked […] In speaking of creativity, therefore, it is necessary to distinguish between internal and external frames of reference (p. 311–312).

Though this is the first explicit definition of creativity, it was inspired by discussion of originality and intellect by researchers like Barron and Guilford, respectively. With this becoming known as the “standard definition of creativity” (Runco & Jaeger, 2012), many adjustments and theories for new definitions would follow. Some followed Stein and kept the definition to two essential characteristics, using terms like “effective surprise” (Bruner, 1979, as cited in Runco & Jaeger, 2012), or “worthwhile” and “compelling” (Cropley, 1967, as cited in Runco & Jaeger, 2012). Others stuck to the novel and useful definition (Amabile, 1996), but

added a focus on other aspects of creativity, like the product or the process specifically. Most focus on the product, which makes sense, with its oldest roots leading to divine manifestation, quite literally creating a product from nothing. Other definitions of creativity attempt to be inclusive of all aspects, a difficult task to do without being too vague. Corazza's theoretical analysis (2016) of past definitions led to the creation of the phrase "Creativity requires potential originality and effectiveness" (p. 262). This not only puts a spin on novelty and usefulness, but also addresses the issue of creativity having an implicit lean toward the product. The potential focuses more on the process, creating a more accessible idea of creativity that applies to many branches of the field. While applicable to those studying socio-cultural dimensions (Amabile, 1983; Glăveanu, 2010), this is also usable for researchers studying creative traits and attributes (Guilford, 1959; Rhodes, 1961; Runco, 2004; Torrance, 1988). While studying creativity does not necessarily require a definition, the standard definition of Novelty and Usefulness as well as the Corazza's dynamic definition of Potential of Originality and Effectiveness, given their well-established valence in the field, have been adopted as this study's primary explicit definitions of creativity.

The field of creativity has branched and thrived as it built upon the foundations laid before us, with current studies creating a wide interdisciplinary body of research. A topic relevant to the present study is domain-specificity. The question of whether creativity is domain-general or domain-specific is a longstanding point of contention in creativity research—the first Point-Counterpoint in the *Creativity Research Journal* was dedicated to this debate (Baer, 1998; Plucker, 1998). Those favoring domain-general creativity view it as a universal concept relying on assimilated knowledge and interpretations of experience (Runco, 2009), similar to sociocultural models of perception. This allows creativity to transcend

boundaries and allow people to experience the same concept of creativity no matter the domain. Those favoring domain-specific creativity do not see it as transferrable, directly contradicting the methods seen in creativity training programs that teach creativity as a general skill to be used in any domain. The question of creativity being general or domain-specific is only made more complex when considering method-biases, which inform both sides of the dichotomy. When using qualitative assessments, a nominal structure of creativity may allude to a domain-general focus, while a more quantitative approach with psychometric tests may allude to a domain-general focus (Lothwesen, 2020; Silvia et al., 2009). Acknowledging this bias leads to a middle-ground in the debate, that creativity has aspects that are both domain-specific and general. Plucker and Beghetto (2004) created a model that not only acknowledges both aspects of creativity as important, but states that:

> [T]oo much of either position will hinder creativity: a person who continually deals with domain-general techniques and approaches to creativity may never scratch the surface of a problem, yet someone who focuses tightly for long periods of time in a domain or on a particular task is likely to experience functional fixedness or, if the unit of interest is a group, groupthink. The optimal condition for creative production is a flexible position somewhere between generality and specificity […], with the individual or group moving between positions as the task or problem of the moment dictates In this way, the model values diversity in all its forms more than either extreme position: specificity downplays the importance of outside perspectives, generality overemphasizes the importance of all other information, and the hybrid position values perspectives from other domains but acknowledges the value of expertise and task commitment. (p. 161)

This dichotomy and the years of research behind it is an example of explicit theory, a line of work and findings that are empirically tested in academic circles. Comparing the same issue of creativity as a general or domain-specific skill in explicit theory to implicit theory, as seen in laypeople and those outside of academia, reveals a large gap in the literature, not only in this issue, but in creativity study as a field, concerning implicit theories of creativity across domains.

Implicit Theories

In the early 1900's, it was established that the "most distinctive and indispensable concept" (Allport, 1935, p. 798) of social psychology was attitude studies. For decades, this line of study was on the basis that cognitive processes were mostly (if not completely) consciously activated. However, in the 1980's and 90's researchers found facets of memory cognition that were implicit and unconscious in nature (Jacoby et al., 1992; Jacoby et al., 1992; Jacoby & Kelley, 1987; Jacoby & Witherspoon, 1982). This provided a basis for a massive shift in attention for social psychology researchers, opening the door for an entirely new understanding of mental processes. Following research found that in cognitive processes like attitude, judgement, stereotyping, etc., activation time was faster than possible for conscious thought to be the cause (Bargh et al., 1992), meaning there was a deeper mechanism involved. In 1995, Greenwald and Banaji coined the theoretical framework of implicit social cognition, merging cognitive and social psychology. Their definition of implicit cognition allowed interchangeability between subjects, as it was created as a template, rather than a concrete phrase meant for a single subject. As written in the 1995 article, the template for definitions of implicit cognition is:

> An implicit **C** is the introspectively unidentified (or inaccurately identified) trace of past experience that mediates **R**. In this template, **C** is the label for a construct (such as

> attitude), and **R** names the category of responses (such as object-evaluative judgments) assumed to be influenced by that construct (Greenwald & Banaji, 1995, p. 5).

At its conception, implicit social cognition already had multiple possible subjects for researchers to examine, as Greenwald and Banaji included sections for processes such as attitude, self-esteem, and stereotypes. The empirical boom that followed in these categories capitalized on tools like the Implicit Association Test (IAT). These methods held a magnifying glass to the human psyche; behavioral analysis of implicit cognition has many real-world applications, as seen in studies involving stereotyping (Greenwald et al., 2009; Nosek et al., 2007; Payne & Gawronski, 2010), mental health (Nock et al., 2010), addiction (Stacy & Wiers, 2010), and other aspects of life, namely creativity. This translated to implicit theories of creativity examining people's attitudes and ideas about creativity directly contrasted from the "explicit" theories that were in academia.

Early research in Implicit Theories of Creativity was examined at the same time as other popular aspects in social psychology like intelligence (Sternberg, 1985; Sternberg et al., 1981). Here it was established that explicit theories in this context are "constructions of psychologists or other scientists that are based on or at least tested on data collected from people performing tasks presumed to measure psychological functioning" (Sternberg, 1985, p. 607). Works like Rhodes' Four P's Model, The Four-C Model (Kaufman & Beghetto, 2013), and Amabile's (1983) Componential Theory are examples of explicit theories. They are widely circulated in academia, but less known outside of this sphere of influence. Examining implicit theories, theories that "already exist, in some form, in people's heads" (Sternberg, 1985, p. 608) was first done in creativity to figure out a more solid foundation of a definition of creativity to base explicit definition on (Amabile, 1982).

Implicit theories held by laypeople (those who are not experts in the subject of study), are gained from experience, and "manifested in opinions and expectations" (Runco, 1999, p. 27). The last point connects directly to the behaviors that come as consequence of implicit theories. In the same manner implicit stereotypes may affect behaviors toward certain groups, implicit theories of creativity may also affect expectations behaviors toward others. The most popular examples of this are studies that involve the general population's ideas about creativity in general (Lothwesen, 2020; Runco & Bahleda, 1986; Sternberg, 1985), or studies involving teachers and how implicit theories affect their expectations and behaviors toward their students (Chan & Chan, 1999; Gralewski & Karwowski, 2018; Gurak-Ozedemir, 2016; Karwowski, 2010; Maksić & Spasenović, 2018; Patston et al., 2018; Pavlović & Maksić, 2019; Runco & Johnson, 2002; Seng et al., 2008). Research in the last twenty years has also examined implicit theories of creativity in multiple cultures, comparing laypeople's understandings in places like Japan (Muneyoshi & Kagawa, 2004), Saudi Arabia (Alkeaid, 2004), Argentina (Gonzalez, 2003), and the United States (Puccio & Chimento, 2001). Though these studies directly compared implicit theories, there are fewer examples of works that directly compared implicit theories to explicit theories concerning tested and accepted ideas in research.

An example of a study that compared implicit and explicit theories of creativity was conducted by Puccio and Chimento (2001). Their investigation tested the degree to which an explicit theory of creativity, known as the Kirton Adaption-Innovation theory, was reflected in laypeople's implicit views of creativity. Kirton proposed a style continuum upon which all people can be located, ranging from an adaptive orientation of creativity to an innovation orientation. Kirton's adaptors create through improvement while innovators create by challenging accepted ideas (Kirton, 1978). Results showed that even though Kirton himself

described both styles as equally creative, there was an implicit belief amongst participants that those with an innovative style preference were inherently more creative than individuals with an adaptive style (Puccio & Chimento, 2001). The widespread perception of creativity being inherent to some instead of others has been prevalent for long periods of history, and the present study is focusing on and extending the literature in this area of creativity research by examining implicit theories concerning representations of creativity as well as factors of creativity.

Implicit theories among laypeople are highly influential, and as they are not bound to a single sphere of influence (explicit theory is often hard-pressed to get past the walls of research and academia), laypeople's theories may be seen by some as the dominant conception of creativity. It is important for those who focus on explicit theory to also be aware and accepting of the perceptions of laypeople. This is exemplified in Social Representations theory.

Social Representations

By replicating the work of Glăveanu in this thesis, this investigation entails both Implicit Theories of creativity and Social Representations of creativity. On the surface, they seem to be the same, but their different foundations and focuses make both perspectives highly relevant to this research. As the pillars of social psychology and sociology respectively, the two concepts have had similar timelines that led to both becoming the highly discussed topics they are today; in the same manner that implicit social cognition stemmed from cognitive psychology, social representations came from collective representations.

French sociologist Émile Durkheim theorized collective representations as a more refined and honed version of his previous chain of thought, collective consciousness (Némedi, 1995). Collective representations are symbols whose meaning become independent and replace the literal object they were originally based on and become "a symbol that articulates and embodies

the collective beliefs, sentiments, and values of a social group" (*Merriam Webster*, n.d.), with examples such as the cross as a symbol in Christianity. This way of thought was revised in the 60's and 70's following Moscivici's (2008, as cited in Jodelet, 2008) study examining social representations of psychoanalysis in France. According to Moscovici, collective representations were static, and therefore not appropriate for how societies change socially, politically, and scientifically. His work focused on cognitive polyfasia; the concept of plurality of representations in social circles, specifically that different, and sometimes contradictory, representations can exist among the same social groups. (Höijer, 2011; Sammut et al., 2015). First seen in how psychoanalysis "became a public entity, an object of discussion, contestation, and ultimately widespread knowledge", his work cemented social representation theory as the study of meaning-making among groups and the transformation of knowledge as it moves throughout communities (Jovchelovitch & Priego-Hernández, 2015, p. 163). Social representations were explicitly defined by Moscovici, who described them as:

> System[s] of values, ideas and practices with a twofold function: first, to establish an order which will enable individuals to orientate themselves in their material and social world and to master it; and secondly to enable communication to take place among members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual group history. (Moscovici, 1973, p. xiii, as cited in Höijer, 2011)

This definition was cemented by four core tenets of theory that arose as social psychologists critiqued behavioral psychology**.** First, instead of perception relying only on direct stimuli, individual understanding comes from sociocultural context. Second: people have more control over their responses than believed in behaviorism, and their actions have purpose and meaning.

Third: humans are inherently social. When coming together, people don't just exist in the same space. They join and form social groups organically. Lastly, stimuli-and-response informed behavior has evolved into a more social framing, "[indicating] the definitely intricate and mutual interdependence between stimulus and response", as "the representation comprises the stimulus itself as well as the response/behavior" (Wagner, 1993, p. 245). The culmination of these four aspects were part of a major paradigm shift in psychology, with social representations evolving further than its predecessors that considered human behavior from a stagnant perspective, becoming a "framework for the study of the evolution, structure, and functions of common sense" across sociocultural contexts (Sammut et al., 2015, p. 11). With the subject of this work directly examining the evolution of laypeople's perceptions of creativity, social representations theory is a very fitting match for this line of inquiry.

As we examine social representations theory, it's easy to see the similarities to implicit theory: both analyze cognitive processes that lead to perception of stimuli and consequent behaviors. Glăveanu's (2011) study addressed this as well, asking the question: "Aren't we in fact studying the same realities under different names?" (p. 56). The answer is yes… *and* no. Yes, in that both can be described as "social knowledge schemas" (Romo & Alfonso, 2003, p. 410). However, the differences begin once we take a closer look. Implicit theories consider laypeople's perceptions as stable and "resistant to modification" (Romo & Alfonso, 2003, p. 409). Social representations allow more flexibility depending on the situation, as well as acknowledging that laypeople's everyday thinking may shift and even contradict itself sometimes. The most glaring difference between the two is the point of accessibility. Social Representations has a concern and acceptance for laypeople's opinions and ideas that implicit theories lack. With implicit theories, everything laypeople describe is held against the overall

"explicit theory," placing a divide between the two groups. This view places the researcher's viewpoint higher than the layperson's, creating the idea of laypeople's perceptions being "biases," and assumed to be incorrect. This invalidation isn't a part of social representations theory. Common sense takes the forefront in this approach; laypeople's perspectives are not seen as incorrect, but accepted as how people make meaning of the world around them. The value of seeing other perspectives is also inherent when looking at different domains, and seeing how expertise in certain areas has the possibility of shaping or changing one's perception of the world around them. As the potential effects of domain on perceptions of creativity was examined in the present study, Holland's Theory of Vocational Choice was used to guide the selection of a range of domains from which the sample of research participants were drawn.

Holland's Theory of Vocational Choice

The fourth and final component of this thesis is Holland's Theory of Vocational Choice, as it directly pertains to the demographic sample chosen for the present study. Though this study acts as a replication of Glăveanu's (2011) study, it extended this earlier work by examining laypeople who were associated with different domains. Rather than examining the general population as a single entity, the present study tested whether perceptions of creativity varied across domains of study.

Holland's theory (Holland, 1959, 1966, 1973, 1985, 1997) revolves around the concept of vocational personality. His work found that every individual has a certain personality type: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. These categories were separated by differences in characteristics like values, interests, preferences, and more. When choosing a vocation, Holland's work shows that the more one's personality type matches with the environment type, they will have higher performance, and job satisfaction (Holland, 1997).

The timeline of Holland's theory coincides with the timeline of creativity studies, as Holland began his research career in the early 1950's studying counseling psychology (Nauta, 2010). Holland began to question the correlations between personality and vocational interest. However, there was a roadblock standing between him and the answer he was looking for: accessibility. Though the existing measures and assessments of the time like Strong's (1927) Vocational Interest Blank (SVIB) were able to assess interests and vocational domain, they weren't as practical as Holland wished. He took on the effort of compiling vocational databases and making a unifying scale for people to access, creating the first iteration of his theory (Holland, 1959). The major influence of his work was a major accessibility shift in the field of vocational psychology and counseling. Where previous measures required psychologist intervention and expenses, Holland's theory (and the tools accompanying it) was easily understandable. Taking the previous profiles and scales, Holland found an underlying structure that allowed him to create an occupational classification model that was noticeably more elegant and practical than its predecessors.

This work of bringing databases together continued for decades, as the Self-Directed Search (SDS) and Occupations Finder (OF) were created in 1970. These tools were revolutionary in allowing the target group—laypeople—to be able to gain knowledge about occupations and make well-informed choices without the issues of usability associated with such measures as the SVIB (e.g., mailing the form to a scoring service with a 10 day wait, for example) (American Psychologist Staff, 1995). Each revision of the SDS added more occupational classifications for people to choose from, with similar improvements being made with each revision of Holland's theoretical work (1959), which underwent multiple revisions following critique and research advances. Holland revised to include women in his theory in the 1960's (Holland, 1966). Less

than a decade later, he revised again—this time explicitly delving into the hexagon model by including the work that had been conducted so far to test his ideas (Holland, 1973). By using the past decades of evidence, Holland's 1985 revision was able to focus more on the constructs of identity that Holland attributed to his scales (Holland, 1985). This continued in the 1997 revision, with Holland changing the vocabulary in his work to emphasize the differences in the classifications by "beliefs" (Holland, 1997). These revisions all contributed to the influence of the RIASEC model and Holland's theory that we see today.

From 1953 to 2018, Holland's theory and research involving RIASEC has been referenced 2,318 times across more than 300 publications worldwide, with *the Journal of Vocational Behavior*, *Journal of Career Assessment*, and *Journal of Counseling Psychology* being the top three in terms of frequency, totaling almost a quarter of all references (Kennelly et al., 2018). Though the majority of the references are centered in counseling and career psychology, Holland's theory has also been seen in creativity studies. Holland et. al (1991) examined each category to rank them "according to their potential for creative performance" (p. 98), with Artistic and Investigative at the top and Realistic and Conventional at the bottom. Current research has used Holland's work as a foundation to study domain-specific creativity among different attributes like thinking styles (Holland et al., 1991; Kelly & Kneipp, 2009; Zhang & Fan, 2007), and personality traits (Armstrong & Anthoney, 2009; Costa et al., 1984;). The RIASEC model has also been used to examine the arts-sciences dichotomy, with Perrine and Brodersen (2005) finding that artistic RIASEC preferences were correlated with artistic creativity, and investigative preferences were correlated to scientific creativity. A notable study that combined the RIASEC theory among undergraduates and creativity (Kaufman et al., 2013) found multiple correlations of interest, like Investigative and Artistic majors rating higher in

self-rated creativity while Investigative and Enterprising rated higher in measured creativity, as well as Investigative and Artistic majors having higher metacognition regarding their creativity overall. The difference between the previous study and the present study is the subject of examination. While the previous study examined self-rating and a measure of creativity for each individual among these domains, we are examining their ideas of what creativity means and how it is represented in our society as an overarching idea. Though we use the same model to differentiate our sample, this study fills the gap of knowledge in the academic literature that arose between the previous study and Glăveanu's 2011 study examining the social representations of creativity with a single group.

With Holland's Theory providing the final block in the foundation of this study, we are able to take a step back and examine what this thesis brings forth. Looking at creativity through the lens of evolutionary psychology makes one ask: *where did the concept of creativity come from*? Adding cultural psychology takes us through numerous societal shifts, watching laypeople's perception of creativity change from Antiquity to today. The question becomes this: *has society's perception of creativity changed, and if so, what was the cause*? The final addition of Holland's theory, however, expands this question to a new level. In the decade between the original study and the present, the world has experienced many cultural shifts; the radicalization of the individual (in Western society, at least) due to things like changes in sociopolitical climate the advancement of technology like the internet makes it harder to justify examining a population as a single entity when different groups are more different than ever in how they perceive the world around them. Taking this into account leads us to quite the interesting question: *Do laypeople in different domains of expertise hold different perceptions of creativity, or is the*

perception of creativity regarding the arts such an everlasting part of society that the domains have a universal agreement?

Summary

The purpose of Chapter Two was to provide a thorough review of the literature that is central to the present study. This chapter overviewed four concepts: Creativity, Implicit Theories, Social Representations, and Holland's Theory of Vocational Choice. Highlighting these concepts demonstrates that few to none have examined domain differences of implicit belief among laypeople, providing greater import for the present study. With these concepts explicitly described in full detail, the next chapter builds upon this by providing the methodology of the present study.

Chapter Three: Methodology

The last chapter reviewed the concepts central to the study and provided context to the present research. The current chapter reviews the methodology and research procedures involved in this study. To that end, the reader will find a description of the research participants, an overview of the paper-and-pencil measure used to collect data, and an explanation of the procedures employed in this investigation.

Participants

The survey was completed by 195 participants between February and April 2023. The inclusion requirements were for participants to be over 18 years of age, and to hold a major in one of the following areas: Criminal Justice, Computer Information Systems, Art and Design, Fashion and Textile Technology, Social Work, Business, and Engineering—all groups correlating with Holland's Theory of Vocational Choice. This decision was inspired by Kaufman, Pumaccahua, and Holt (2013); one of the first to examine personality and creativity among a spectrum of undergraduate majors. The trio chose a wide array of majors and sorted them into five out of the six categories–excluding Conventional—and from their choices we narrowed ours down to one major each, including our own choice to fill in the gap for the Conventional domain. With Engineering being the choice of major to fill this gap, we were able to have a Conventional major that would also lend an eye to the arts-sciences dichotomy in the present study. After excluding ineligible participants and incomplete responses, we analyzed data from 169 participants. The mean age was 23 (ages spanning from 18 to 48). There were 84 females, 77 males, four who identified as Non-Binary or a Third Gender, and four that chose not to disclose. There were 29 Realistic majors (criminal justice), 21 Investigative majors (computer information sciences), 26 Artistic majors (art & design and fashion textile technology), 23 Social majors

(social work), 26 Enterprising majors (business), and 29 Conventional majors (engineering). To ensure that students were immersed in their respective domains, the study focused on upper class students. The majority of the students were in their fourth year of study (68%). The group was 51% Caucasian, 19% African American, 11% Mixed or Biracial, 8% Latino or Hispanic, 5% Asian, 1% Native American, with 3% choosing to self-describe and 2% choosing not to disclose.

Materials/Design

The research questionnaire in the present study was a direct replication of the original measure used by Glăveanu (2011). Permission to use the measure was granted by Glăveanu and administered in class as a paper-and-pencil survey (see Appendix A for a copy of the instrument). As the study held the same emphasis on social representations and perceptions, the same format of combining closed questions (Likert ratings) and open-ended questions (participants explaining their ratings) was used, with the reasoning coming back to the concepts of "objectification," "anchoring," and self-perception (Glăveanu, 2011). The Likert scales represent the 'objectification' of the participants perception, and their explanations allow us to see the ideas that 'anchor' those perceptions to create a basis to compare themselves to throughout their lives.

The first portion of the questionnaire involved respondents describing what they think the best symbol of creativity would be ("We all live in a world of signs and symbols that we can easily recognise. For example, the dove is a symbol of peace. What would you consider to be the best symbol for creativity?"). This is followed by "[w]hy did you choose this as a symbol for creativity?," allowing participants to explain their choice. They were then shown eight common symbols of creativity (lightbulb, brain, paintbrush and colors, computer, toy, musical note, jigsaw puzzle, and children's drawings). Participants used a Likert scale to rate how well each symbol

represented creativity (with one as an extremely poor symbol and seven as an excellent symbol), and then respondents were invited to explain the link between each symbol and creativity. In the second section, participants used Likert scales to compare pairs of related creative concepts. There were four pairs of comparisons: heredity versus social environment, originality versus social value, perspiration versus inspiration, and creativity in general versus creativity in a domain. Each term in the pair had a Likert response scale (e.g. "What is, in your view, the contribution of heredity ("you are born creative") compared to that of the social environment ("you become creative") for the development of a creative person?") ranging from one (very small) to seven (very important). Participants then explained their general perception of creativity in society by writing what percentage of the general population should be considered creative. They then rated their own creativity on a Likert Scale (from never creative to always creative), followed by a space to explain their rating. Those who chose "never creative" were instructed to skip this section, while those who chose from "rarely creative" to "always creative" were asked to explain their rating, with a section asking them to describe their biggest creative achievement and who may have helped them most in being creative. The last section of the survey presented demographic questions such as sex, ethnicity, age, college major, and level of study.

Procedure

Participants were recruited by correspondence between the primary investigator and faculty of majors applicable to the study, notably professors teaching upper-level courses to obtain a group with higher domain-specificity. With approval from faculty, the survey was administered on-campus with paper-and-pencil copies of the consent form as well as the survey itself. Consent was obtained with each participant reviewing the consent form and completing

the survey before returning both to the primary investigator once completed. No material compensation was given for participation. However, any extra credit given for participation was at the discretion of the faculty.

Summary

This chapter reviewed the methodology, participants, design, and procedures of the present study. Chapter Four will delve into the findings of the study, comparing the results to the original work as well as examining how the results extend the literature by examining differences between majors.

Chapter Four: Results

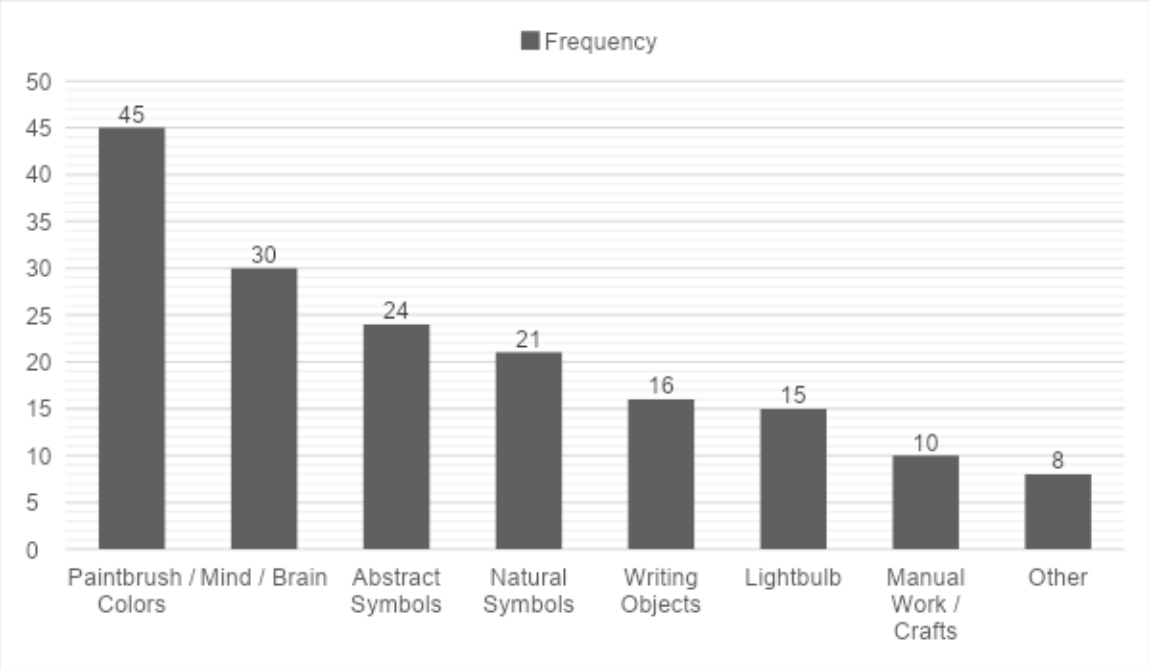
The previous chapter contained the methodology of the current study, noting similarities and differences between this replication and the original work (Glăveanu, 2011). This chapter details the results of the current study in two parts. The first section shows results of the replication of Glăveanu's original study, and the second shows the results that came from the extension of the study concerning the implicit views of students across different domains.

Section I: Replication Results

The survey completed by students began with an open-ended question of what they considered to be the best symbol of creativity. Figure 1 shows the analysis of students' responses to this open-ended question. Similar to Glăveanu's original study, the most frequently mentioned answer was related to *artistic expression* (26%) (i.e., paintbrush, paint and easel, paint colors, etc.). However, the order of the categories that followed was different than Glăveanu's findings. The next most common response was *brain and mind* (17%), for Glăveanu these symbols were the fourth most common. Similar to the original study, the next two most common responses were *abstract symbols* (14%) and *natural symbols* (12%). For Glăveanu these responses were the second most frequent and third, respectively. For the frequency count of all symbols from both studies, see Figure 1. Finally, it should be noted that where Glăveanu found his participants mentioned musical notes and computers, the current group did not mention these symbols at all.

Figure 1

Categories of Creativity Symbols (as Proposed by Respondents)



The present study was centered around four research questions. The remainder of this section, regarding the replication of Glăveanu's original study, examines each research question involving the entire sample as a single unit, while the next section (Section II: Extension Results) reveals the results of the research questions relative to the six domains associated with students' degree programs.

Research Question 1

1. *Is there a relationship across symbols of creativity?*

    H0. There will be no significant correlations between symbol ratings.

    H1. There will be significant correlations between symbol ratings.

The first research question examines the correlations among participants ratings of certain symbols as representations of creativity as a concept (e.g., "how well does this symbol represent creativity?"). Spearman correlations yielded 17 statistically significant correlations (see Table 1), with the strongest between *Toy* and *Musical Note* (r=.37, p<.001), *Toy* and *Computer*

(r=.34, p<.001), and *Lightbulb* and *Brain* (r=.34, p<.001). All correlation coefficients among the symbols are found in Table 1.

Table 1

Spearman's Rho: Creativity Symbols

N=169		Lightbulb	Brain	Paintbrush & Colors	Computer	Toy	Musical Note	Jigsaw Puzzle	Children's Drawings
Lightbulb	Correlation Coefficient								
	Sig. (2-tailed)								
Brain	Correlation Coefficient	.335**							
	Sig. (2-tailed)	.000							
Paintbrush & Colors	Correlation Coefficient	.073	-.062						
	Sig. (2-tailed)	.348	.427						
Computer	Correlation Coefficient	.190*	.284**	.122					
	Sig. (2-tailed)	.013	.000	.113					
Toy	Correlation Coefficient	.113	.108	.189*	.340**				
	Sig. (2-tailed)	.145	.163	.014	.000				
Musical Note	Correlation Coefficient	.124	.065	.275**	.225**	.373**			
	Sig. (2-tailed)	.108	.399	.000	.003	.000			
Jigsaw Puzzle	Correlation Coefficient	.188*	.186*	.149	.296**	.222**	.110		
	Sig. (2-tailed)	.014	.015	.053	.000	.004	.154		
Children's Drawings	Correlation Coefficient	.138	.165*	.309**	.231**	.325**	.250**	.093	
	Sig. (2-tailed)	.074	.033	.000	.002	.000	.001	.228	

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

As 17 of 28 correlation coefficients show statistically significant differences in relationships, it seems there are significant correlations between symbol ratings. Based on the findings described above, in response to the question "*Is there a relationship across symbols of creativity*," the hypothesis that is most supported by this analysis is H1.

Research Question 2A

2. *What symbols do laypeople most associate with creativity?*
    a. *Is there a significant difference across the symbols in terms of creative perception?*

        H0. There will be no significant difference between the ratings of the symbols.

        H1. There will be a significant difference between the ratings of the symbols.

Research Question 2 examines the participants' ratings for each symbol and whether these ratings showed significant differences (e.g., "how well does this symbol represent creativity?"). Descriptive data showed that *Paintbrush and Colors* had the highest mean rating among the symbols (see Table 2). A Friedman test (see Tables 3a, 3b) was conducted to examine whether participants had a differential ranking of the eight symbols, and results showed a significant difference between the symbols mean ratings, $\chi^2(7) = 289.826$, $p < .001$. Multiple Wilcoxon Signed Ranks Tests (Table 4) were conducted as a post-hoc test of these results, which yielded 22 significant differences between symbols. The highest rated symbol was the *Paintbrush and Colors* with significantly higher means than six of the seven other symbols, with the only pair-wise comparison not reaching significance being between *Paintbrush and Colors* and *Children's Drawings* (p=.111). The symbol that showed the next highest number of significant comparisons was *Children's Drawings* with five out of seven comparisons having significantly higher means (excluding *Brain*, p=.299), followed by *Brain* with five significantly different comparisons with other symbols. The comparisons with the highest effect sizes—describing the size of effect there would be in the real world, rather than the p value that describes the likelihood that the results are by chance (Bhandari, 2020; Sullivan & Feinn, 2012)—were *Paintbrush and Colors* and *Toy* (.73), *Children's Drawings* and *Toy* (.70),

Paintbrush and Colors and *Computer* (.69), *Paintbrush and Colors* and *Jigsaw Puzzle* (.69), and *Children's Drawings* and *Computer* (.62). As none were higher than .80, these are all considered moderate effect sizes.

Table 2

Descriptive Statistics: Creativity Symbols

	Mean	Std. Deviation
Paintbrush & Colors	5.63	1.344
Children's Drawings	5.40	1.552
Brain	5.24	1.578
Lightbulb	4.91	1.371
Musical Note	4.78	1.575
Computer	3.83	1.664
Jigsaw Puzzle	3.76	1.691
Toy	3.67	1.664

Table 3a

Friedman Test Ranks

	Mean Rank
Paintbrush & Colors	5.91
Children's Drawings	5.63
Brain	5.35
Lightbulb	4.82
Musical Note	4.69
Jigsaw Puzzle	3.28
Computer	3.26
Toy	3.07

Table 3b

Friedman Test Statistics

N	169
Chi-Square	289.826
Df	7
Asymp. Sig.	.000

Table 4

Wilcoxon Signed Ranks Test: Symbols of Creativity

	Z	Asymp. Sig. (2-tailed)	Effect Size
Paintbrush & Colors – Lightbulb	4.608	.000	.35
Paintbrush & Colors – Brain	2.110	.035	.16

Paintbrush & Colors – Computer	8.955	.000	.69
Paintbrush & Colors – Toy	9.447	.000	.73
Paintbrush & Colors – Musical Note	5.643	.000	.43
Paintbrush & Colors – Jigsaw Puzzle	8.921	.000	.69
Paintbrush & Colors – Children's Drawings	1.594	.111	.12
Children's Drawings – Lightbulb	3.425	.001	.26
Children's Drawings – Brain	1.038	.299	.08
Children's Drawings – Computer	8.011	.000	.62
Children's Drawings – Toy	9.084	.000	.70
Children's Drawings – Musical Note	4.026	.000	.31
Children's Drawings – Jigsaw Puzzle	7.852	.000	.60
Brain – Lightbulb	2.257	.024	.17
Brain – Computer	7.765	.000	.60
Brain – Toy	7.699	.000	.59
Brain – Musical Note	2.846	.004	.22
Brain – Jigsaw Puzzle	7.452	.000	.57
Lightbulb – Computer	6.635	.000	.49
Lightbulb – Toy	6.947	.000	.53
Lightbulb – Musical Note	0.615	.539	.04
Lightbulb – Jigsaw Puzzle	6.717	.000	.52
Musical Note – Computer	5.695	.000	.44
Musical Note – Toy	6.824	.000	.52
Musical Note – Jigsaw Puzzle	5.461	.000	.42
Computer – Toy	1.056	.291	.08
Computer – Jigsaw Puzzle	.354	.723	.03
Jigsaw Puzzle – Toy	.506	.613	.04

22 of 28 comparisons in a Wilcoxon test show statistically significant differences in ratings, and a Friedman Test showed statistical significance between symbol mean ratings. Based on the findings described above, in response to the question "*Is there a significant difference across the symbols in terms of creative perception*," the hypothesis that is most supported by this analysis is H1.

Research Question 3A

3. *What are the implicit beliefs about the fundamental nature of creativity among laypeople?*
    a. *Is there a significant difference across the existing dichotomies of creativity for the entire sample?*

H0. There is no significant difference across dichotomies of creativity for the entire sample.

H1. There is a significant difference across dichotomies of creativity for the entire sample.

The next section of the survey had participants rate their perceptions of eight factors concerning the nature of creativity, separated into four pairs of Likert scales (e.g. "What is, in your view, the contribution of heredity ('you are born creative') compared to that of the social environment ('you become creative') for the development of a creative person?"). We not only analyzed the participants' responses by pairs (*Heredity* versus *Social Environment*, *Originality* versus *Social Value*, *Perspiration* versus *Inspiration*, and *Creative in General* versus *Creative in Domain*), but examined all eight factors across the sample as well. Wilcoxon Tests yielded significant differences 'within' all four pairs (see Table 5), with participants ranking *Social Environment* (mean 5.73) higher than *Heredity* (mean 4.42), *Originality* (mean 5.36) higher than *Social Value* (mean 4.96), *Inspiration* (mean 6.03) higher than *Perspiration* (mean 5.54), and *Creative in Domain* (mean 5.54) higher than *Creative in General* (mean 5.14). All pairwise comparisons were significantly different with small to medium effect sizes. The comparison between Social Environment and Heredity showed the largest effect size (.56) with Social Environment demonstrating a stronger contribution to creativity as perceived by the research participants. Based on these findings, in response to the question "*Is there a significant difference across the existing dichotomies of creativity for the entire sample,"* the hypothesis most supported by this analysis is H1.

Table 5

Wilcoxon Signed Ranks Tests: Factors of Creativity

	Z	Asymp. Sig. (2-tailed)	Effect Size
Social Environment – Heredity	7.342	.000	.56
Originality – Social Value	2.466	.014	.19
Inspiration – Perspiration	4.048	.000	.31
Creative in Domain – Creative in General	2.784	.005	.21

While the current study focused on the research questions driving the analysis, there were additional findings in the data that provided valuable insights into the perceptions of laypeople regarding creativity as a concept. For example, a Spearman correlation (Table 6) conducted for the creativity symbols and pairs yielded 10 significant correlations out of 64, with the strongest between *Social Value* and *Brain* (r=.215, $p<.01$), *Heredity* and *Jigsaw Puzzle* (r=.215, $p<.01$), and *Heredity* and *Toy* (r=.214, $p<.01$). Examining the original study (2011) yielded interesting insights concerning these analyses: the original study had significant comparisons between *Lightbulb* and *Heredity* as well as *Lightbulb* and *Social Value*, *Lightbulb* and *Inspiration*, *Brain* and *Inspiration*, and *Computer* and *Social Value*. The current study held no statistical significance in these comparisons, with the strongest comparisons described above. These differences among results imply a shift in perceptions and beliefs about the facets of creativity among laypeople.

Table 6

Spearman's Rho: Creativity Symbols and Factors of Creativity

N=169		Lightbulb	Brain	Paintbrush & Colors	Computer	Toy	Musical Note	Jigsaw Puzzle	Children's Drawings
Heredity	Correlation Coefficient	-0.079	-0.077	.165*	0.112	.214**	0.014	.215**	0.138
	Sig. (2-tailed)	0.308	0.317	0.032	0.147	0.005	0.857	0.005	0.073
Social Environment	Correlation Coefficient	-0.046	0.013	0.034	0.058	0.064	0.150	-0.143	.171*
	Sig. (2-tailed)	0.557	0.867	0.656	0.450	0.408	0.051	0.063	0.026

Originality	Correlation Coefficient	0.007	0.067	.169*	0.069	-0.077	0.033	0.034	0.097
	Sig. (2-tailed)	0.927	0.389	0.028	0.375	0.322	0.666	0.662	0.208
Social Value	Correlation Coefficient	0.039	.215**	0.116	0.127	0.119	.168*	.179*	0.116
	Sig. (2-tailed)	0.611	0.005	0.133	0.101	0.123	0.029	0.020	0.132
Perspiration	Correlation Coefficient	-0.004	0.080	0.038	.184*	-0.004	0.133	-.155*	0.007
	Sig. (2-tailed)	0.963	0.302	0.623	0.017	0.956	0.084	0.044	0.928
Inspiration	Correlation Coefficient	-0.012	0.035	0.013	-0.054	0.009	0.025	-0.063	0.089
	Sig. (2-tailed)	0.880	0.655	0.869	0.483	0.908	0.752	0.414	0.250
Creative in General	Correlation Coefficient	0.088	0.019	0.122	-0.017	-0.008	0.008	0.141	0.076
	Sig. (2-tailed)	0.258	0.805	0.113	0.826	0.923	0.916	0.068	0.329
Creative in Domain	Correlation Coefficient	0.080	-0.056	0.103	0.060	0.030	0.121	-0.071	0.106
	Sig. (2-tailed)	0.298	0.471	0.182	0.441	0.695	0.116	0.360	0.168

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Section II: Extension

The first section of Chapter Four described the analyses of all research questions directly replicating the original study (Glăveanu, 2011). This section addresses all research questions that extended the original research investigation by involving participant domains in the analysis, rather than viewing the entire sample as a single group.

Research Question 2B

2. *What symbols do laypeople most associate with creativity?*
    b. *Is there a significant difference between degree programs in terms of the evaluation of ratings of the symbol?*

    H0. Overall symbols will not vary by degree program.

    H1. Undergraduate students' degree programs will show significant differences in how they rated symbols.

Descriptive data for symbol ratings by students' degree program (Table 7) showed that Criminal Justice majors (Realistic domain) had the highest mean ratings on the Likert scales of four symbols: *Brain* (5.45), *Musical Note* (5.31), *Jigsaw Puzzle* (4.34), and tied for mean ratings of *Toy* (3.83) with the Social Work majors (Social domain). Social Work majors also had the highest mean ratings for the symbol *Children's Drawings* (5.70). Business majors (Enterprising domain) had the highest mean ratings for *Paintbrush and Colors* (6.12) and *Computer* (4.23). Engineering majors had the highest mean ratings for the *Lightbulb* (5.28). Computer Science (Investigative domain) and Artistic majors (Artistic domain) did not have the highest ratings for any of the eight symbols. A Kruskal-Wallis H test (Table 8) yielded no significant differences among mean rankings by degree program, which is discussed further in the next chapter.

Table 7

Descriptive Statistics: Creative Symbols by Major

	Major	N	Mean	Std. Deviation
Lightbulb	ENG	29	5.28	1.306
	BUS	26	5.12	1.479
	CRJ	29	4.90	1.448
	ARTS	41	4.80	1.289
	CIS	21	4.76	1.578
	SW	23	4.57	1.161
	Avg	28.17	4.91	1.371
Brain	CRJ	29	5.45	1.478
	SW	23	5.43	1.472
	ENG	29	5.24	1.504
	CIS	21	5.24	1.609
	BUS	26	5.19	1.524
	ARTS	41	5.00	1.817
	Avg	28.17	5.24	1.578

Paintbrush & Colors	BUS	26	6.12	0.952
	SW	23	6.00	1.128
	CRJ	29	5.83	1.256
	ARTS	41	5.51	1.485
	ENG	29	5.21	1.449
	CIS	21	5.19	1.436
	Avg	28.17	5.63	1.344
Computer	BUS	26	4.23	1.728
	CIS	21	4.14	2.197
	ENG	29	4.03	1.636
	SW	23	3.91	1.857
	CRJ	29	3.79	1.320
	ARTS	41	3.27	1.361
	Avg	28.17	3.83	1.664
Toy	SW	23	3.83	1.669
	CRJ	29	3.83	1.560
	BUS	26	3.65	1.719
	CIS	21	3.62	1.857
	ENG	29	3.59	1.680
	ARTS	41	3.59	1.673
	Avg	28.17	3.67	1.664
Musical Note	CRJ	29	5.31	1.391
	BUS	26	4.92	1.495
	SW	23	4.91	1.443
	ENG	29	4.72	1.688
	ARTS	41	4.46	1.748
	CIS	21	4.43	1.469
	Avg	28.17	4.78	1.575
Jigsaw Puzzle	CRJ	29	4.34	1.778
	SW	23	4.00	1.651
	ENG	29	3.97	1.636

	CIS	21	3.57	1.832
	BUS	26	3.46	1.529
	ARTS	41	3.37	1.655
	Avg	28.17	3.76	1.691
Children's Drawings	SW	23	5.70	1.490
	ARTS	41	5.61	1.464
	BUS	26	5.46	1.503
	CRJ	29	5.45	1.429
	ENG	29	5.28	1.811
	CIS	21	4.71	1.586
	Avg	28.17	5.40	1.552

Table 8

Kruskal-Wallis H Test: Symbols (Grouping Variable: Major)

	Lightbulb	Brain	Paintbrush & Colors	Computer	Toy	Musical Note	Jigsaw Puzzle	Children's Drawings
Kruskal-Wallis H	5.637	1.188	9.928	7.535	0.662	5.384	7.982	6.636
df	5	5	5	5	5	5	5	5
Asymp. Sig.	0.343	0.946	0.077	0.184	0.985	0.371	0.157	0.249

With the Kruskal-Wallis test yielding no statistically significant differences between groups, the perceptions of symbols do not vary by degree program. Based on the findings described above, in response to the question "*Is there a significant difference between degree programs in terms of the evaluation of ratings of the symbol,"* the hypothesis that is most supported by this analysis is H0, which will be discussed further in the next chapter.

Research Question 3B

3. *What are the implicit beliefs about the fundamental nature of creativity among laypeople?*

b. *Is there a significant difference across the existing dichotomies of creativity when examined across students from different degree programs?*

H0. There are no significant differences in dichotomies of creativity across degree programs.

H1. There are significant differences in dichotomies of creativity across degree programs.

Descriptive data for symbol ratings by domain (Table 9) showed that Business majors (Enterprising domain) had the highest mean ratings on the Likert scales of three factors: Heredity (4.77), Perspiration (5.81), and Creative in Domain (5.85). Social Work majors (Social domain) also had the highest ratings for three symbols: Social Value (5.39), Inspiration (6.09), and Creative in General (5.61). Computer Science majors (Investigative Domain) had the highest ranked means for the final two factors, Social Environment (6.05) and Originality (5.57). A Kruskal-Wallis H Test conducted with Major as the grouping variable (Table 10a) only yielded one significant difference among factors (inspiration: $x^2(5) = 10.837$, $p = 0.055$). Examining mean ranks (Table 10b) reveal that Arts majors (Artistic Domain) held a mean rank of 101.24 for inspiration, which was significantly higher than other domains; the closest being Criminal Justice (Realistic domain) ranked at 87.38.

Table 9

Descriptive Statistics: Factors of Creativity by Major

	Major	N	Mean
Heredity	BUS	26	4.77
	CRJ	29	4.69
	SW	23	4.48
	ARTS	41	4.44
	CIS	21	4.29

	ENG	29	3.86
	Avg	28.17	4.42
Social Environment	CIS	21	6.05
	CRJ	29	5.79
	ARTS	41	5.73
	ENG	29	5.72
	BUS	26	5.58
	SW	23	5.52
	Avg	28.17	5.73
Originality	CIS	21	5.57
	CRJ	29	5.55
	SW	23	5.48
	ARTS	41	5.41
	BUS	26	5.38
	ENG	29	4.83
	Avg	28.17	5.36
Social Value	SW	23	5.39
	CRJ	29	5.38
	BUS	26	4.88
	ENG	29	4.86
	ARTS	41	4.73
	CIS	21	4.62
	Avg	28.17	4.96
Perspiration	BUS	26	5.81
	ARTS	41	5.63
	CRJ	29	5.55
	CIS	21	5.52
	ENG	29	5.41
	SW	23	5.26
	Avg	28.17	5.54
Inspiration	ARTS	41	6.39

	SW	23	6.09
	CRJ	29	6.07
	BUS	26	6.04
	CIS	21	5.86
	ENG	29	5.55
	Avg	28.17	6.03
Creative in General	SW	23	5.61
	CIS	21	5.29
	ARTS	41	5.27
	BUS	26	5.27
	CRJ	29	4.97
	ENG	29	4.55
	Avg	28.17	5.14
Creative in Domain	BUS	26	5.85
	SW	23	5.57
	ARTS	41	5.54
	ENG	29	5.48
	CIS	21	5.43
	CRJ	29	5.41
	Avg	28.17	5.54

Table 10a

Kruskal-Wallis H Test Statistics: Factors of Creativity (Grouping Variable: Major)

	Heredity	Social Environment	Originality	Social Value	Perspiration	Inspiration	Creative in General	Creative in Domain
Kruskal-Wallis H	5.939	3.222	5.497	5.729	3.252	10.837	8.868	1.577
df	5	5	5	5	5	5	5	5
Asymp. Sig.	0.312	0.666	0.358	0.333	0.661	0.055	0.114	0.904

Table 10b

Kruskal-Wallis H-Test: Factors of Creativity (Grouping Variable: Major)

	Major	N	Mean Rank
Heredity	BUS	26	96.60
	CRJ	29	94.12
	SW	23	86.46
	ARTS	41	84.00
	CIS	21	80.19
	ENG	29	69.22
	Total	169	
Social Environment	CIS	21	97.02
	ARTS	41	87.90
	CRJ	29	86.95
	ENG	29	84.79
	SW	23	76.41
	BUS	26	76.37
	Total	169	
Originality	CRJ	29	90.62
	CIS	21	90.60
	ARTS	41	88.48
	SW	23	87.80
	BUS	26	87.10
	ENG	29	66.31
	Total	169	
Social Value	SW	23	98.41
	CRJ	29	96.74
	ENG	29	82.02
	ARTS	41	80.79
	BUS	26	80.25
	CIS	21	72.31
	Total	169	
Perspiration	BUS	26	95.08
	CIS	21	89.14
	ARTS	41	87.41
	CRJ	29	85.03
	ENG	29	78.10
	SW	23	74.17
	Total	169	
Inspiration	ARTS	41	101.24
	CRJ	29	87.38
	SW	23	83.80

	BUS	26	83.77
	CIS	21	80.38
	ENG	29	65.05
	Total	169	
Creative in General	SW	23	101.02
	CIS	21	89.90
	BUS	26	89.50
	ARTS	41	89.24
	CRJ	29	78.55
	ENG	29	65.16
	Total	169	
Creative in Domain	BUS	26	93.85
	ARTS	41	86.62
	SW	23	86.22
	CIS	21	81.62
	ENG	29	80.97
	CRJ	29	80.29
	Total	169	

There was one statistically significant difference in dichotomies of creativity across degree programs, with inspiration being ranked much higher by those in the Artistic domain than those in the other groups. This finding is not surprising, as it is a common perception that artistic expression relies on inspiration. Based on the findings above, in response to the question "*Is there a significant difference across the existing dichotomies of creativity when examined across students from different degree programs",* the hypothesis that is most supported by this analysts is H1.

Research Question 4

4. *Does domain, as represented by undergraduate students' degree program, relate to their implicit views of creativity regarding self-rated creativity?*
    a. *Is there a significant difference in self-rating across degree programs?*

        H0. All degree programs will have a similar self-rated creativity level.

        H1. Self-rated creativity will significantly vary across degree programs.

A Kruskal-Wallis test (Table 11a) was conducted to examine self-rating grouped by degree program, yielding a significant difference among groups ($x^2(5) = 13.234$, $p = 0.021$). Further examination shows that the Arts (Artistic Domain) major held the highest mean rank (105.15), more than 15 points higher than the second-highest ranked major (Social Work; Social Domain), 89.57), with Business (Enterprising Domain, 83.19) as the third-highest ranked mean rating. For mean ranks of all six degree programs, see Table 11b.

Table 11a

Kruskal-Wallis Test: Self Rating TEST STATISTICS (Grouping Variable: Major)

	self-rating
Chi-Square	13.234
df	5
Asymp. Sig.	0.021

Table 11b

Kruskal-Wallis Test: Self Rating RANKS (Grouping Variable: Major)

	MAJOR	N	Mean Rank
Self-Rating	CRJ	29	76.26
	CIS	21	70.24
	ARTS	41	105.15
	SW	23	89.57
	BUS	26	83.19
	ENG	29	73.95
	Total	169	

Analysis showed that students from one degree program had significantly higher self-rating scores. Based on these findings, in response to the question "*Does domain, as*

represented by undergraduate students' degree program, relate to their implicit views of creativity regarding self-rated creativity," the hypothesis that is most supported by this analysis is H1.

Summary

Chapter Four detailed the results regarding the four research questions introduced in Chapter One, sorted by two sections: Replication and Extension of the original 2011 study. The final chapter will interpret these results and discuss the implications of our findings, address limitations, then conclude the current study.

Chapter Five: Discussion and Conclusion

The previous chapter detailed the results of the current study in two sections: replication of the previous study examining perceptions of creativity, and extension of the study regarding domain specificity among undergraduates. In summary, the current analysis yielded these findings: among the overall sample there were significant differences between certain symbols representing creativity (Question 2a) as well as significant differences between dichotomies of creativity (Question 3a). When examining the sample by domains, there were no significant differences between the groups and symbol ratings (Question 2b), but there was a significant difference in their ratings of the dichotomies of creativity (Question 3b). The groups also had significant differences in self-ratings of creativity (Question 4a).

A limitation of the current study was the size of the sample, and more specifically the size of each group used in the analysis. Across the six groups of educational majors, the samples ranged from 21 to 29. For future research, having a larger number of participants as well as a larger number of groups would be recommended to emphasize the findings of this study regarding the universal perception of creativity among laypeople, or to examine individual differences among domains. Since the present study worked with university students, it might be valuable for future research to include working adults from different domains. After acknowledging the results and limitations of the current study, Chapter Five describes the findings and their implications, then concludes.

Discussion

Though this is a replication study, in which the findings replicated the original study (2011) with laypeople still associating creativity with the arts in the general sample, the findings that take center stage are found in the extension (regarding domain). As all groups maintained

universality in their perceptions of creativity regardless of domain-specific influences, these results yield highly interesting implications regarding society's understandings of creativity as a concept. The first half of the discussion focuses on the results of factors of creativity, in the replication section, which examined the majors as a single sample rather than six separate groups, and the extension, which compared the implicit perceptions across the groups made up of different degree majors. The second section explores the data regarding the eight symbols of creativity, both in replication and extension.

The factors of creativity displayed many significant correlations, revealing implications that laypeople still emphasize the influence of social environment, originality, and inspiration on creativity. The current results also imply that laypeople believe that people are more creative in a domain rather than in general—a new development since the original study was conducted in 2011. In the current results, the participants who saw heredity as a more important factor than social environment were also likely to value originality and inspiration as factors of creativity and believe that people are more creative in general than in a specific domain. Those who valued social environment over heredity were likely to value both inspiration and perspiration (two concepts that were directly held against each other as factors of creativity) and were more likely to believe that people were creative in specific domains rather than being creative in general. The participants self-ratings of creativity were also correlated with factors of inspiration, perspiration, and social value, implying that those who viewed themselves as more creative emphasized perspiration and acknowledged the work/processes it took to be creative. The current samples emphasis on domain-specific creativity was interesting, as later analyses revealed that there were no significant domain-specific differences in opinions regarding creativity between students in different degree programs.

When examining the sample by major, a significant finding was that the arts majors rated notably higher on the inspiration factor of creativity than engineering majors, implying that those in the conventional domain are less likely to see "inspiration" as a factor of their creativity. This finding also serves as an instance of the dichotomy between the arts and sciences. This dichotomy is reinforced by the arts majors having significantly higher self-evaluated ratings of creativity than the computer information science majors (investigative domain), reinforcing the perception that artistic ability is the most favored indicator of creativity in the opinion of laypeople. The final finding regarding the majors is in the question of creativity in the general population: social work majors (social domain) described the general population as almost 25% more creative than criminal justice (realistic) and engineering (conventional) majors, which can be interpreted in multiple ways. Those in the social domain may just be more optimistic about the general population—seeing the best in everyone—or they may just be around more people, hence the label of 'social domain.'

Examining the Likert scales of the eight symbols across the entire sample showed an interesting point of change in the perceptions of creativity. While the most highly rated symbol was 'paintbrush and colors,' which would imply that there was no change since the last study in 2011 regarding laypeople's overall opinion of what creativity is as a concept, the means, medians, and modes of every symbol were equal to *or higher than* those in the 2011 study. While the modes of 'lightbulb' and 'paintbrush and colors' stayed the same (at five and seven points on the Likert scale, respectively) the rest of the symbols had higher modes than the 2011 results-notably the 'computer' symbol, which had gone from one point (an 'extremely poor symbol' of creativity) in 2011, to four points, (the neutral marker) in 2023. Looking back at the timeline of creativity and how it began as highly exclusive (from the Latin roots to Greco-Roman myth to

Judeo-Christian belief) and has become more widely accepted, we can see that the acceptance of creativity is *still* becoming more inclusive.

The progress being made in scientific creativity's acceptance among laypeople can also be seen in the ratings of the eight symbols of creativity. There were two distinct groupings of correlated symbols in the sample: one that was more scientifically based (lightbulb, brain, computer, and puzzle), and one that was centered around artistic values (paintbrush and colors, toy, musical note, and children's drawings). This may be an example of the ever-present dichotomy between the arts and sciences, but it may also imply that there may be a day that these two concepts are on equal footing as pillars of creativity among laypeople. Pairing those correlations with the modes mentioned previously, that day may come sooner than many expect. That being said, a core and unique emphasis of the present study, as exemplified by the research extension, was the examination as to whether the implicit association of creativity with the arts is universal, that is consistent across a variety of domains.

Implications

The current study revolves around one question: among undergraduate students, does choice of degree program correlate with implicit theories of creativity? The results of the study imply that domain, as exemplified by major, does *not* affect the implicit understanding of creativity among laypeople. The understanding of creativity being intertwined with artistic values is universal in our culture and is so deeply ingrained into our perception that even now, in the age of unseen creativity and evolution in the scientific domains, the art*s still* take the forefront as a universal construct of creativity. *Ars/artis* and *creare* being two separate facets of creativity has had continuous and unshaking influence over our society's perceptions throughout

Western history. This finding highlights a key implication related to the gap that exists between laypeople's implicit views and creativity scholars explicit work on creativity.

The analyses show that laypeople's perception of creativity differs from explicitly researched understandings. First seen in Chapter Two, and reinforced by our findings in Chapter Four, laypeople's understandings of creativity and the arts have been intertwined for so long that for many the two are synonymous. Meshing the two together leads to people tying their creative ability to their artistic ability. While this may be good for those with higher domain expertise in the arts, those in other domains—especially the sciences—may discount their own creative abilities and achievements because they don't fit the popular definition of creativity, potentially lowering creative efficacy by way of a self-imposed constraint. This is a major downside to laypeople's perception of creativity being universally represented by the arts. In noting this negative effect, it is important to remember the difference between Implicit Theory and Social Representations.

While those studying Implicit Theory may label the universality of the arts in creativity (and the negative consequences that arise from it) as an implicit bias, the current study is a replication of Glăveanu's work in Social Representations Theory. As it was stated in Chapter Two:

> Social Representations has a concern and acceptance for laypeople's opinions and ideas that implicit theories lack. With implicit theories, everything laypeople describe is held against the overall "explicit theory," placing a divide between the two groups. This view places the researcher's viewpoint higher than the layperson's, creating the idea of laypeople's perceptions being "biases," and assumed to be incorrect. This invalidation isn't a part of social representations theory. Common sense takes the forefront in this

approach; laypeople's perspectives are not seen as incorrect, but accepted as how people make meaning of the world around them.

Being able to accept laypeople's representations of creativity for what they are—understandings and views that have been built over the course of humanity and shape how our society navigates the world today—will allow many to reach a common ground and shift those perceptions to a more inclusive one, rather than dismissing them as "biased".

The results of this work have highlighted that laypeople's perceptions of creativity have been consistent throughout the timeline of western civilizations. However, *our results also serve as a reminder that timelines do not end with the present*. With the computer symbol having the most drastic increase in favor among laypeople in the last decade, the results of the current study imply that the future of creativity will place the sciences in a better light, allowing many more people in a wider array of domains to see themselves as creative. Future work in the field may focus on creative efficacy, as the current state of self-rated creativity is significantly lower in domains that are not centered around visual arts. By holding a mirror to their creative accomplishments and abilities, we may open doors to new avenues in the field and reach levels of interdisciplinary opportunity never seen before.

Conclusion

The current study highlighted the differences we see between implicit and explicit theories of creativity. While the explicit understanding of creativity stems from more than a century of research, the implicit theory is molded by millions of years of human experience, culminating in our current worldviews and present understanding. Creativity scholars may have established ideas about creativity and its accessibility in all areas of life, but this work shows that we still have a long way to go in proving the true interdisciplinary nature of creativity to society.

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