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Examining Relationships Among Creativity Skills Training, Domain-Specific Creativity, and Creative Self-Efficacy: A Mixed Methods Study

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The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. This research further aims to remediate the deficiency of existing creativity research regarding the relationship between domain-specific creativity, creativity skills training, and creative self-efficacy. This study employs a mixed-method approach to address four research questions regarding the impact of a creativity skills training experience from adult alumni of Destination Imagination, an educational experience designed to enhance creativity. The Amusement Park Theoretical Model of Creativity acts as a theoretical framework to guide the work. Results from this study suggest alumni of a youth creativity skills training experience believe their creativity skills training experience was impactful in their creative development, have high creative self-efficacy, and believe they are creative in a variety of domains. The relationship between the performance domain and creative self-efficacy is the only statistically significant relationship found. Results from this study further suggest that the creativity skills training experience focused more on general creativity including initial requirements and general thematic areas rather than more specific areas of creativity including domains and micro-domains. This data adds to the field of research and can be useful to organizations that foster creativity as they work to enhance their programming to address domain-general areas of creativity and domain-specific areas of creativity.

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Kayla R. Steffens

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Keywords: creativity, domain-specific creativity, creative self-efficacy, creativity skills training, creativity skills experience

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CHAPTER ONE: INTRODUCTION

Overview

Chapter One sets the stage for this study by describing the current limitations of creativity skills training, creative self-efficacy, and domain-specific creativity. The study is derived from the persistent problem of practice which guides the purpose of the research, research questions, and the methodology. The target audience, outcomes, and implications are briefly described.

Creativity is a skill highly valued in educational settings (Runco & Johnson, 2002; Westby & Dawson, 1995) and workplace settings (Li & Kaufman, 2014; Staw, 1995). Schools tend to not appreciate or identify creativity (Runco & Johnson, 2002; Westby & Dawson, 1995), while workplaces often do not support creativity, nor do they invite creativity into their spaces (Li & Kaufman, 2014; Staw, 1995). Educators and employers have considerable control over the amount of creativity occurring in classrooms or the workplace, however, they often fail to adequately support and promote creativity (Li & Kaufman, 2014; Runco & Johnson, 2002; Staw, 1995; Westby & Dawson, 1995).

Researchers agree that creativity is not something that is or is not (Ambrose & Macheck, 2015; Kim, 2006; Torrance, 1972; VanTassel-Baska, 2005). Additionally,

creativity can be misidentified as more fixed than malleable (Ambrose & Macheck, 2015; Kim, 2006; Torrance, 1972; VanTassel-Baska, 2005). Further, creativity is something that occurs in context - someone perceived as creative in a particular domain may not be perceived as creative in another domain (Baer & Kaufman, 2005; Kaufman, 2012). Creativity can also be viewed as a learned skill that can be taught rather than a static trait (Baer & Kaufman, 2005; Beghetto, 2016; Vygotsky, 2004). One common way of teaching creativity is through creativity skills training (Beghetto, 2014; Grohman et al., 2006; Li & Kaufman, 2014; Mansfield et al., 1978; Scott et al., 2004a, 2004b; Treffinger & Isakson, 2005).

Creativity skills training is one highly endorsed method for developing creativity (Beghetto, 2014; Grohman et al., 2006; Li & Kaufman, 2014; Mansfield et al., 1978; Scott et al., 2004a, 2004b; Treffinger & Isakson, 2005). Creativity skills training is an experience that enhances an individual's creativity (Birdi, 2016). Research is just beginning to explore the impact of creativity skills training on creativity (Hunsaker, 2005; Beghetto, 2014; Birdi, 2016; Meinel et al., 2018). Creativity skills training does improve creativity, but it is unclear how long creativity skills training continues to improve creativity (Beghetto, 2014; Birdi, 2016; Li & Kaufman, 2014; Mansfield et al., 1978; Meinel et al., 2018; Renzulli & Reis, 2018). Additional research is needed to gather a better understanding of the relationship between creativity skills training and creativity.

Research detailing the relationship between creativity, creativity skills training, and creative self-efficacy is still developing (Hunsaker, 2005; Beghetto, 2014; Birdi, 2016; Meinel et al., 2018). These relationships are discussed in greater depth in Chapter Two.

Personal Context

As a youth, I experienced creativity as something outside of my formal education. Creativity simply wasn't encouraged or taught in my K-12 coursework. As a student, I was always striving to look for whatever answer my teachers wanted me to find. Although my teachers desired students to produce creative or unique work, I didn't understand what that meant within the context of my classes.

Creativity felt like something that happened outside of the traditional school day. During elementary school and middle school, I participated in activities like Destination Imagination where I was able to create stories, engage in improvisation, and build costumes and set pieces. As I moved into high school, I participated in other activities that fostered meaningful connections to creativity, including theatre.

Expectations around creativity in class didn't seem much different during my undergraduate college experience. Creativity still felt like something that occurred outside of the classroom. I volunteered my time with Destination Imagination to support children in expressing their creativity. I also started working for small businesses and I experienced firsthand how creativity was leveraged to develop processes and procedures that were new and efficient. I found that I was typically moved out of whatever role I was hired into and pushed to creatively improve different areas of the business. I built websites, organized expansions, and developed new systems to fit various needs.

One summer, during my undergraduate experience, I decided to try teaching and engaged in a summer teaching experience. My role was to teach science to incoming 8th graders as an enrichment experience. I developed relationships with my students and used their curiosities to develop interesting and creative learning experiences. My students

were interested in the environment, so I took them outside and we collected items like pinecones to ignite their curiosity around wildfire and its role within an ecosystem. However, I was swiftly reprimanded for going too far off the "scripted curriculum". Other ideas my students were curious about, including the brain, mental illness, and drugs, were not allowed to be implemented because it was too different from the curriculum I was expected to teach. I was not allowed to express my own creativity in the classroom. Additionally, my students were not allowed to express their creativity through the scripted tests and quizzes rather than the hands-on learning experiences that they could have created. This summer teaching experience led me to become an educator.

The experience as a summer educator made it clear what my professors were looking for. While working towards my master's degree in Curriculum and Instruction I realized the importance of owning my learning. I learned to produce creative work while learning about topics of interest, and I carried this creative lens into my role as an educator.

Currently, I work as a middle school math teacher. I am deeply passionate about ensuring my students are engaged in learning. My students are encouraged to create within the context of the classroom, and as a teacher, I am constantly creating new ways for students to engage in the material. Outside of teaching, I continue to volunteer for Destination Imagination and support students in engaging in a creative learning experience. I also sit on several boards to encourage and advocate for students' needs, including creativity in the classroom.

This section discusses my personal context. My experience with creativity is students want to be it, teachers want to see it, and professional work wants to leverage it.

Creativity seems to be something that everyone is looking for, but it also seems to me that creating an environment where creativity thrives is difficult to do. The next section covers the persistent problem of practice guiding this study.

Persistent Problem of Practice

Creativity is highly desirable and, at the same time, is highly misunderstood (Amabile, 1998; Hoff & Carlsson, 2011; Li & Kaufman, 2014; Piirto, 2004; Runco & Johnson, 2002; Scott, 1999; Westby & Dawson, 1995). School, in general, stifles creativity (Piirto, 2004; Yeung et al., 2005). In classrooms, educators claim they value creativity and want creative students (Runco & Johnson, 2002; Westby & Dawson, 1995). Simultaneously, teachers are unlikely to recognize creative students (Runco & Johnson, 2002; Scott 1999; Westby & Dawson, 1995). Educators see traits of creative students as disruptive and challenging (Runco & Johnson, 2002; Scott 1999; Westby & Dawson, 1995). Moreover, teachers that say they value creativity have a hard time identifying creative students (Hoff & Carlsson, 2011; Scott, 1999).

Similarly, employers claim they desire creative employees, however, because creativity is misunderstood, employers tend to avoid hiring creative employees (Li & Kaufman, 2014; Staw, 1995). Instead, employers recruit and hire employees that are much like those currently in the organization (Staw, 1995). Creative employees are viewed as "challenges" in the workplace because creative individuals do things differently than the status quo (Basadur & Hausdorf, 1996; Li & Kaufman, 2014; Staw, 1995). When creative employees are hired, companies stifle their creativity by reinforcing behaviors and thinking that align with the way things have always been done (Amabile, 1998; Amabile & Kramer, 2012; Li & Kaufman, 2014; Staw, 1995). Creative

ideas are viewed skeptically (Basadur & Hausdorf, 1996; Sternberg, 2019; Sternberg & Lubart, 1995). Supervisors and companies encourage employees away from creativity and toward the existing values and culture of the organization (Amabile, 1998; Amabile & Kramer, 2012; Li & Kaufman, 2014; Staw, 1995).

Creativity can be learned through creativity skills training (Baer & Kaufman, 2005; Mansfield et al., 1978; Scott et al., 2004a, 2004b). Research shows that creativity skills training programs support the development of creative skills and creative thinking processes (Beghetto, 2014; Grohman et al., 2006; Mansfield et al., 1978; Scott et al., 2004a; Treffinger & Isakson, 2005). Creativity skills training has been one of the preferred approaches to enhancing creativity (Baer & Kaufman, 2005; Mansfield et al., 1978; Scott et al., 2004a, 2004b).

Moreover, research regarding youth creativity training and the impacts on adult creativity has not been researched in-depth (Scott et al., 2004a; Ritter et al., 2020). Studies researching creativity training in youth generally are confined to short timelines (Scott et al., 2004a). Studies that measure creativity over time also focus on narrow timelines (Baer, 1988; Ritter et al., 2020). Other research with college student participants focuses on their growth up to two years (Reese et al., 1976). Although creativity training has been developed for nearly every age group including Kindergarten (Cliatt et al., 1980; Scott et al., 2004a) through adulthood (Scott et al., 2004a), research on youth creativity training does not span to adulthood (Scott et al., 2004a).

Researchers conceptualize creativity in different ways. Some define creativity as "the ability to consider several possible ways of looking at and solving problems" (Ambrose & Macheck, 2015, p. 122), while others suggest that creativity includes both

domain-general creativity areas and domain-specific creativity areas (Baer & Kaufman, 2005). Domain-general creativity refers to creativity as a general skill that can be developed and fostered, such as divergent thinking (Ambrose & Machck 2015; Kim, 2006; Lidz & Macrine, 2001). Domain-specific creativity describes creativity existing within a field or domain and creativity coming out of that specific field or domain (Baer & Kaufman, 2005; Kaufman, 2012). The idea of creativity being domain-general, domain-specific, or some combination of both is disputed by researchers in the field (Baer & Kaufman, 2005).

Research about creativity is still developing (Ambrose & Machek, 2014; Beghetto, 2014; Li & Kaufman, 2014; Plucker et al., 2004). Creativity researchers understand some components of creativity very well, like the relationship between intelligence and creativity (Baer & Kaufman, 2005; Renzulli & Reis, 2018), or the characteristics of creativity and personal attributes of creative individuals (McKay, Grygiel, & Karwowski, 2017; Kaufman & Sternberg, 2019). Other elements of creativity research are sparse. For example, not much is known about specific environmental factors that contribute to an individual's creativity (Galveanu & Kaufman, 2019) or the methods for fostering creativity development (Baer & Kaufman, 2005; Beghetto, 2014; Sternberg, 2019; Wesby & Dawson, 1995).

This section describes the persistent problem of practice. Creativity is something widely misunderstood and something employers and schools claim they desire (Amabile, 1998; Hoff & Carlsson, 2011; Li & Kaufman, 2014; Piirto, 2004; Runco & Johnson, 2002; Scott, 1999; Westby & Dawson, 1995). This study addresses the persistent

problem of practice. The following section details the purpose of this study and how the persistent problem of practice will be addressed.

Purpose Statement

The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience.

Research Questions

The persistent problem of practice delineates a need for additional research centering on domain-specific creativity, creative self-efficacy, and creativity skills training. Further research is also needed to continue to build a research body of evidence around the concept of creativity and its specific and related factors.

The research questions that guided this study were designed using the persistent problem of practice and are aligned with the purpose of the research. The three areas measured in this study are the impact of creativity skills training, domain-specific creativity, and creative self-efficacy.

The research questions (RQs) that guide this mixed-methods study are:

RQ 1: How do adult alumni of a youth creativity skills training experience report its impact?

RQ 2: How do adult alumni of a youth creativity skills training experience report their domain-specific creativity?

RQ 3: How do adult alumni of a youth creativity skills training experience report their creative self-efficacy?

RQ 4: What are the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience?

The research questions guiding this study were designed to be aligned with the purpose statement and address the persistent problem of practice. The next section provides an overview of the research methodology.

Research Methodology Overview

This study will employ a mixed-methods research approach. According to Creswell (2015), mixed methods can be conceptualized as:

> An approach to research in the social, behavioral, and health sciences in which the investigator gathers both quantitative (closed-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems. (p. 2)

The assumption of mixed methods research is that qualitative and quantitative research combine to strengthen the research (Creswell, 2015; Creswell & Creswell, 2018). The current study is conceptualized as mixed methods research because it endeavors to illuminate an enlarged understanding of the persistent problem of practice through the use of both qualitative and quantitative methods (Creswell, 2015; Creswell & Creswell, 2018).

Data from this empirical inquiry were collected through an online survey and structured interviews. The online survey included both instruments and demographic data. The three instruments included in the survey are the Destination Imagination Survey, the Kaufman Domains of Creativity Scale (K-DOCS), and a measure of Creative Self-Efficacy. These instruments provided quantitative data for analysis. Interviews were

conducted with three participants that have engaged in the Destination Imagination experience for variable amounts of time since last participating in the experience.

Participants in this study were recruited from the Destination Imagination Alumni Network. The Destination Imagination Alumni Network is a collection of alumni of the creativity skills training program Destination Imagination. Length of participation and time since participation in the Destination Imagination creativity training experience supported the data analysis. The Destination Imagination Alumni Network was selected as the community partner for this study because of the type of creativity skills training experience and the accessibility of the alumni.

A mixed-methods study is used to address the research questions. This idea is outlined this section. The next section discusses audiences, outcomes, and implications of this study.

Audience, Outcomes, and Implications

This study is designed to improve educational opportunities by adding to the body of evidence around creativity, creativity skills training, and creative self-efficacy. Findings from this study support educators, researchers, creativity program coordinators, and anyone interested in supporting creative development. This study contributes to the existing body of research around creativity skills training, creative self-efficacy, and domain-specific creativity. Additionally, this study provides clarity around the relationships among the three elements. Researchers may better understand relationships among creativity, the impact of creativity skills training, and creative self-efficacy. In the next section, definitions are provided to clarify language used throughout this study.

Definitions

This section continues to introduce the study by defining terms to provide clarity around the language used in the study.

1. Domain-Specific Creativity: "the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context," (Plucker et al., 2004, p. 90).
2. Creative Self-Efficacy: Creative self-efficacy has been defined as the belief that one can produce creative works (Karwowski et al., 2019; Plucker et al., 2019; Sternberg, 2019; Tierney & Farmer, 2002, 2011). Like creativity, creative self-efficacy is a trait that is malleable and can be influenced by a variety of factors, one of which is creativity skills training (Birdi, 2016; Karwowski et al., 2019).
3. Creativity Skills Training: "Creativity [skills] training can be defined as instruction to develop an individual's capability to generate novel and potentially useful solution to (often complex and ill-defined) problems" (Birdi, 2016, p. 298).
4. Destination Imagination: A creativity skills training program that engages participants in "project-based challenges that are designed to build confidence and develop extraordinary creativity, critical thinking, communication, and teamwork skills." (Destination Imagination, 2018b).

5. Destination Imagination Alumni Network: The network of Destination Imagination alumni. Alumni are defined as anyone who participated in DI for at least one season and who is 18 or older (Destination Imagination, 2018a).
6. Kaufman Domains of Creativity Scale (K-DOCS): An adult self-report measure of domain-specific creativity.

This section clarifies the definition of the words used in this study.

Summary

Chapter one introduced this study through the persistent problem of practice, purpose, research questions, methodology overview, audience, and definition of terms. It is clear from this section that research regarding creativity, creative self-efficacy, and creativity skills training is continuing to develop (Hunsaker, 2005; Beghetto, 2014; Birdi, 2016; Meinel et al., 2018). The effects of creativity skills training on creative self-efficacy and creativity are still not fully understood (Hunsaker, 2005; Beghetto, 2014; Birdi, 2016; Meinel et al., 2018) and this study provides increased understanding of domain-specific creativity, creativity skills training, and creative self-efficacy for educators and researchers. The following section details specific elements of research regarding these three areas.

CHAPTER TWO: LITERATURE REVIEW

The previous chapter outlined the need for additional research regarding the impact of creativity skills training, domain-specific creativity, and creative self-efficacy. The purpose of this section is to review existing literature that is relevant to this study. Chapter Two includes areas of literature for discussion including creativity, theoretical framework, initial requirements for creativity, creativity skills training, creative self-efficacy, self-report measures, relevant studies, and gaps in the literature.

Creativity

Researchers conceptualize creativity in different ways (Baer & Kaufman, 2005; Kaufman & Baer, 2005; Kaufman et al., 2008; Kaufman & Sternberg, 2019; Li & Kaufman, 2014; Piirto, 2004; Plucker, 2005; Plucker & Beghetto, 2004; Plucker et al., 2004). There are a variety of theories and ways of conceptualizing creativity. “Big C little c” takes a psychological approach to creativity (Csikszentmihalyi, 2013; Piirto, 2004). This framework sees “Big C” as creativity that occurs and is widely recognized (Csikszentmihalyi, 2013; Piirto, 2004). This might be someone like Bach who is widely recognized as a successful composer (Csikszentmihalyi, 2013). “Little c” creativity is smaller scale creativity for example, the first time a first grader discovers a knock-knock joke. Although knock-knock jokes are not creative to adults, they are creative to the first grader who just discovered them (Piirto, 2004). This theory has been expanded into the

Four C theory which includes Big C and little c but also adds mini-c and Pro-c (Kaufman & Glaveanu, 2019). Big C is conceptualized as eminent creativity, little-c is conceptualized as everyday creativity, mini-c is conceptualized as personal creativity, and Pro-c is conceptualized as a creative professional or expert (Kaufman & Glaveanu, 2019).

Creativity theories often are perceived across two broad dimensions: domain-general creativity and domain-specific creativity (Baer & Kaufman, 2005; Kaufman & Baer, 2005; Plucker, 2005; Plucker & Beghetto, 2005; Sternberg, 2005). Domains are areas like art, science, tap dance, or psychology, for example. Domain-general creativity is the idea that creativity spans all domains and that there are specific thinking processes that impact all domains equally (Huang et al., 2017). Domain-specific creativity is the idea that creativity is specific to individual domains (Kaufman & Baer, 2005a). More recently, researchers are coming to the consensus that creativity is both domain-general and domain-specific (Baer & Kaufman, 2005; Baer & Kaufman, 2017; Kaufman & Baer, 2005; Plucker & Beghetto, 2004; Sternberg, 2005; Tu et al., 2018). These three areas, domain-general, domain-specific, and the dual combined domain-general and domain-specific creativity, will be discussed in the following sections. Additionally, the relationship between giftedness and creativity will be discussed.

Domain-General Creativity

Domain-general creativity describes creativity as a skill that involves specific thinking processes regardless of the domain (Huang et al., 2017). Some of the more common thinking processes associated with domain-general creativity are originality,

effectiveness, and divergent thinking (Glaveanu & Kaufman, 2019; Li & Kaufman, 2014; Plucker et al., 2004; Runco & Jaeger, 2012; Vygotsky, 2004).

Originality is one way of conceptualizing domain-general creativity and describes creating something unique and new. Originality is captured in several definitions of domain-general creativity (Glaveanu & Kaufman, 2019; Li & Kaufman, 2014; Plucker et al., 2004; Runco & Jaeger, 2012; Vygotsky, 2004). Glaveanu and Kaufman (2019) describe creativity as "to bring new ideas or things into existence," (p. 9). Vygotsky (2004) describes creativity as, "Any human act that gives rise to something new is referred to as a creative act, regardless of whether what is created is a physical object or some mental or emotional construct that lives within the person who created it and is known only to him," (p. 7). Both definitions highlighted above use originality to describe and define domain-general creativity.

Effectiveness is another term frequented in the discourse on domain-general creativity. Effectiveness often equates to usefulness (Plucker et al., 2004) and is typically paired with originality in domain-general creativity definitions (Li & Kaufman, 2014; Plucker et al., 2004; Runco & Jaeger, 2012). Runco and Jaeger (2012) describe the domain-general creativity definition as "biparte," requiring both "originality and effectiveness," (p. 92). Plucker et al. (2004) propose a similar definition: "Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context," (p. 90). These definitions describe domain-general creativity as both original and effective or useful.

A third conceptualization of domain-general creativity is divergent thinking (Ambrose & Machck 2015; Kim, 2006; Lidz & Macrine, 2001), or "the ability to consider several possible ways of looking at and solving problems" (Ambrose & Macheck, 2015, p. 122). Divergent thinking is the most widely used predictor of future creativity (Ambrose & Macheck, Dumas & Dunbar, 2014; 2015; Kim, 2006; Yeung et al., 2005). Divergent thinking consists of four components: fluency, flexibility, originality, and elaboration (Ambrose & Macheck, 2015; Dumas & Runco, 2018; Guilford 1956; Torrance, 1972). While divergent thinking is not the same thing as domain-general creativity, it is often used to predict future creativity and general creative potential (Dumas & Runco, 2018). One of the most widely used divergent thinking and domain-general creativity instruments is The Torrance Tests of Creative Thinking (Ambrose & Macheck, 2015; Kim, 2006; Yeung et al., 2005). This assessment has been viewed as an excellent predictor of future creativity (Torrance, 1972). However, critics of this assessment argue that it only focuses on one theory of creativity: divergent thinking (Ambrose & Machck 2015; Kim, 2006; Lidz & Macrine, 2001).

In summary, domain-general creativity is the idea that creativity spans all domains and that there are specific thinking processes that impact all domains equally (Huang et al., 2017). While there is no single definition of domain-general creativity, there are, however, several representations of domain-general creativity as described above. Originality, effectiveness, and divergent thinking are examples of conceptualizations of domain-general creativity. To contrast with domain-general creativity, domain-specific creativity is discussed in-depth next.

Domain-Specific Creativity

Domain-specific creativity is the idea that creativity exists within domains rather than as a standalone domain (Baer & Kaufman, 2005b; Kaufman, 2012). Domains may include areas like poetry, acting, dance, music, science, psychology, computer science, teaching, engineering, or mathematics (Kaufman & Baer, 2005a). The concept behind domain-specific creativity is that a person can be creative within a specific domain but may not be creative in other domains (Baer, 1991, 1996; Baer & Kaufman, 2005a; 2005b; Runco, 1989). Baer and Kaufman (2005a) note that it is acceptable to "describe someone as creative without reference to specific works or domains" (p. 158).

Domain-specific creativity has been described and researched by several creativity researchers. Gardner (2011) describes a creative person as having skills with problem-solving, creating projects, and posing new questions. While this definition sounds domain-general, Gardner (2011) goes on to describe a creative person as having innovated in the three areas above within a domain and that the innovations must be accepted by the domain or cultural group (Gardner, 2011, Piirto, 2004). This shift to requiring creativity to occur within a domain and be accepted by the domain or cultural group points to a domain-specific definition (Gardner, 2011, Piirto, 2004). Innovation occurring within a domain would be taking a specific domain and then finding original ways of working within that domain (Gardner, 2011, Piirto, 2004). For example, the shift to standards-based education could be considered creative within the field of education, however, for it to be considered innovative it must be accepted by the domain of education.

There is a growing body of evidence to support domain-specific creativity (Baer, 1998; 2012). Baer (2012) argues that if creativity were domain-general, then someone creative in one domain would be creative in all domains. Similarly, if an individual improved their creativity in one area, it could be expected that creativity improves in all areas (Baer, 1991; 2012). However, when domain-general creativity is researched, improvements in all areas are not seen. (Baer, 1991; 1996).

Several studies find support for domain-specific creativity. Runco (1989), asked elementary school students to create different types of artwork. When assessed by experts on creativity, there was a very weak correlation among them (Runco, 1989). This study's findings point to domain-specific creativity because creativity within one domain of artwork was not correlated to another domain of artwork. Another study measured student performance on four domain-specific tasks: writing poetry, writing stories, solving mathematical equations, and solving mathematical word problems (Baer, 1991). Experts in the field rated each domain based on creativity (Baer, 1991). None of the four domains were correlated, supporting the idea of domain-specific creativity (Baer, 1991). In a follow-up study, a group of middle school students was asked to create products in four different domains. The study found that creativity among the products in four different domains were unrelated (Baer, 1991). In another study, researchers provided creativity skills training related to poetry to middle school students (Baer, 1996). Before creativity skills training and after completing creativity skills training, students wrote poems and short stories (Baer, 1996). The poems and short stories completed before and after creativity skills training were assessed based on creativity by experts in the field

(Baer, 1996). The study found that creativity training related to poetry significantly increased students' creative poetry writing but did not have the same impact on the creativity of short stories (Baer, 1996). Each of these studies provides evidence that creativity is domain-specific. When creativity improves in one domain, it does not improve in all domains (Baer, 1991; 1996; Runco, 1989).

In summary, domain-specific creativity is the idea that creativity exists within domains and there are specific creative thinking processes associated with domains that do not translate to other domains (Baer, 1991; 1996; Baer & Kaufman, 2005b; Kaufman, 2012; Runco, 1989). The research cited above demonstrates the need for additional research in the area of domain-specific creativity.

The first view of creativity covered in this chapter was domain-general creativity which is creativity that spans across domains. The second view of creativity covered in this chapter was domain-specific creativity which is the idea that creativity exists within specific domains. The third view of creativity is described in-depth in the upcoming section.

Creativity is Both Domain-General and Domain-Specific

The third, and recently supported view of creativity, is a dual model where creativity is seen as both domain-general and domain-specific (Baer & Kaufman, 2005; Kaufman & Baer, 2005; Kaufman & Baer, 2017; Plucker, 2005; Plucker & Beghetto, 2005; Tu et al., 2018). Plucker (2005) describes creativity as primarily domain-general however when creativity is applied to real-world tasks, creativity then becomes domain-specific.

There exists a small pool of empirical research around the dual model where creativity is both domain-general and domain-specific. A study by Huang et al. (2017) explored the relationship among domain-general divergent thinking, domain-specific scientific creativity, and domain-specific mathematical creativity. Researchers found that domain-specific scientific creativity was moderately positively correlated with domain-general divergent thinking ability (Huang et al.). Researchers also found that achievement in science and domain-general divergent thinking ability can explain the variance in domain-specific scientific creativity (Huang et al.). However, when looking at the domain-specific math creativity, researchers found that domain-general divergent thinking ability was not correlated with domain-specific math creativity (Huang et al., 2017). This research suggests that domain-specific creativity and domain-general creativity are necessary and may not be universally impactful in all domains. Another study examining relationships among domain-general creativity and domain-specific creativity suggests that there are some general pre-requisites for creativity that are domain-general and then additional components that can be applied to specific domains (van Broekhoven et al., 2020).

Creativity as domain-general, domain-specific, or a combination of both is a conversation researchers continue to discuss (Plucker & Beghetto, 2004). Plucker and Beghetto (2004) pose questions to challenge the way researchers think about domain-generality and domain-specificity around creativity: “What aspects of creativity are domain general and which aspects are domain specific?” (p. 159). Rather than viewing

creativity dichotomously as domain-general and domain-specific, some researchers argue the two should be conceptualized together (Plucker and Beghetto, 2004).

Research supports domain-general creativity, domain-specific creativity, and the idea that creativity is both domain-general and domain specific, as described above. In the following section, the link between creativity and giftedness is explained.

Creativity and Giftedness

There is no *one* definition of giftedness (Renzulli, 2005; Renzulli & Reis, 2018; Runco, 2005; VanTassel-Baska, 2005), rather researchers describe giftedness as multidimensional (Renzulli & Reis, 2018; VanTassel-Baska, 2005). Recently, giftedness has become more inclusive of different dimensions of giftedness, including creativity (Renzulli & Reis, 2018; VanTassel-Baska, 2005). Runco (2005) describes creative potential as "one of the most critical commonalities among various domains of giftedness," (p. 295). Renzulli and Reis (2018) describe giftedness as a triad of above-average intelligence, creativity, and task commitment. Feldhusen (2005) describes the inextricable link between giftedness and creative achievement. Conceptions of giftedness are also cultural (VanTassel-Baska, 2005) and can be represented across and within a variety of cultures (Piirto, 2004; Renzulli, 2005; Renzulli & Reis, 2018).

In the United States, the federal definition of giftedness includes six areas of giftedness: (1) superior cognitive ability; (2) specific academic ability; (3) creativity; (4) leadership ability; (5) visual and performing arts ability; and (6) psychomotor ability (Marland, 1971). Ac cording to this definition, creativity is included as one of the areas of giftedness (Kaufman et al., 2008; Piirto, 2004). This is a domain-general definition

because it identifies creativity as a separate domain or area. A domain-specific definition might include creativity as a component of the other areas of giftedness (Kaufman et al., 2008; Piirto, 2004). Piirto (2004) asks the following questions: “Aren’t brainy scientists creative? Aren’t verbal writers creative? Aren’t visual artists creative? Aren’t actors creative? Aren’t dancers creative? Aren’t visual artists creative? Aren’t athletes creative?” (p. 12). Piirto’s (2004) questions highlight the importance of domain-specific creativity; scientists can be creative and writers can be creative, but a creative scientist is qualitatively different from a creative writer.

One theory that addresses these questions is Gardner’s Theory of Multiple Intelligences (Gardner, 2011) which identifies eight domains of intelligence: (1) linguistic; (2) musical; (3) logical-mathematical; (4) spatial; (5)bodily-kinesthetic; (6) interpersonal; (7) intrapersonal; and (8) naturalist (Gardner, 2011; Piirto, 2004). Creativity is included within each domain rather than as a standalone domain (Gardner, 2011; Piirto, 2004).

Overall, creativity is described as something related to giftedness. In some areas creativity is seen as a domain-general area giftedness, in csome theories, creativity exists within other domains of giftedness or is a required component of an area of giftedness. In the upcoming section, creativity is described within the Amusement Park Theoretical Model of Creativity.

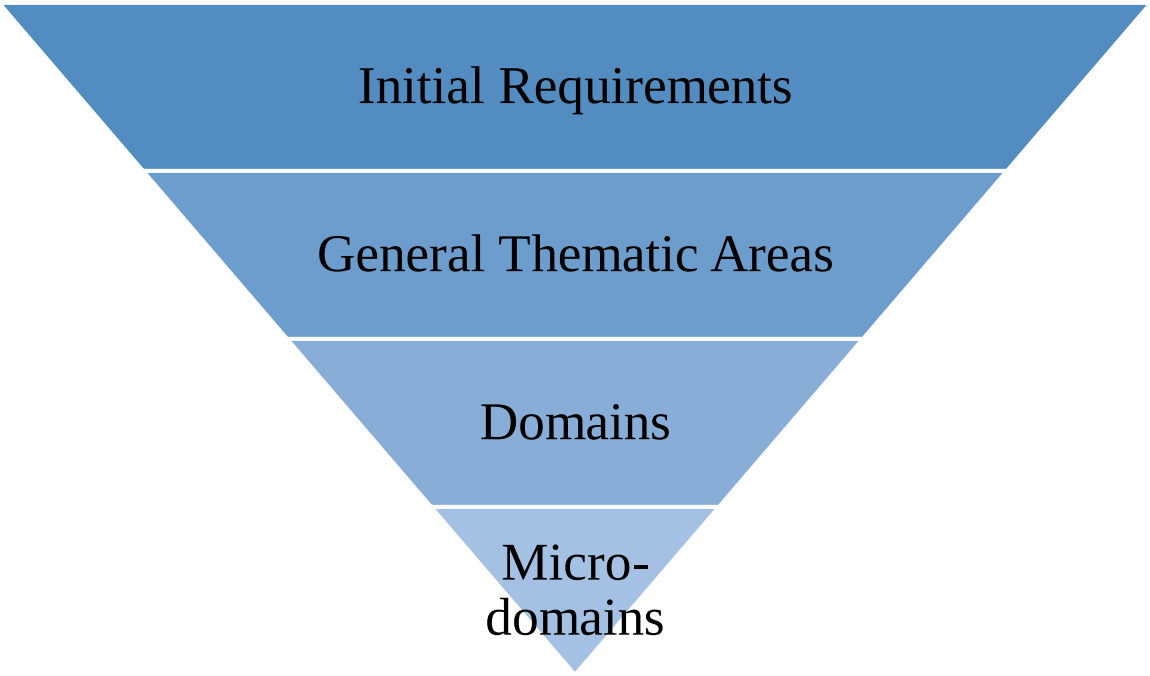
Theoretical Framework: Amusement Park Theoretical (APT) Model of Creativity

The Theoretical Framework guiding this study is Baer and Kaufman’s (2005; 2017) Amusement Park Theoretical (APT) Model of Creativity. This model is designed

to bridge domain-general creativity and domain-specific creativity (Baer & Kaufman, 2005; 2017; Kaufman & Baer, 2005). The Amusement Park Theoretical Model of Creativity includes four levels: initial requirements, general thematic areas, domains, and microdomains (Baer & Kaufman, 2005; 2017). The levels start with domain-general and slowly become more domain-specific (Baer & Kaufman, 2005; 2017).

Figure 2.1

The Four Levels of the Amusement Park Theoretical Model of Creativity (APT)



The first level is initial requirements which states that the initial requirements for creativity to occur at all include intelligence, motivation, and environment (Baer & Kaufman, 2005; 2017). These requirements are domain-general and are required regardless of the domain. Within the amusement park analogy, initial requirements are similar to initial requirements for an amusement park (Baer & Kaufman, 2005; 2017). These might include things like a ticket or transportation to the park (Baer & Kaufman,

2005; 2017). After initial requirements are met, then increasingly domain-specific skills are applied to creativity (Baer & Kaufman, 2005; 2017).

The second level addresses general thematic areas like art or science (Baer & Kaufman, 2005; 2017). Within the amusement park analogy, general thematic areas are like the type of amusement park — are you looking for roller coasters, water, or specific characters? Baer & Kaufman (2017) suggest that additional research should be conducted in this area and there are different ways to conceptualize general thematic areas. However, Baer & Kaufman (2017) identify the Kaufman Domains of Creativity Scale (Kaufman, 2012) as the current measure of five general thematic areas.

The Kaufman Domains of Creativity Scale (K-DOCS) is a popular instrument for measuring domain-specific creativity (Plucker et al., 2019). This instrument uses a Likert scale to measure five different domain-specific areas related to creativity: Self/Everyday, Scholarly, Performance, Mechanical/Scientific, and Artistic (Plucker et al., 2019). The K-DOCS was designed to measure domain-specific creativity to "create a self-report, behavior-based creativity rating scale that reflects a domain-specific perspective of everyday creativity," (p. 299).

The next level in the Amusement Park Theoretical model is domains (Baer & Kaufman, 2005; 2017). Domains in this level are more specific than in the previous level. For example, if the general thematic area is performance, then a domain area might be theatre acting or solo singing (Baer & Kaufman, 2017). In the analogy of the amusement park, domains might be like selecting the amusement park. Once you've decided you

want to see water, then you need to select which specific water park you will attend (Baer & Kaufman, 2017).

The final level in the Amusement Park Theoretical model of creativity is micro-domains (Baer & Kaufman, 2005; 2017). These are very domain-specific areas. If the domain is psychology, then you may have a micro-domain of "clinical, cognitive, social, developmental, neuroscience, educational, or organizational," (Baer & Kaufman, 2017, p. 43). Within the analogy of the amusement park, micro-domains might be the specific areas of the park or rides within the amusement park that you chose.

The Amusement Park Theoretical model of creativity directly relates to both domain-specific creativity and domain-general creativity (Baer & Kaufman, 2005; 2017). The model outlines that creativity includes both domain-specific and domain-general components and suggests the Kaufman Domains of Creativity Scale as a measure for domain-specific creativity (Baer & Kaufman, 2005; 2017). The Amusement Park Theoretical Model of Creativity will act as the theoretical framework to guide this study.

Table 2.0.1

The Amusement Park Theoretical Model of Creativity

Level	Amusement Park Examples	APT Model Examples
Initial Requirements (the highest degree of domain generality)	Transportation to the park, a ticket to enter, money	**Intelligence, motivation** (whether intrinsic or extrinsic) to do or create something, an **environment** that allows some form of creativity
General Thematic Areas	What type of amusement park? Rides, animals, water, cartoon characters, etc.	Everyday, scholarly, performance, math/scientific, or artistic creativity (among others)
Domains	Picking the actual amusement park itself	Within math/science (for example) it could be chemistry, biology, physics, psychology, economics, etc.
Micro-domains	Within the actual amusement park, where do you go?	Within psychology (for example): clinical, cognitive, social, developmental, neuroscience, educational, or organizational

Note. From "The Amusement Park Theoretical Model of Creativity," by J. Baer & J. C. Kaufman, 2017, In J. C. Kaufman, V. P. Glaveanu, & J. Baer (Eds.), *The Cambridge Handbook of Creativity Across Domains*, p. 42-43. Copyright 2017 by Cambridge University Press.

The Amusement Park Theoretical Model of Creativity is the theoretical framework guiding this study. This model is designed to bridge domain-general creativity and domain-specific creativity (Baer & Kaufman, 2005; 2017; Kaufman & Baer, 2005). The APT model includes four components: initial requirements, general thematic areas,

domains, and micro-domains. Initial requirements for creativity are discussed in-depth in the next section.

Initial Requirements for Creativity

There are specific initial requirements that can support an individual's creativity. As described by the Amusement Park Theoretical Model of Creativity (Baer & Kaufman, 2005; 2017). Initial requirements are things that allow people the opportunity to be creative within three areas: general intelligence, motivation, and a supportive environment (Baer & Kaufman, 2005; 2017).

Intelligence is the first dimension of the initial requirements for creativity. Intelligence and creativity are related (Baer & Kaufman, 2005; 2017; Renzulli & Reis, 2018). There are many types of intelligence, and no single definition of intelligence exists that is generally agreed upon by researchers (Baer & Kaufman, 2017; Gardner, 2011; Renzulli & Reis, 2018).

Motivation is another component that may influence creativity (Hennessey, 2019; Runco 2005). Runco (2005) describes the importance of intrinsic motivation when it comes to developing personal creativity. "A child will not choose to put the effort into constructing an original interpretation unless he or she is motivated to do so," (Runco, 2005, p. 300). Hennessey (2019) describes the importance of motivation in creative development, "without the right kind of motivation, we are unlikely to play with ideas, take risks, or feel at all comfortable with the possibility of failure. Without the right kind of motivation, creativity is nearly impossible," (p. 374). Some researchers argue that

motivation is one of the initial requirements for creativity (Runco, 2005; Hennessey, 2019).

Creatively gifted children tend to be highly persistent, and sometimes they are so interested in a domain or problem that they invest all of their discretionary time into it. The result becomes a huge knowledge base along with domain-specific skills that may allow them to become productive and creative adults (Runco, 2005, p. 301).

A supportive environment is another area that may specifically influence future creative achievement (Hunter et al., 2007). Within the environment, there are experiences and opportunities presented that impact creative potential in the future (Beghetto & Kaufman, 2014). There are a variety of environments that support creativity (Beghetto & Kaufman, 2014; Hunter et al., 2007), including those tasks that are supportive of developing creativity such as challenge, support, and risk-taking (Hunter et al., 2007). Classrooms are one example of an environment where creativity can be fostered and developed or suppressed and dismissed (Beghetto & Kaufman, 2014). The environment within a classroom dictates the creative learning environment and whether it is supportive or not (Beghetto & Kaufman, 2014). Children who are exposed to different domains may be inspired to create (Runco, 2005), and this exposure to new ideas can support children in finding an interest area and developing their creative potential within that area (Runco, 2005).

Research supports the fact that creativity is not an innate talent that some people are born with while others are not (Hunter et al., 2007; Plucker et al., 2004; Renzulli & Reis, 2018). Rather, creativity is a skill that can be developed and fostered over time

(Feldhusen, 2005; Renzulli & Reis, 2018; Runco, 2005). Researchers describe creativity as malleable (Ambrose & Macheck, 2015; Kim, 2006; Torrance, 1972; VanTassel-Baska, 2005). Researchers also agree that when creativity is fostered, it thrives, when creativity is not fostered, it dissipates (Ambrose & Macheck, 2015; Kim, 2006; Torrance, 1972; VanTassel-Baska, 2005), this implying that creativity can be learned. Creativity training has been explored as one option for developing and learning creativity (Baer & Kaufman, 2005; Hunter et al., 2007; Mansfield et al., 1978; Plucker et al., 2004; Scott et al., 2004a; 2004b).

Creativity Skills Training

Creativity can be learned in a variety of ways; one of the most frequently used approaches to teaching and learning creativity is creativity skills training (Baer & Kaufman, 2005; Mansfield et al., 1978; Scott et al., 2004a, 2004b). Research shows that creativity skills training programs support the development of creative skills and creative thinking processes (Beghetto, 2014; Grohman et al., 2006; Mansfield et al., 1978; Scott et al., 2004a; Treffinger & Isakson, 2005). Creativity skills training has been one of the preferred approaches to enhancing creativity because the belief among researchers is that general-creativity skills support domain-specific creativity skills (Baer & Kaufman, 2005; Mansfield et al., 1978; Scott et al., 2004a, 2004b). Creativity skills training experiences should tailor their programming to their purpose (Baer & Kaufman, 2005).

Creativity Skills Training Defined

"Creativity training can be defined as instruction to develop an individual's capability to generate novel and potentially useful solution to (often complex and ill-

defined) problems" (Birdi, 2016, p. 298). The principles that underlie creativity skills training include reducing fixed thinking, increasing originality, increasing divergent or convergent thinking, increasing motivation, and increasing creative self-efficacy (Birdi, 2016). Other researchers describe creative cognitive processes, like divergent thinking, that can only be taught domain-generally because they take on a different meaning in different domains (Kleibeuker et al., 2016). Notice the above principles address domain-general creativity. It is also important that domain-specific creativity is addressed within creativity skills training efforts. Plucker (2005) stresses the importance of creativity skills training that addresses both domain-specific creativity and domain-general creativity; "focusing enhancement efforts solely on domain-specific strategies will be difficult—if not impossible—and probably not very effective," (pp. 311-312). Creativity skills training has many outcomes and effects that are discussed in the next section.

Outcomes/Effects of Creativity Skills Trainings

Research regarding the practical effects of creativity skills training over time is unclear (Birdi, 2016; Mansfield et al., 1978; Renzulli & Reis, 2018). Some research demonstrates positive impacts of creativity skills training in the moment including

> increased satisfaction, evidence that academic achievement is not affected by creative performance, writing more creatively in different genres-one student even wrote a novel, growth in personality and the acquisition of a healthy self-concept, improvement in attitudes toward mathematics, and an openness to pursuing creative choices. (Piirto, 2004, p. 416-417)

The majority of research around creativity skills training focuses on in-the-moment impacts or impacts around two weeks after training (Birdi, 2016; Mansfield et al., 1978; Renzulli & Reis, 2018). The impacts of creativity skills training over time,

from childhood to adulthood, for example, is unclear and have not yet been measured in research (Beghetto, 2014; Birdi, 2016; Li & Kaufman, 2014; Mansfield et al., 1978; Meinel et al., 2018; Renzulli & Reis, 2018).

Research regarding domain-general training has generally occurred within the workplace and within schools. A study by Kienitz et al. (2014) used existing literature on domain-specific training within the workplace to test the possibility of domain-general training in adults. Their findings supported the idea that adults experiencing domain-general creativity skills training does improve creativity across domains (Kienitz et al., 2014). Studies with adolescent and child participants find that domain-general creativity skills training, like creativity skills training that focuses on divergent thinking, is impactful and improves student creativity (Mansfield et al., 1978; Renzulli & Reis, 2018).

Research around domain-specific training has occurred but primarily within the context of the workplace (Charyton & Merrill, 2009). Findings are mixed but generally show that domain-specific training improves adult creativity within the workplace (Charyton & Merrill 2009; Fontenot, 2013; Herrmann & Felfe, 2013).

How long and how impactful creativity skills training is over time is unclear (Beghetto, 2014; Li & Kaufman, 2014; Meinel et al., 2018). Researchers are still developing theories and principles around what makes creativity skills training impactful (Beghetto, 2014; Beghetto, 2016; Meinel et al., 2018; Scott et al., 2004a), how long the training must occur for the impact to be long-lasting (Beghetto, 2014; Li & Kaufman,

2014; Meinel et al., 2018; Scott et al., 2004b), and how time passing after creativity skills training impacts creativity (Beghetto, 2014; Beghetto, 2016; Meinel et al., 2018).

It is unclear if the short-term effects of creativity skills training have long-term effects on creativity (Birdi, 2016; Mansfield et al., 1978; Renzulli & Reis, 2018). It is also unclear if creativity training has impacts on domain-specific creativity, domain-general creativity, both, or neither. There are several creativity skills training experiences described in detail in the next section.

Creativity Skills Training Experiences

There are many creativity skills training experiences that assert they support participants in developing creativity skills (Missett et al., 2013; Piirto, 2004). These include experiences like Creative Problem Solving, Odyssey of the Mind, and Destination Imagination (Piirto, 2004).

Creative Problem Solving is the original creativity skills training experience and it focuses on teaching divergent and convergent thinking to support participants in creating the best solution (Piirto, 2004). Many creativity skills training experiences stem from Creative Problem Solving, including Odyssey of the Mind (OM) and Destination Imagination; both are international competitive experiences that engage participants in creative problem solving (Piirto, 2004).

Destination Imagination

Destination Imagination is a global educational experience that spans from kindergarten through the university level. The organization was founded in 1999 by several members of a separate creativity skills training program (Missett et al., 2013).

Destination Imagination engages participants in “project-based challenges that are designed to build confidence and develop extraordinary creativity, critical thinking, communication, and teamwork skills.” (Destination Imagination, 2018b). Teams of two to seven students in grades K-12 engage in an education designed to support students in taking “their learning to the next level,” (Destination Imagination, 2020a, p. 3). The Destination Imagination experience includes two primary parts: instant challenge and team challenge.

The instant challenge offered by Destination Imagination is an opportunity for teams of students to “engage in quick, creative and critical thinking,” (“Team Challenges,” 2021). Destination Imagination describes instant challenges as problem-solving opportunities where “the team must think on their feet by applying appropriate skills to produce a solution in a short period of time,” (“Team Challenges,” 2021). Scoring for an instant challenge typically includes elements like teamwork, creativity, and originality (Destination Imagination, 2020b). Instant challenges are designed to support domain-general creativity as they focus on domain-general skills like originality (see Appendix A for an example of an instant challenge).

The team challenge is a year-long competitive challenge (“Team Challenges,” 2021). Each team participating in Destination Imagination will choose one team challenge to focus on for the tournament season (Destination Imagination, 2021). There are six domain-specific choices for the team challenge: technical, scientific, fine arts, service learning, engineering, and improvisational (Destination Imagination, 2021). The team challenges offered by Destination Imagination are domain-specific challenges

because they are tailored to specific domains. These challenges are appraised for student creativity and innovation within the domain. For example, the technical challenge for the 2020-21 competition includes technical innovation as a scoring element (Destination Imagination, 2020c). See Appendix B for the scoring sheet for the 2020-21 technical team challenge.

Destination Imagination is one example of a creativity skills training experience that focuses on both domain-general and domain-specific elements. The philosophy around creativity as both domain-general and domain-specific is present in both the Destination Imagination creativity skills training experience and the Amusement Park Theoretical Model of Creativity. Self-beliefs of the ability to be creative are discussed in the next section.

Creative Self-Efficacy

Creativity is malleable and can be improved through techniques like creativity skills training (Birdi, 2016; Karwowski et al., 2019). A similar construct, creative self-efficacy, is also malleable and can be influenced by a variety of factors including environmental factors (Birdi, 2016; Karwowski et al., 2019). Creative self-efficacy is the self-belief that one is capable of producing creative works (Karwowski et al., 2019; Plucker et al., 2019; Sternberg, 2019; Tierney & Farmer, 2002, 2011).

A precursor to creativity is believing one is creative, and Sternberg (2019) describes this idea as *creative self-efficacy*. Creative self-efficacy describes how creative a person believes they can be (Plucker et al., 2019; Sternberg, 2019; Tierney & Farmer, 2002, 2011). This first conceptualization takes a domain-general approach. Other

researchers have described it as “perceived confidence to creatively perform a given task, in a specific context, at a particular level,” (Karwowski et al., 2019, p. 399). Focusing on a specific context at a particular level takes a domain-specific approach.

Research on the topic of creative self-efficacy provides evidence that creative self-efficacy changes over time (Tierney & Farmer, 2011). Creative self-efficacy can be influenced by many factors including creativity skills training (Birdi, 2016; Karwowski et al., 2019). Tierney and Farmer (2011) found that when employees see their role as more creative or see their supervisors as expecting creativity, then employee creative self-efficacy increases. The way individuals view their role impacts perceptions of creative self-efficacy and the way individuals view their supervisor's expectations also impacts creative self-efficacy (Tierney & Farmer, 2011). Both of these elements support the idea that creative self-efficacy is malleable.

Creative self-efficacy is also correlated with student beliefs about their performance (Beghetto, 2006). Beghetto (2006) found that students with high levels of creative self-efficacy were more likely to participate in structured after-school activities.

There are mixed findings regarding creative self-efficacy and its impact on creativity (Haase et al., 2018). Some studies show that creative self-efficacy is related to some domains and not others (Paek et al., 2016). Paek et al. (2016) found that creative self-efficacy was significantly moderately related to creative performance in science, math, fine arts, music, and writing where a higher creative self-efficacy predicted higher creative performance in the specific domain. A meta-analysis by Haase et al. (2016) found that overall creative self-efficacy has a moderate correlation with all creativity

measures, but the correlation strengthened and weakened depending on the type of creativity measure used. The research article for stronger conceptualizations around creative self-efficacy and creativity.

Tierney and Farmer (2002) developed the first creative self-efficacy measure of only three items. It was designed based on self-efficacy and creativity literature (Tierney & Farmer, 2002). Tierney and Farmer (2002) developed a domain-general creative self-efficacy measure that includes items like "I am good at coming up with new ideas." Since Tierney and Farmer (2002) released their self-report instrument, several studies have adapted the instrument (Beghetto, 2006; Beghetto et al., 2011) for use in other research. Other researchers have constructed measures of Creative Self-Efficacy (Farmer & Tierney, 2017; Karwowski et al., 2013) or adapted Tierney and Farmer's (2002) measure, (Beghetto, 2006; Beghetto et al., 2011; Farmer & Tierney, 2017). Some of the adapted measures include domain-specific items like "I am good at coming up with new ideas when solving math problems," (Beghetto & Baxter, 2012). The majority of creative self-efficacy assessments, both domain-specific and domain-general, are short and only contain a few questions similar to the example questions above (Beghetto, 2006; Beghetto et al., 2011; Tierney & Farmer, 2002, 2011). When discussing creativity measures, it is critical to discuss self-report measures. Self-report measures are covered in the next section.

Self-Report Measures

Self-report measures are common for measuring creativity (Plucker et al., 2019); indeed "the best predictor of future creative behavior may be past creative behavior" (Colangelo et al., 1992, p. 158).

The main concern with self-report measures is validity (Gliner et al., 2017). For these measures to be non-biased and provide accurate data for research, the assumption that participants will provide answers in good faith must be made (Gliner et al., 2017).

Findings around the validity of self-report measures are mixed. There is evidence that self-report and self-perception measures are creativity are valid measures of creative potential, and there is evidence that they are not valid measures of creative potential (Kaufman et al., 2008; Plucker et al., 2019). Using self-perception and self-report as a measure can be challenging with some populations like younger children for example (Plucker et al., 2019).

Overall, researchers have mixed findings on the validity of self-report measures (Kaufman et al., 2008; Plucker et al., 2019). Research has found that the current creativity self-report measures are highly correlated with each other, creating a body of evidence for reliability (Kaufman et al., 2008). These self-report instruments include the CPI Creativity Scale, MBTI Creativity Index, and the Kirton Adaption-Innovation Inventory (Fleenor & Taylor, 1994); Creative Motivation Scales, and Adjective Check List (Goldsmith & Matherly, 1988); Inventory of Creative Activities and Achievements, Creative Achievement Questionnaire, and the Kaufman Domains of Creativity Scale (McKay, Karwowski, & Kaufman, 2017). There are several studies relevant to creativity

and measures of creativity. The next section details previously conducted studies relevant to this study.

Relevant Studies

Relationships between domain-specific creativity, creative self-efficacy, and creativity skills training have been explored in research (Baer & Kaufman, 2005; McKay, Karwowski, & Kaufman, 2017; Tierney & Farmer, 2011). Some researchers argue that creativity skills training should be domain-specific (Baer & Kaufman, 2005). Other researchers push for domain-specific and domain-general creativity skills training experiences (Plucker, 2005). Successful creativity skills training programs focus on cognitive skills, skill application, and tasks that ask participants to work within a specific domain (Scott et al., 2004a), implying that both domain-specific and domain-general creativity skills training is necessary.

Baer (1996) conducted a quasi-experimental study on the impact of divergent thinking training in the area of poetry on creativity performance in poetry and story writing. This training was both domain-specific and domain-general because it addressed divergent thinking, a domain-general skill, within the specific domain of poetry. The study included 157 seventh-grade students in one middle school in New Jersey (Baer, 1996). Students were randomly assigned to one of two classes at the start of the school year (Baer, 1996), with one class assigned to the control group and the other assigned to the experimental group (Baer, 1996). Researchers then provided creativity training in the form of divergent thinking exercises to the experimental group (Baer, 1996). Creativity training occurred twice a week over four weeks (Baer, 1996). The control group received

no creativity skills training (Baer, 1996). Creativity training exercises were designed to increase fluency, flexibility, originality, and elaboration (Baer, 1996). Creativity training exercises were related to poetry and included rhyme, alliteration, metaphor, and imagery (Baer, 1996). After all creativity training sessions, both classes (the experimental and control) were asked to write a story and a poem (Baer, 1996). Students were told that stories and poems would be scored by judges (Baer, 1996). The judges were familiar with middle school student work and all had qualifying credentials for rating the stories and poems (Baer, 1996). Judges had the poems and stories presented to them in a random order. Each judge independently rated the poems and stories based on creativity using a 1.0-5.0 scale (Baer, 1996). The poems created by the class receiving creativity training were significantly higher than the class that did not receive creativity training (Baer, 1996). The stories were not found to be significantly different ($p = 0.54$) although the experimental group did have a higher mean score than the control group for creativity (Baer, 1996).

The relationship between domain-specific creativity and creative self-efficacy has been explored by several research studies (Beghetto & Baxter, 2012; McKay, Karwowski, & Kaufman, 2017; Tierney & Farmer, 2011). Beghetto and Baxter (2012) used a correlational quantitative study to examine "how students' self-beliefs might be related to teachers' ratings of students' math and science understanding," (p. 946). Researchers asked 276 third through fifth-grade participants across twelve elementary schools to participate in this study (Beghetto & Baxter, 2012). All data used in the study came from a teacher development project that "aimed a promoting inquiry science and

problem-based mathematics teaching" (Beghetto & Baxter, 2012, p. 947). Data were analyzed from a student survey and teacher ratings of students' science and math understanding (Beghetto & Baxter, 2012). The student survey also included Likert-type items to rate students' science and math creative self-efficacy (Beghetto & Baxter, 2012). All Likert-type items were measured on a scale of 1-5 (Beghetto & Baxter, 2012). The items in the Likert-type section were adapted from existing measures and modified to assess creative self-efficacy in the domain-specific areas of math and science (Beghetto & Baxter, 2012). Scale scores for students' creative self-efficacy for math and science were calculated by averaging student responses on the items measuring math or science (Beghetto & Baxter, 2012). Beghetto and Baxter (2012) found that creative self-efficacy ratings in math were related to math understanding, but the same was not true of creative self-efficacy ratings in science.

Tierney and Farmer (2011) explored creative self-efficacy by looking at factors that impact employee creative self-efficacy, and creativity performance levels. The research used surveys and instruments to collect several pieces of data over time. All employees were invited to participate in the survey and supervisors were invited to rate the creativity of employees. The creative self-efficacy measure used Tierney and Farmer's 2002 three-item instrument (Tierney & Farmer, 2011). Tierney and Farmer (2011) found that increasing creative self-efficacy can increase creative performance at work.

McKay, Karwowski, and Kaufman (2017) designed a two-fold study to explore the factor structure of the Kaufman Domains of Creativity Scale (K-DOCS) and various

types of creativity. The first part of the study examined the factor structure of the K-DOCS to provide evidence of construct and discriminant validity. The second purpose of the study was to explore the types of creativity (the study refers to them as "latent profiles") using the K-DOCS (McKay, Karwowski, & Kaufman, 2017). There were two sets of participants in this study, participants from Amazon MTurk and participants from an online panel in Poland (McKay, Karwowski, & Kaufman, 2017). Participants from Amazon MTurk were paid $0.50 for their participation in the study. Participants from Amazon MTurk were excluded from the data if they were missing data points, or if they clicked the same level of scale more than 80% of the time (McKay, Karwowski, & Kaufman, 2017). After exclusions, 825 adults were included in the study (McKay, Karwowski, & Kaufman, 2017). Participants completed the K-DOCS instrument, a Big Five measure, then at the end provided demographic data (McKay, Karwowski, & Kaufman, 2017).

The participants from Poland completed several instruments: K-DOCS, Big Five measure, International Personality Item Pool (IPIP), creative self-efficacy, intelligence, Inventory of Creative Activities and Achievements, Creative Achievement Questionnaire, and the dark triad dirty dozen (a personality measure) (McKay, Karwowski, & Kaufman, 2017). Each instrument was completed in a random order (McKay, Karwowski, & Kaufman, 2017). Relationships among domain-specific creativity as measured by the Kaufman Domains of Creativity Scale (K-DOCS) and creative self-efficacy were measured McKay, Karwowski, & Kaufman, 2017). Creative self-efficacy was found to

predict three of the five K-DOCS factors: Everyday creativity, Scholarly creativity, and Science creativity (McKay, Karwowski, & Kaufman, 2017).

Overall, the study used bivariate correlations with both the Amazon MTurk sample and the Polish sample and found that Big Five factors were related to specific domains of the K-DOCS (McKay, Karwowski, & Kaufman, 2017). Researchers also found that creative self-efficacy is a significant predictor of three of the five K-DOCS domains: Everyday, Scholarly, and Science (McKay, Karwowski, & Kaufman, 2017).

The study by McKay et al. (2017) provides a solid foundation for research and can be used to support a pattern in relevant research. There are many topics not covered in current literature. The gap in literature is described in the following section.

Gap in Literature

Researchers remain curious about the long-term impact and effectiveness of creativity enrichment like creativity skills training on creativity (Birdi, 2016; Mansfield et al., 1978; Renzulli & Reis, 2018). The link between participating in youth creativity skills training and adult creative success is unknown (Birdi, 2016; Mansfield et al., 1978; Renzulli & Reis, 2018). The majority of studies around creativity skills training do not measure the impact of the creativity skills training over long periods.

Short-term adult creativity skills training experiences show that immediately after receiving creativity skills training, creativity scores in adult business professionals increases (Fontenot, 1993). A study using an experimental design by Fontenot (1993) found that flexibility and fluency increase in participants that receive creativity skills training compared to their peers that do not receive creativity skills training.

Basadur, Graen, and Green (1982) measured creativity after creativity skills training at two points in time. First, immediately after the training, and second, after returning to work. It was found that the creativity skills training improved adult creativity significantly both immediately after training and two weeks later (Basadur et al., 1982).

Cliatt et al.'s (1980) eight-week study on kindergarten children and their creativity found that training over eight weeks still allowed kindergarten children to increase their creativity (Cliatt et al., 1980). This study measured creativity immediately after training (Cliatt et al., 1980).

One study that takes a longer-term approach measures the effects of creativity skills training in middle school students six months after creativity training ended (Baer, 1988). The study by Baer (1988) found that creativity scores of participants that received creativity skills training were still significantly higher than the peers of participants that did not receive creativity skills training, even after six months had passed. Another study had similar findings after eleven months had passed (Glover, 1980).

One of the longest studies completed on creativity training includes college students engaging in creativity skills training for two years (Reese et al., 1976). This study found that over this two-year experimental study, participants receiving creativity skills training grew their divergent thinking abilities but did not improve their memory or evaluation abilities (Reese et al., 1976).

There is a dearth of information on the impact of youth creativity skills training and the impact on creativity or creative self-efficacy of adults. Few research studies explore the impact of creativity skills training on creativity (Beghetto, 2014; Birdi, 2016;

Hunsaker, 2005; Meinel et al., 2018). Further, research on the impact of creativity skills training on domain-specific creativity is still developing (Beghetto, 2014; Sternberg, 2019). The impact of length of participation in creativity skills training and the length of time since participating in creativity skills training is unclear (Beghetto, 2014; Li & Kaufman, 2014; Meinel et al., 2018). Researchers are still developing theories and principles around what makes creativity skills training impactful (Beghetto, 2014, 2016; Meinel et al., 2018; Scott et al., 2004a), how long the training must occur for the impact to be long-lasting (Beghetto, 2014; Li & Kaufman, 2014; Meinel et al., 2018; Scott et al., 2004b), and how time passing after creativity skills training impacts creativity (Beghetto, 2014, 2016; Meinel et al., 2018).

The Amusement Park Theoretical Model of Creativity suggests that creativity is both domain-specific and domain-general (Baer & Kaufman, 2005; 2017). Creativity skills training has been explored, but a creativity skills training experience rarely addresses both domain-general and domain-specific elements of creativity within a research study (Baer, 1996). Additionally, creative self-efficacy and its relationship with domain-specific creativity and creativity skills training that focuses on both domain-general creativity and domain-specific creativity is not well researched (Beghetto, 2014, 2016; Birdi, 2016; Meinel et al., 2018; Scott et al., 2004a).

Summary

Chapter Two provided an outline of existing literature to support the purpose of this study. Topics on creativity, both domain-general and specific were discussed in depth. The theoretical framework that guided the study, the Amusement Park Theoretical

Model of Creativity, was introduced as a strategy for connecting creative self-efficacy, domain-specific creativity, domain-general creativity, and creativity skills training. Literature around creativity skills training, creative self-efficacy, and self-report measures are discussed in detail. The chapter closes with discussions of the gap in the literature.

CHAPTER THREE: METHODOLOGY

Overview

The previous section detailed literature related to this study. The purpose of this section is to detail the research methodology for this study, including the research design, population and sampling, recruitment, instrumentation, data management, data analysis, and limitations. The structure of the study, including the qualitative and quantitative phases, is discussed in depth.

Purpose of Study

The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. This study will increase the body of research around domain-specific creativity, creativity skills training, and creative self-efficacy using the theoretical framework of the Amusement Park Theoretical Model of Creativity as a lens. The findings may have implications for educators that intend to support creative development in their classrooms and schools. The theoretical framework guiding this work is discussed next.

Theoretical Framework

The theoretical framework guiding this study is the Amusement Park Theoretical Model (APT) (Baer & Kaufman, 2005; 2017; Kaufman & Baer, 2005). The methodology

of this study is connected to the four main components of the APT: initial requirements, general thematic areas, domains, and micro-domains (see Table 3.1).

Table 3.1

The Amusement Park Theoretical Model of Creativity

Level	Amusement Park Examples	APT Model Examples
Initial Requirements (the highest degree of domain generality)	Transportation to the park, a ticket to enter, money	**Intelligence**, **motivation** (whether intrinsic or extrinsic) to do or create something, an **environment** that allows some form of creativity
General Thematic Areas	What type of amusement park? Rides, animals, water, cartoon characters, etc.	Everyday, scholarly, performance, math/scientific, or artistic creativity (among others)
Domains	Picking the actual amusement park itself	Within math/science (for example) it could be chemistry, biology, physics, psychology, economics, etc.
Micro-domains	Within the actual amusement park, where do you go?	Within psychology (for example): clinical, cognitive, social, developmental, neuroscience, educational, or organizational

Note. From "The Amusement Park Theoretical Model of Creativity," by J. Baer & J. C. Kaufman, 2017, In J. C. Kaufman, V. P. Glaveanu, & J. Baer (Eds.), *The Cambridge Handbook of Creativity Across Domains,* p. 42-43. Copyright 2017 by Cambridge University Press.

The Amusement Park Theoretical Model of Creativity is the theoretical framework guiding this study. This model is designed to bridge domain-general creativity and domain-specific creativity (Baer & Kaufman, 2005; 2017; Kaufman & Baer, 2005).

The APT model includes four components: initial requirements, general thematic areas, domains, and micro-domains. Research questions guiding this study are discussed next.

Research Questions

The first research question (RQ 1) is, "How do adult alumni of a creativity skills training experience report its effectiveness?" was designed to describe the experience adults had during their creativity skills training experience and provide a greater understanding of how alumni view creativity skills training that addresses both domain-general creativity and domain-specific creativity. RQ 1 supports the theoretical framework component initial requirements. Both quantitative and qualitative data were collected to support this question.

Research question two (RQ 2) is, "How do adult alumni of a creativity skills training experience report their domain-specific creativity?" was designed to describe the domain-specific creativity areas of adults that engaged in a creativity skills training experience and support the theoretical framework component general thematic areas. Both quantitative and qualitative data were collected to support this answering this research question. Answering this question supports an understanding of alumni domain-specific creativity and the way alumni view their creativity.

Research question three (RQ 3) is, "How do adult alumni of a creativity skills training experience report their creative self-efficacy?" was designed to describe the creative self-efficacy of adults that engaged in a creativity skills training experience and support the theoretical framework component initial requirements. Both quantitative and qualitative data were collected to support answering this research question. Answering

this question supports the understanding of individual beliefs regarding domain-general creative self-efficacy.

Research question four (RQ 4) is, "What are the relationships among adult perceptions of creativity skills training impact, domain-specific creativity, and creative self-efficacy?" was designed to measure the relationships among creativity skills training impact, domain-specific creativity, and creative self-efficacy and explore the interaction between theoretical framework components. This question supports understanding of relationships among the three variables and provides insight into creativity. These research questions support the purpose which is grounded in the context of the literature and the persistent problem of practice. Research questions also use the theoretical framework as a guide. The following section details the research methodology which support the theoretical framework and purpose of the study.

Research Methodology

This study employed a mixed-methods research approach. A mixed-methods approach can be conceptualized as:

> An approach to research in the social, behavioral, and health sciences in which the investigator gathers both quantitative (closed-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems. (Creswell, 2015, p. 2)

The assumption of mixed methods research is that qualitative and quantitative research combine to strengthen the research and create a better understanding of the problem of practice than qualitative research alone or quantitative research alone (Creswell, 2015;

Creswell & Creswell, 2018). The research design supporting the methodology is outlined in the next chapter.

Research Design

This study used an explanatory sequential mixed methods design to investigate relationships among creativity skills training impact, domain-specific creativity, and creative self-efficacy. An explanatory sequential mixed methods design includes two phases of data collection: the first phase includes quantitative research, and the second phase includes qualitative research (Creswell & Creswell, 2018).

In phase one of this study, quantitative data were collected data from three instruments: the Kaufman Domains Scale of Creativity, the Destination Imagination Survey, and a measure of creative self-efficacy. The data collected from the quantitative phase was analyzed using descriptive statistics and correlations. Correlational research is used to "describe and measure the degree of association (or relationship) between two or more variables or sets of scores," (Creswell & Creswell, 2018, p. 12).

In phase two of the study, qualitative data were collected through structured interviews. A narrative approach is used to "tell stories of individual experiences" (Creswell & Poth, 2018, p. 67). The stories of individual experiences highlight various components of the theoretical framework throughout. The qualitative data captured nuance and clarity that quantitative data, collected during the first phase of data collection, did not capture (Creswell & Creswell, 2018). The details of the quantitative and qualitative phases are discussed below.

Phase One: Quantitative Phase

Population and Sampling

The population includes all alumni associated with the Destination Imagination Alumni Network. In 2014, Calkin and Karlsen reported that more than 200,000 students participate in Destination Imagination every year. The true number of the Destination Imagination alumni is unknown. The community partner supporting this work is the Destination Imagination Alumni Network. Only Destination Imagination alumni that were on the Destination Imagination Alumni Network email list or members of the Destination Imagination Alumni Network Facebook group were accessible. Destination Imagination does not keep a list of student or parent contact information (Callahan & Missett, 2011), so the only accessible alumni were those that are members of the Destination Imagination Alumni Network. Accessible Destination Imagination Alumni Network members are limited because members include Destination Imagination participants that graduated high school while concurrently involved in the experience or alumni that signed up to be part of the Alumni Network (personal communication, K. Nylander, April 18, 2021). Additionally, Destination Imagination Alumni Network typically recruits during the Global Finals competition which includes only the most competitive Destination Imagination teams (personal communication, K. Nylander, April 18, 2021). Due to this challenge, members of the Destination Imagination Alumni Network that are included on the Alumni Network email list (about 1,000 people) and alumni on the Destination Imagination Alumni Facebook group (between 1,000 and 1,100 people) were the accessible members of the alumni group (personal

communication, K. Nylander, April 18, 2021). There may be overlap in some of the individuals on the email list and the Facebook group (personal communication, K. Nylander, April 18, 2021).

Historically, a minimum of 30 participants has been recommended for correlational research designs (Gliner et al. 2017). This study included 49 participants who attempted the survey. Thirty-eight people fully completed the survey and these data were used for analysis. Participant recruitment is described in the following section.

Recruitment

Recruitment for the quantitative phase of the study occurred through the Destination Imagination Alumni Network. Possible participants were notified about the opportunity to participate in an online survey through the *Alumni Compass,* an online newsletter sent out to Destination Imagination alumni via email from the Destination Imagination Alumni Network. Additionally, possible participants were notified about the opportunity to participate in the study through a post on the Alumni Network Facebook social media group. See Appendix C for a full copy of the recruitment flyer that was attached to the online newsletter and the Facebook page post. Possible participants then had the opportunity to voluntarily complete the Qualtrics survey which addressed the quantitative part of the study. Informed consent was collected from participants using Qualtrics before beginning the survey (see Appendix D). The instruments used during the data collection process are described next.

Instrumentation

All instruments were administered electronically in a survey format using Qualtrics software. Email and social media were the most efficient way to contact possible participants as the most up-to-date alumni contact information is email. Additionally, alumni were available on the Destination Imagination Alumni Network Facebook page. Destination Imagination is a global organization and alumni live across the globe. Administering instrumentation online is appropriate given the various locations of participants and online accessibility.

The survey consisted of four parts: Destination Imagination survey, Kaufman Domains of Creativity Scale (K-DOCS), a measure of creative self-efficacy, and demographics. Each part of the survey is discussed in detail below.

Destination Imagination Survey.

The Destination Imagination survey (Missett et al., 2013) was designed to measure "stakeholder beliefs about the impacts of Destination Imagination on the students who participated in the program," (p. 101). This study was used to measure adult alumni's perceptions of the impact of Destination Imagination. The Destination Imagination survey was influenced by Gubbins' (1986) Matrix of Thinking Skills and was pilot tested with adults and children that participated in the program. These individuals were four team managers, two-state directors, and eight participants. The Destination Imagination survey asks participants to rate items on a 5-point Likert scale ranging from *not at all* to *a great deal* (Callahan & Missett, 2011; Missett, et al., 2013). The original survey includes several categories that are unrelated to creativity therefore,

the only survey section included in this study will be the creative thinking category. The creative thinking category reads "On a scale from *not at all* to *a great deal*, how much did DI [Destination Imagination] teach about CREATIVE THINKING in the areas stated below?" Examples of a few areas listed here are "generating many ideas" and "thinking creatively even when conditions become difficult or stressful." This instrument was used to report the impact of the Destination Imagination creativity skills training experience from alumni of the experience. See Appendix E for the full instrument.

Kaufman Domains of Creativity Scale (K-DOCS).

The K-DOCS is an adult self-assessment measure of creativity. Kaufman (2012) reports that the K-DOCS instrument was created to "create a self-report, behavior-based creativity rating scale that reflects a domain-specific perspective of everyday creativity," (p. 299).

To create the K-DOCS instrument, a 94-item list of creative behaviors was created (Kaufman, 2012). The list was constructed from several versions of the Creativity Achievement Questionnaire (CDQ) (Kaufman, 2012). All items were adapted and presented as domain-specific behaviors (Kaufman, 2012). Instructions for the 94 items are as follows: "Compared to people of approximately your age and life experience, how creative would you rate yourself for each of the following acts? For acts that you have not specifically done, estimate your creative potential based on your performance on similar tasks," (Kaufman, 2012, p. 300). Participants ranked themselves on all 94 items using a 5-point Likert scale where 1 represents *much less creative* and 5 represents *much more creative*. Factor analysis on the 94-item assessment was then conducted, resulting in five

distinct domain-specific creativity factors: Self/Everyday, Scholarly, Performance, Mechanical/Science, and Artistic (Kaufman, 2012). Alpha reliabilities for each domain were greater than .80 with the highest reliability being Performance (α=.87) and the lowest reliability being Artistic (α=.83) (Kaufman, 2012). When taking the K-DOCS for a second time, correlation coefficients ranged from .76 to .86 (Kaufman, 2012) which states this is appropriate test-retest reliability.

The Big-Five, a five-factor personality measure, was used to measure the convergent validity of the K-DOCS (Kaufman, 2012). Correlations between the K-DOCS domains and the Big-Five personality factors show that both Scholarly Creativity and Performance Creativity are significantly positively correlated with the personality factors Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (Kaufman, 2012). Self/Everyday Creativity is positively correlated with Extraversion and Openness to Experience but is negatively correlated with Conscientiousness (Kaufman, 2012). Mechanical/Science Creativity is the only creativity significantly correlated with Emotional Stability (Kaufman, 2012). Mechanical/Science Creativity is also negatively correlated with Agreeableness (Kaufman, 2012). Lastly, Artistic Creativity is only correlated with Openness to Experience (Kaufman, 2012). McKay, Karwowski, and Kaufman (2017) conducted a confirmatory factor analysis of the K-DOCS where three different factor analyses were tested. Results indicated that the five-factor analysis model that did not include a creativity factor was most aligned with the data (McKay, Karwowski, & Kaufman., 2017).

In this study, the K-DOCS was used to assess adult domain-specific creativity. This is a valid self-assessment used to measure domain-specific creativity (Kaufman, 2012; McKay, Karwowski, & Kaufman 2017). A study by McKay, Karwowski, and Kaufman (2017) measures the construct validity of the K-DOCS. In this study, researchers used the Big-Five personality factors to establish construct validity. Researchers reported that openness to experience is related to four of the creativity domains: Self/Everyday, Scholarly, Science, and Artistic. They also compared the K-DOCS with other validated measures including Creative Self-Efficacy and Creative Personal Identity as measured by Karwowski's (2012) instrument, intelligence as measured by the International Cognitive Ability Resource Project, and creative domain achievement as measured by the Creative Achievement Questionnaire and the Inventory of Creative Activities and Achievements. Creative domain-general traits are related to K-DOCS factors (McKay, Karwowski, & Kaufman 2017). The K-DOCS was most strongly related to creativity domain achievement measures (McKay, Karwowski, & Kaufman, 2017). Overall, McKay, Karwowski, and Kaufman (2017) state that the K-DOCS is a "reliable and valid measure for assessing self-perceptions of domain-specific creativity" (p. 228).

In the current research study, participants rated themselves compared to same-age peers on 50 task items presented in random order (Kaufman, 2012; McKay, Karwowski, & Kaufman, 2017). The ratings consisted of a five-point Likert scale from *Much less creative* to *Much more creative* (Kaufman, 2012). One task item reads, "Researching a topic using many different types of sources that may not be readily apparent," and

another reads, “Taking apart machines and figuring out how they work,” (Kaufman, 2012). See Appendix F for the full instrument.

Creative Self-Efficacy Instrument.

Tierney and Farmer’s (2002) original creative self-efficacy measure was designed based on self-efficacy and creativity literature. The item pool from the measure went through two iterations based on factor analyses. The final creative self-efficacy measure was three items, with each item assessed on a seven-point scale ranging from one, *very strongly disagree,* to seven, *very strongly agree* (Tierney & Farmer, 2002). It was tested with two populations, employees from a manufacturing department and employees from an operations department; the alpha reliability for each was .83 and .87, respectively (Tierney & Farmer, 2002). Including additional items from prior versions of the measure did not improve the alpha reliability for either population (Tierney & Farmer, 2002). Tierney and Farmer (2002) also conducted two-factor models and single-factor models to compare creative self-efficacy and job self-efficacy. The researchers found the two measures to be distinct from one another, providing evidence for creative self-efficacy as a distinct and valid construct.

Several studies since Tierney and Farmer’s (2002) study have adapted the instrument (Beghetto, 2006; Beghetto et al., 2011). Beghetto et al. (2011) adapted the measure to create a domain-specific version for science and math. When looking at all measures of creative self-efficacy that use or build from Tierney and Farmer’s (2002) measure, there is median alpha reliability of 0.83 (Farmer & Tierney, 2017). This suggests that the measures are reliable (Farmer & Tierney, 2017).

The creative self-efficacy instrument that is used in this study was designed to measure participants' beliefs about their ability to produce creative outcomes (Beghetto, 2006). The instrument was designed based on definitions of creativity, self-efficacy, and Tierney and Farmer's (2002) work on creative self-efficacy (Beghetto, 2006). This measure has alpha reliability of .86 (Beghetto, 2006). In this study, the instrument is used to assess adult creative self-efficacy. The instrument is a brief, three-item scale: (1) "I am good at coming up with new ideas," (2) "I have a lot of good ideas," and (3) "I have a good imagination" (Beghetto, 2006; Kaufman, et al., 2008). Participants rate their agreement with each statement using a 5-point Likert scale ranging from 1, *not true,* to 5, *very true* (Beghetto, 2006).

Demographic Data and Destination Imagination Experience.

The survey collected demographic data and perceptions of the Destination Imagination experience from participants. Descriptive data include gender, race and ethnicity, educational background, and career background. Data also include grade-level involvement in the Destination Imagination experience, the challenges participants were involved in, the length of participation, and the time since last participating in the experience.

Gender data were collected by a single-select item with five options: woman, man, non-binary/gender non-conforming, not listed (with space available to describe), and prefer not to answer.

Race and ethnicity data were collected by a multiple-select item with twelve options: African, Black/African American, Asian-American, East Asian (including

Chinese, Japanese, Korean, Mongolian, Tibetan, and Taiwanese), Latinx/Hispanic, Indigenous American/First Nations (including Native American/American Indian, Alaskan Native, Pacific Islander, and Native Hawaiian), Middle Eastern, South Asian (including Bangladeshi, Bhutanese, Indian, Nepali, Pakistani, and Sri Lankan), Southeast Asian (including Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Thai, and Vietnamese), White, not listed (with space available to describe), and prefer not to answer (*Measuring Progress*, n.d.). Given that Destination Imagination is a global organization, it is important to recognize global races and ethnicities.

Educational background data were collected using an open-ended question asking participants to explain their educational background. Career backgrounds were also collected using an open-ended question asking participants to explain their career backgrounds.

When participants were involved in Destination Imagination and the length of participation were collected using the same item. Participants were asked during which grade levels they participated in Destination Imagination. This information was collected using a multiple-select item listing all grade levels K-University: K, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, University. Participants can select one or more grade levels from this list. This information explains which school years they were involved and how long they were involved in the program.

Challenges participants were involved in were collected by a multiple-select item listing eight options: Rising Stars/Early Learning, Technical, Scientific, Fine Arts,

Improv, Engineering, Project Outreach / Service Learning, and “I don’t recall”. Each option has a description of the specific challenge and things unique to that challenge to support participants in recalling challenges. Participants were able to select one or more challenge types from this list. This information shows the domain-specific areas participants engaged in.

Data regarding time since last participating in the program were collected using a drop-down single-select item. The item asked participants to select the time since last participating in the program. Possible ranges included 0-4 years, 5-9 years, and 10 or more years since last participating in the challenge program experience. Collecting demographic data about the participants allows for transparent data analysis.

Once the data is in the process of being collected, the management of that data is important for the security and safety of participants. The data management plan is discussed in the next section.

Data Management

All data from the instruments were collected using Qualtrics and analyzed using R, an open-source statistical software package. Data collected did not include personal identifiers like names, emails, or phone numbers. All data collected were anonymous and each survey received an identification number assigned by Qualtrics.

All data documents were stored in a University OneDrive account. The data were stored in a password-protected Excel document. At the end of the study, all data were moved to a USB flash drive and will be stored in a locked cabinet for a minimum of three years, following IRB policy. After three years, data will be deleted from the flash drive.

Summary of the Quantitative Phase

In total, this study collected data on demographics and used instruments to measure the impact of creativity skills training, domain-specific creativity, and creative self-efficacy. Creativity skills training was measured using a Destination Imagination specific survey designed to capture beliefs about the experience (Missett et al., 2013). Domain-specific creativity was measured using the Kaufman Domains of Creativity Scale designed to identify creativity domains (Kaufman, 2012). Creative self-efficacy was measured using a three-item creative self-efficacy instrument (Tierney & Farmer, 2002; Beghetto, 2006; Beghetto et al., 2011).

There are two phases of the data collection process. The first phase is the quantitative phase that was described in this section. The second phase, the qualitative phase, is described in the following section.

Phase Two: Qualitative Phase

Population and Sampling

After completing the quantitative data collection process, participants were able to volunteer to be part of the qualitative process. Participants were randomly selected from the pool of self-selected individuals to participate in the interview process. Participant recruitment is described in the following section.

Recruitment

At the end of phase one, participants were invited to volunteer for an interview. Participants were self-selected as possible interview participants for phase two of data

collection. Participants that choose to self-select completed a short survey that collected baseline information and engaged in a structured interview process.

At the end of the phase one survey, participants were provided a link to a second survey. The second survey was optional and asks participants to provide information for phase two of data collection. Participants were asked to provide contact information. This survey is separate from the first survey to ensure confidentiality of the phase one survey.

Participants that volunteered for the second phase of data collection provided their names and emails.

In total, five participants were contacted for an interview. First, three participants were randomly selected for interviews from the pool of participants that volunteered for the interview. Each participant selected received an email inviting them to participate in an interview. Two participants did not respond to the email within 3 days and a follow-up email was sent. Two participants did not respond to the second email after four additional days. The researcher then randomly selected two additional participants. Both additional participants responded. The three total participants that responded scheduled a time with the researcher for an interview. The interview process used to collect data is described next.

Interviews

Each participant that was selected to interview scheduled a one-on-one interview with the researcher. All interviews lasted between 30 and 60 minutes. Questions that were asked in the interview are available below:

- Please describe Destination Imagination.

- How did you get involved in Destination Imagination?
- When did you participate in Destination Imagination?
- What were some of your general learnings from Destination Imagination?
- What were some of your specific learnings from Destination Imagination?
- Describe how the Instant Challenge experience impacted your creativity.
- Describe how the Team Challenge experience impacted your creativity.
- How have your views around Destination Imagination's impact on creativity changed over time?
- Why have your views around Destination Imagination's impact on creativity changed?

Interview questions were designed to provide insight into the research questions and add depth to quantitative data. Questions one, two, and three were designed to support understanding of how participants view a creativity skills training experience and speak to the impact of the creativity skills training experience. Questions one, two, and three were designed to provide insight into domain-specific creativity and creative self-efficacy. Questions four and five were designed to support understanding of the impact of creativity skills training on domain-specific creativity. Questions six and seven were designed to provide insight into the change over time experienced after participating in creativity skills training. All three questions were designed to provide nuance and clarity around the quantitative findings.

Interviews were conducted via Zoom, an online video-conferencing application. Zoom interviews were recorded and saved to the University of Denver's zoom cloud

recordings, an online file storage system for video meetings. Zoom software was used to support the researcher in transcribing the interviews. The researcher reviewed the automatic transcriptions from Zoom and updated the transcriptions to correct any errors and ensure accurate transcriptions. This allowed the researcher to review and accurately describe findings from the interview.

Once the data is in the process of being collected, the management of that data is important for the security and safety of participants. The data management plan is discussed in the next section.

Data Management

All data from phase two were collected, first through Qualtrics, an online survey software, and then through Zoom, an online video-conferencing application. Data collected during the second survey through Qualtrics did include personal identifiers like names and emails. This information was stored in a University OneDrive account, which is an online file storage system. The data were stored in a password-protected Excel document. At the end of the study, all data were moved to a USB flash drive and stored in a locked cabinet for a minimum of three years, following IRB policy. After three years, the data will be deleted from the flash drive.

After the study, all recordings and transcriptions on the University of Denver's zoom cloud recordings, an online file storage system for video meetings, were moved to a USB flash drive and deleted from Zoom. The flash drive will be stored in a locked cabinet for a minimum of three years, following IRB policy. After three years, the data will be deleted from the flash drive.

There are two phases of the data collection process. The first phase is the quantitative phase that was described in the previous section. The second phase, the qualitative phase, was described in this section. Next, the analysis of the data is discussed.

Data Analysis

Overall, this study collected both quantitative and qualitative data. The quantitative data includes data from three instruments: Destination Imagination Survey, Kaufman Domains of Creativity Scale, and Creative Self-Efficacy Measure. Within each instrument, individual areas or domains were analyzed. The qualitative data includes narratives from three participants' interviews. The data analysis was conducted in three phases: quantitative phase, qualitative phase, and the final data analysis. The three phases are introduced and described below.

Phase One: Data Analysis

Data collected in phase one is quantitative data. Because of this, a quantitative analysis was conducted using R, an open-source statistical software package. All information about the number of participants who participated and participants who completed the instrument are reported in Chapter 4: Findings. Tables describing the respondents' demographics were also developed.

A descriptive analysis of the data was conducted. Descriptive statistics were calculated for all instruments and items for each instrument. Destination Imagination Survey creative thinking domain; K-DOCS self/everyday, scholarly, performance, science, artistic domain; and the Creative Self-Efficacy Measure overall score.

Descriptive statistics include the N, range, mean, standard deviation, variance, skewness, and kurtosis. A Shapiro-Wilk test was run to ensure all data used in the analysis met the assumption of normality. A Shapiro-Wilk test was decided on because it ensures normal data specifically for sample sizes smaller than 50 (Gliner et al., 2017). Eleven incomplete data points were excluded from the study. The analysis for each of the three instruments, Destination Imagination, Kaufman Domains of Creativity Scale, and Creative Self-Efficacy follows.

Destination Imagination Survey.

The creative thinking area of the Destination Imagination Survey includes six items (Missett et al., 2013). The mean score for each item was calculated across the entire sample. Additionally, scale scores for this instrument were calculated by adding the six scores aligned to each item (Missett et al., 2013).

Kaufman Domains of Creativity Scale (K-DOCS).

The K-DOCS has 50 items that measure 5 domains: Self/Everyday, Scholarly, Performance, Science, and Artistic. Self/Everyday creativity is measured with 11 items, Scholarly with 11 items, Performance with 10 items, Science with 9 items, and Artistic with 9 items (Plucker et al., 2019). The mean score for each item was calculated and presented. Scale scores for each domain were calculated by adding the aligned item scores for each domain (Kaufman, 2012).

Creative Self-Efficacy Measure.

The creative self-efficacy measure consists of three items (Beghetto, 2006). The mean score for each item was calculated. Scale scores for this instrument were calculated by totaling the three scores aligned to each item (Beghetto, 2006).

The process for the quantitative analysis was discussed in this section. The analysis process for each instrument, including the Destination Imagination Survey, the Kaufman Domains of Creativity Scale, and the Creative Self-Efficacy Measure, was discussed. Addressing research questions is discussed next.

Answering Research Questions

Different statistical measures were used to answer each research question. Research questions one, two, and three report findings from each instrument. To describe the findings, descriptive statistics were calculated. The descriptive approach to research intends to describe and summarize data rather than make inferences or associations (Gliner et al., 2017). Descriptive statistics include minimum values, maximum values, range, mean, standard deviation, skewness, and kurtosis (Gliner et al., 2017).

The phase one process for the quantitative analysis was discussed. The qualitative process is discussed in the next section.

Phase Two: Data Analysis

Data collected in phase two were qualitative data. Because of this, qualitative analyses were conducted. All interviews were transcribed using Trint, an online transcription software, and then edited for accuracy by the researcher. Interview transcriptions were analyzed in NVivo, an application used for qualitative analysis, first

into a narrative and then analyzed using a priori coding aligned to the APT theoretical framework.

After the quantitative and qualitative analysis took place, a final analysis using both quantitative and qualitative processes were discussed. The final analysis is described in-depth in the next section.

Final Data Analysis

Mixed methods research values the strengths coming from both qualitative and quantitative research (Creswell, 2015). Both qualitative and quantitative data will combine to create an understanding of the research questions.

To answer RQ 1, "How do adult alumni of a creativity skills training experience report its effectiveness?", the variable *Destination Imagination overall survey score* was described using descriptive statistics. Histograms and tables were used to explain the data. This describes how alumni of a creativity skills training experience report the impact of creativity skills training. Additional findings from narrative interviews provided insight into this question.

To answer RQ 2, "How do adult alumni of a creativity skills training experience report their domain-specific creativity?", each of the K-DOCS domain variables was analyzed using descriptive statistics and presented using histograms and tables. This describes how alumni of a creativity skills training experience report their domain-specific creativity. Additional findings from narrative interviews provided insight into this question.

To answer RQ 3, “How do adult alumni of a creativity skills training experience report their creative self-efficacy?”, the *Creative Self-Efficacy overall score* was analyzed using descriptive statistics. Overall score data were described using tables and histograms. This describes how alumni of a creativity skills training experience report their creative self-efficacy. Additional findings from narrative interviews provided insight into this question.

RQ 4, “What are the relationships among adult perceptions of creativity skills training impact, domain-specific creativity, and creative self-efficacy?”, measures relationships among variables. To measure the relationships, Pearson product-moment correlations were calculated. A Pearson product-moment correlation is a statistical test of significance that describes the “magnitude and direction of association between two variables,” (Creswell & Creswell, 2018, p. 159). The Pearson product-moment correlation calculates the coefficient, *r* (Gliner et al., 2017). The coefficient ranges from +1.0 to -1.0 where positive coefficients represent as one variable increases, the other variable increases, and where negative coefficients represent inverse relationships; as one variable increases the other variable decreases (Gliner et al., 2017). It is generally agreed upon that a correlation coefficient between +0.5 and +1.0 is a strong positive relationship between variables, a correlation coefficient between -0.5 and -1.0 is a strong negative relationship between variables, and a correlation coefficient of 0 represents no relationship between variables (Gliner et al., 2017).

To answer research question four, “What are the relationships among adult perceptions of creativity skills training impact, domain-specific creativity, and creative

self-efficacy?", several correlations between variables were conducted. The variables of *Destination Imagination Creativity Survey overall scale score* and each K-DOCS domain (Self/Everyday, Scholarly, Performance, Science, Artistic) overall scale score were correlated to determine the strength and direction of their relationship. The variables of *Destination Imagination Creativity Survey overall scale score* and *Creative Self-Efficacy overall scale score* were correlated to determine the strength and direction of their relationship. The variables of the K-DOCS domain (Self/Everyday, Scholarly, Performance, Science, Artistic) overall scale score and *Creative Self-Efficacy overall scale score* were correlated to determine the strength and direction of their relationship. After all data were collected and analyzed, results were interpreted. Results describe how all three of the constructs are related. Additional findings from narrative interviews provided insight into RQ 4.

In summary, the research questions and the theoretical framework guided the data analysis process. Descriptive statistics and correlations were used to analyze the data. Findings from qualitative narrative analysis supported and added nuance to findings. The next section covers limitations.

Limitations

Limitations of this study include the type of instruments being used. The Destination Imagination Survey used in this study was initially designed to measure the impact of creativity skills training on participants. The Destination Imagination Survey instrument has not been widely used as a measure and has a weaker empirical background than other assessments.

This study relies on the Destination Imagination Alumni Network to collect information. This group has only recently been collecting contact information from Destination Imagination Alumni (personal communication, K. Nylander, April 18, 2021). Additionally, the group currently only sends out emails in English and the Facebook group uses English (personal communication, K. Nylander, April 18, 2021). Because of this, the study will only include alumni fluent in English.

Timeline

The timeline for this study is presented in Table 3.2.

Table 3.2

Timeline

Task	Timeline
Submit project for IRB approval	June 2021
Receive IRB approval	July 2021
Send out the survey via newsletter and Facebook	November 2021
Survey responses	November 2021
Survey closes	April 2022
Interview selection	February 2022
Interviews	February and March 2022
Data analysis	March and April 2022
Write findings	April and May 2022
Defense	June 2022

Summary

Chapter Three described the research methodology and questions that guided this study. The methodology was both guided by and aligned with the purpose, the problem of practice, and the literature review presented in earlier chapters.

CHAPTER FOUR: RESULTS

Overview

The purpose of this chapter is to detail the results and findings of this study. Outlined below are the findings for each research question as well as quantitative and qualitative findings. Quantitative findings are described using histograms and descriptions. Qualitative findings are presented as three separate narratives with the theoretical framework woven throughout. The chapter concludes with a summary of the results.

Purpose Statement

The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. Research questions are revisited in the next section.

Research Questions

The four research questions were designed to interact with the Amusement Park Theoretical Model.

The research questions (RQs) that guide this mixed-methods study are:

RQ 1: How do adult alumni of a youth creativity skills training experience report its impact?

RQ 2: How do adult alumni of a youth creativity skills training experience report their domain-specific creativity?

RQ 3: How do adult alumni of a youth creativity skills training experience report their creative self-efficacy?

RQ 4: What are the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience?

The three areas measured in this study and the research questions are the impact of creativity skills training, domain-specific creativity, and creative self-efficacy. The theoretical framework is revisited in the next section.

Theoretical Framework

The theoretical framework guiding this study is the Amusement Park Theoretical Model of Creativity (Baer & Kaufman, 2017). Throughout this chapter results are connected to the four main components of the APT: initial requirements, general thematic areas, domains, and micro-domains (see Table 4.1). Three additional areas that are nested within the initial requirements component of the theoretical model were included: intelligence, motivation, and environment.

Table 4.1

The Amusement Park Theoretical Model of Creativity

Level	Amusement Park Examples	APT Model Examples
Initial Requirements (the highest degree of domain generality)	Transportation to the park, a ticket to enter, money	**Intelligence**, **motivation** (whether intrinsic or extrinsic) to do or create something, an **environment** that allows some form of creativity
General Thematic Areas	What type of amusement park? Rides, animals, water, cartoon characters, etc.	Everyday, scholarly, performance, math/scientific, or artistic creativity (among others)
Domains	Picking the actual amusement park itself	Within math/science (for example) it could be chemistry, biology, physics, psychology, economics, etc.
Micro-domains	Within the actual amusement park, where do you go?	Within psychology (for example): clinical, cognitive, social, developmental, neuroscience, educational, or organizational

Note. From "The Amusement Park Theoretical Model of Creativity," by J. Baer & J. C. Kaufman, 2017, In J. C. Kaufman, V. P. Glaveanu, & J. Baer (Eds.), *The Cambridge Handbook of Creativity Across Domains,* p. 42-43. Copyright 2017 by Cambridge University Press.

The Amusement Park Theoretical Model of Creativity is the theoretical framework guiding this study. This model is designed to bridge domain-general creativity and domain-specific creativity (Baer & Kaufman, 2005; 2017; Kaufman & Baer, 2005). The APT model includes four components: initial requirements, general thematic areas,

domains, and micro-domains. Quantitative and qualitative results from this study are discussed next.

Quantitative Results

Participant data were collected via Qualtrics, an online survey tool. Data were then exported from Qualtrics into a CSV, online spreadsheet, format. In the CSV, the data set was checked for missing data. There were no missing data values in the data set. R, an open-source statistical software, was used for the remainder of the data analysis. Several quantitative results including demographic results, Destination Imagination experience results, creativity skills-training experience results, domain-specific creativity results, creative self-efficacy results, relationship results, and a summary of the section are to follow.

Demographic Results

The demographic section of the data collection process asked questions that provided more than one source of information. The open-ended question "Explain your educational background" was asked to participants and coded by the researcher into the categories presented in Table 4.2. The researcher created a code to capture the level of education described by the participants (see Table 4.2). Each participant was coded and then checked by the researcher twice for accuracy.

Table 4.2

Highest Education Code

Highest Education	Code
Less than HS Diploma / GED	1
HS Diploma / GED	2
Some college	3
Associates degree	4
Bachelors degree	5
Some graduate work	6
Masters degree	7
Some doctoral work	8
Doctoral degree	9

All participants from this study reported that they had graduated high school and engaged in some form of higher education.

Table 4.3

Level of Education

	Frequency	Percent
Some college	8	21.05%
Bachelors	16	42.11%
Masters	10	26.32%
Some Doctoral Work	4	10.52%
Total	38	100.0

Participants reported personal demographic information including their gender, race, and level of education. Participants also reported their Destination Imagination experience including the number of years they participated and the type of challenge they participated in.

In this study, sixty-six percent of participants identified as female (n = 25). Thirty-four percent of participants identified as male (n = 13).

Table 4.4

Participant Gender

Gender	Frequency	Percent
Female	25	65.79%
Male	13	34.21%
Total	38	100.00%

The race and ethnicity of participants were reported. Ninety-two percent reported their race as white (n = 35). The remaining eight percent of participants were split equally between Asian-American (n = 1), Latinx/Hispanic (n = 1), and Southeast Asian (n = 1).

Table 4.5

Participant Race/Ethnicity

Race/Ethnicity	Frequency	Percent
White	35	92.11%
Asian-American	1	2.63%
Latinx/Hispanic	1	2.63%
Southeast Asian (including Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Thai, and Vietnamese)	1	2.63%
Total	38	100.00%

Overall, participants from this study are primarily white, highly educated, and female. 92% white and 65% female. All participants have at least some college education with 35% of participants earning a master's degree or higher. The next section covers the descriptive results of creativity skills training participation.

Destination Imagination Experience Results

The years participating in Destination Imagination were determined by the researcher using the item from the data collection "Select all grade levels in which you participated in Destination Imagination." The researcher counted each year of participation as identified by the participants and summed them to create an overall number of years participated. The amount of time participating ranged from participating only one year (n = 2) to participating for up to twelve years (n = 2).

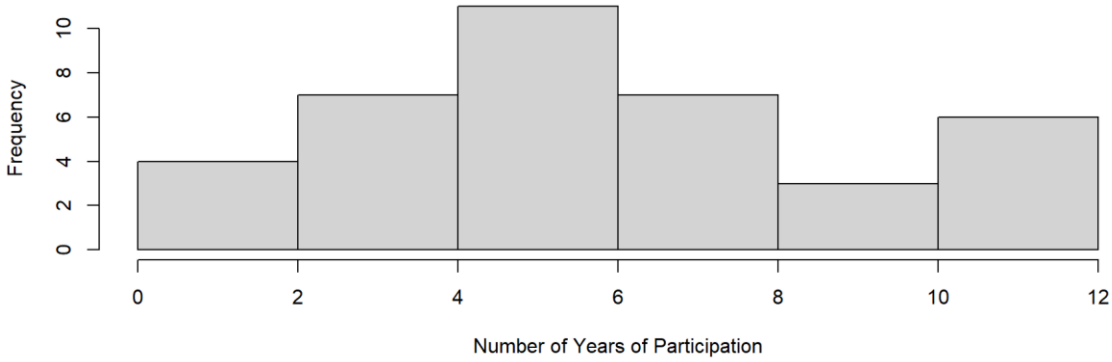
Table 4.6

Years of Participation in Destination Imagination

Years Participated	N
1	2
2	2
3	4
4	3
5	3
6	8
7	6
8	1
9	2
10	1
11	4
12	2

Figure 4.1

Histogram of Years of Participation in Destination Imagination



Destination Imagination has four competitive levels: elementary, middle, senior, and university levels. The competition level of Destination Imagination participants engaged in was determined by the researcher using the item from the data collection "Select all grade levels in which you participated in Destination Imagination." The researcher grouped grades K-5 for elementary, 6-8 for middle level, 9-12 for senior-level, and University for university level.

Seventy-one percent of participants engaged in Destination Imagination at the elementary level (n = 27), eighty-two percent engaged in Destination Imagination at the middle level (n = 31), sixty-six percent engaged in Destination Imagination at the senior level (n = 25), and eleven percent engaged in Destination Imagination at the university level (n = 4). Eighty percent of participants engaged in Destination Imagination at more than one level (n = 30).

Table 4.7

Grade Level Participation in Destination Imagination

Grade Level	N
Kindergarten	2
1st Grade	7
2nd Grade	10
3rd Grade	15
4th Grade	19
5th Grade	25
6th Grade	24
7th Grade	28
8th Grade	26
9th Grade	21
10th Grade	21
11th Grade	20
12th Grade	17
University	4

Participants engaged in each of the seven types of challenges: 11% participated in Rising Stars/Early Learning Challenge (n = 4), 37% participated in the Technical Challenge (n = 14), 37% participated in the Scientific Challenge (n = 14), 55% participated in the Fine Arts Challenge (n = 21), 55% participated in the Improv Challenge (n = 21), 29% participated in the Engineering Challenge (n = 11), and 5% participated in the Project Outreach/Service Learning Challenge (n = 2). Thirteen percent reported that they were unaware of the type of challenge they participated in (n = 5). Seventy-one percent of participants reported they participated in more than one type of challenge (n = 27).

Table 4.8

Participation in Type of Challenge in Destination Imagination

Challenge	N	Percent
Rising Stars / Early Learning	4	10.52%
Technical	14	36.84%
Scientific	21	55.26%
Fine Arts	21	55.26%
Improv	10	26.32%
Engineering / Structural	11	28.95%
Project Outreach / Service Learning	2	5.26%
Unknown	5	13.16%

Sixteen percent of participants participated in Destination Imagination within the last four years (n = 6), thirty-three percent of participants last participated in Destination Imagination between five and nine years ago (n = 12), and fifty-one percent of participants last participated in Destination Imagination ten or more years ago (n = 20).

Table 4.9

Last Participation in Destination Imagination

Last Participated	N	Percent
0-4 years ago	6	15.79%
5-9 years ago	12	31.58%
10 or more years ago	20	52.63%

In summary, participants in this study engaged with the Destination Imagination experience for a variable number of years spanning from one to twelve years. Participants engaged during different grade levels but include all possibilities for Destination

Imagination participation. Last participation in Destination Imagination includes those that recently participated (0-4 years ago) and those that participated more than 10 years ago. Lastly, participants engaged in various challenges. Only 5% of participants participated in the Project Outreach / Service-Learning challenge. All other challenges had engagement of 26% or more. The creativity skills training experience results are discussed in the next section.

Creativity Skills Training Experience Results

The first research question guiding this study is:

RQ 1: How do adult alumni of a youth creativity skills training experience report its impact?

RQ1 addresses creativity skills training which is an initial requirement nested under the environment within the APT model framework. To answer this research question, a new variable was created to represent the Creativity Skills Training Experience overall survey score. This item is reported in Table 4.9.

Table 4.10

Descriptive Statistics of Creativity Skills Training Experience

Question Number	N	Min	Max	Range	Median	Mean	Std Dev
Q1	38	2	5	3	4	4.211	.905
Q2	38	2	5	3	5	4.474	.725
Q3	38	2	5	3	4	4.184	.896
Q4	38	2	5	3	5	4.657	.708
Q5	38	3	5	2	5	4.500	.688
Q6	38	3	5	2	5	4.526	.603
Creativity Skills Training Experience	38	17.00	30.00	13.00	27.50	26.55	3.46

Participants described the impact of Destination Imagination as a creativity skills training experience on their creativity through Likert-scale items. Participants rated their responses to the question: How much did DI [Destination Imagination] teach about CREATIVE THINKING in the areas stated below? The areas questioned were generating many ideas, generating unusual or original ideas, making unusual or original products, finding new ways to use materials, brainstorming, and thinking creatively even when conditions become difficult or stressful (see Appendix E).

An overall scaled score was calculated by summing all scores on the assessment for each participant. The overall scores had a minimum of 17 and a maximum score of 30. No participants rated their creativity a 1 (not at all impactful). At least one participant gave themself all 5s on the assessment (a great deal impactful). Scores were heavily skewed left with skewness of -1.36 indicating participants reported the creativity skills training experience as being very impactful on their creativity (*Median* = 27.50, *M* = 26.55, *SD* = 3.46).

In summary, participants report Destination Imagination as a creativity skills training experience to be very impactful on their creativity. This is demonstrated by the median score on all questions being at a 4 or 5. A score of 4 or 5 means alumni of the creativity skills training experience believe the creativity skills training experience impacted their creativity a great deal. Results from the domain-specific creativity instrument are discussed in the following section.

Domain-Specific Creativity Results

The second research question guiding this study is:

RQ 2: How do adult alumni of a youth creativity skills training experience report their domain-specific creativity?

RQ2 uses the K-DOCS as a method to measure domain-specific creativity. The K-DOCS areas align with general thematic areas of the Amusement Park Theoretical Model of Creativity. To answer this research question, each K-DOCS domain area (Everyday, Scholarly, Performance, Mechanical/Scientific, and Artistic) was transformed into new scores. The analysis of each area is reported below.

Table 4.11

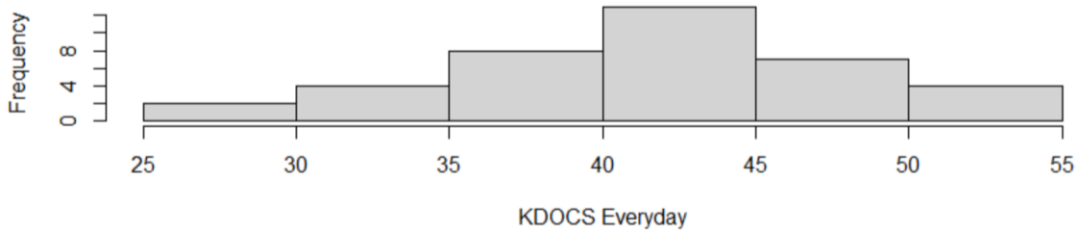
Descriptive Statistics of K-DOCS Domain Areas

K-DOCS Areas	N	Min	Max	Range	Median	Mean	Std Dev
Self/Everyday	38	29	52	23	42.500	41.974	6.114
Scholarly	38	22	52	30	41.000	40.947	6.311
Artistic	38	20	45	25	32	31.395	6.171
Performance	38	14	45	31	31	29.737	8.297
Mechanical/Scientific	38	10	41	31	32.500	31.579	6.404

Self/Everyday creativity was measured using the K-DOCS instrument. The range for this assessment's scores was 23 with the minimum being 29 and the maximum being 52. The smallest possible score for the Self/Everyday domain was 11. The largest possible score was 55.

Figure 4.2

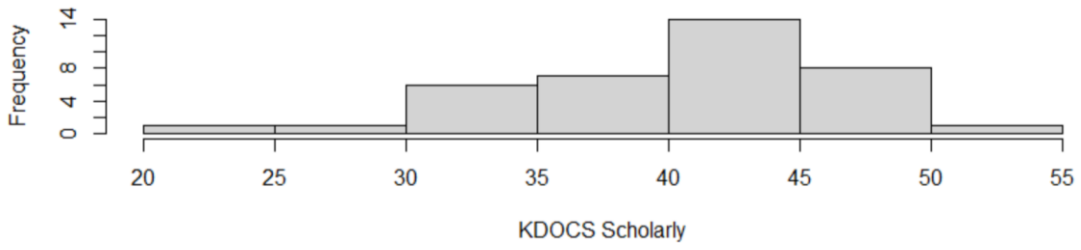
Histogram of K-DOCS Everyday Domain Overall Scale Score



Scholarly creativity was measured using the K-DOCS instrument. The range for this assessment's scores was 30 with the minimum being 22 and the maximum being 52. The smallest possible score for the Scholarly domain was 11. The largest possible score was 55.

Figure 4.3

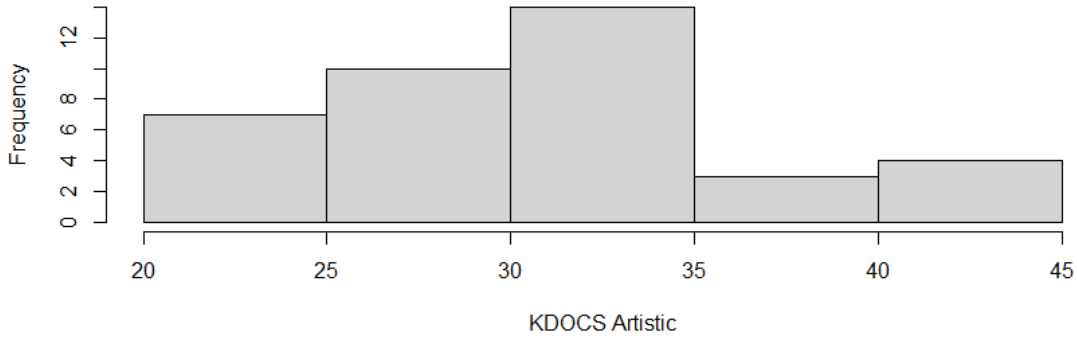
Histogram of K-DOCS Scholarly Domain Overall Scale Score



Artistic creativity was measured using the K-DOCS instrument. The range for this assessment's scores was 25 with the minimum being 20 and the maximum is 45. The smallest possible score for the Artistic domain was 9. The largest possible score was 45.

Figure 4.4

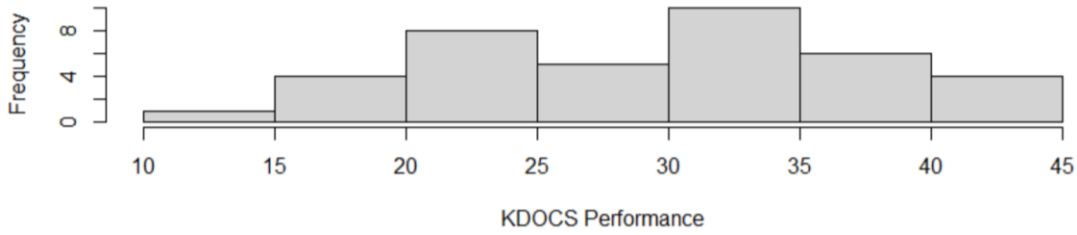
Histogram of K-DOCS Artistic Domain Overall Scale Score



Performance creativity was measured using the K-DOCS instrument. The range for this assessment's scores was 31 with the minimum being 14 and the maximum being 45. The smallest possible score for the Performance domain was 10. The largest possible score was 50.

Figure 4.5

Histogram of K-DOCS Performance Domain Overall Scale Score

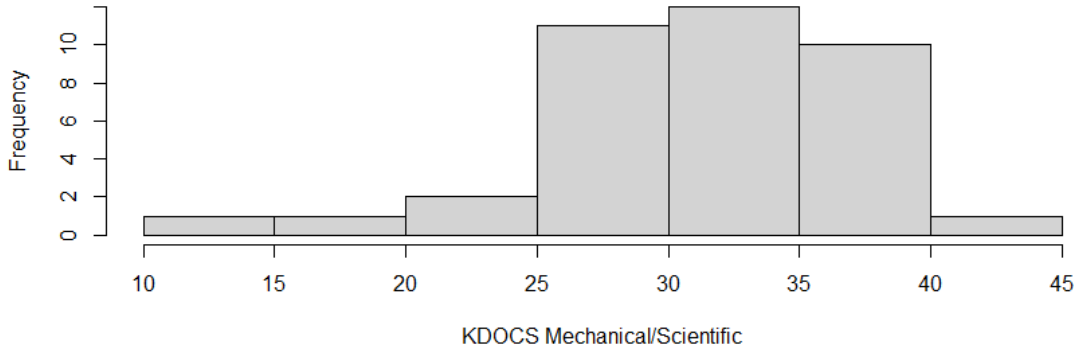


Mechanical/Scientific creativity was measured using the K-DOCS instrument. The range for this assessment's scores was 31 with the minimum being 10 and the

maximum is 41. The smallest possible score for the Mechanical/Scientific domain was 9. The largest possible score was 45.

Figure 4.6

Histogram of K-DOCS Mechanical / Scientific Domain Overall Scale Score



In summary, participants' domain specific creativity depends on the domain area. Participants report their Self/Everyday domain creativity to be slightly above average with participants self-reporting their creativity as more than their same-age peers. Participants also report their scholarly domain creativity to be more than their same-age peers. Artistic creativity had a wider range with most participants rating themselves as equally creative or less creative than their same-age peers while some participants rated themselves as much more creative than their same age peers. Performance creativity was rated by participants as slightly more creative than same-age peers. Mechanical / Scientific creativity was self-reported as much more creative than same-age peers. Overall, it seems that alumni from a creativity skills training experience report their domain specific creativity differently depending on the domain, however, in general,

participants believe they are more creative than their same-age peers, except in the artistic domain. Creative self-efficacy results are covered in the following section.

Creative Self-Efficacy Results

The third research question guiding this study is:

RQ 3: How do adult alumni of a youth creativity skills training experience report their creative self-efficacy?

RQ3 addresses creative self-efficacy which is an initial requirement nested under motivation within the APT model framework.

To address this question, each creative self-efficacy score was combined to create a *Creative Self-Efficacy overall score*. This new variable is reported below in table 4.6.

Table 4.12

Descriptive Statistics of Creative Self-Efficacy

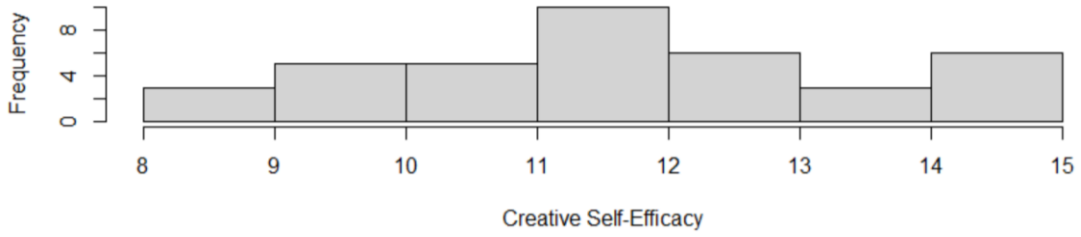
Question Number	N	Min	Max	Range	Median	Mean	Std Dev
Q1	38	3	5	2	4	4.026	.716
Q2	38	2	5	3	4	4.079	.784
Q3	38	2	5	3	4	4.105	.764
Overall	38	9	15	6	12	12.211	1.758

Participants described their creative self-efficacy through Likert-scale items on the Creative Self-Efficacy instrument. Participants rated their responses to three questions using a Likert scale ranging from 1, *not true*, to 5, *very true.* The three statements read (1) "I am good at coming up with new ideas," (2) "I have a lot of good ideas," and (3) "I have a good imagination."

An overall scaled score was calculated by summing all scores on the assessment for each participant. The overall scores had a minimum of 17 and a maximum score of 30. No participants rated themselves below a 2 on any of the items in the creative self-efficacy instrument. At least one participant gave themselves all 5s on the instrument. Scores were normally distributed with a skewness of .10 and a kurtosis of 2.16 (*Median* = 12.00, *M* = 12.21, *SD* = 1.76).

Figure 4.7

Histogram of Creative Self-Efficacy Overall Scale Score



In summary, participants from the creativity skills training experience report they are good at coming up with new ideas, have a lot of good ideas, and have good imaginations. Overall, participants believe they are creative and have high self-efficacy. The next section details results of the relationship among all instruments.

Relationships Results

The fourth research question guiding this study is:

RQ 4: What are the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience?

The following sections outline the assumption of normality and correlation results.

Assumption of Normality.

To address the fourth research question, each of the areas that were measured was analyzed for normality using the Shapiro-Wilk test for normality. All except for two variables, Creativity Skills Training Experience and Mechanical/Scientific Domain-Specific Creativity, passed the test for assumption of normality. The two variables that did not pass the assumption of normality test were transformed to meet normality.

Table 4.13

Shapiro-Wilk Test for Normality for Each Variable

	Shapiro-Wilk Test			
	W	*p*	Skew	Kurtosis
CSE	.948	.07	-.09	2.33
Creativity Skills Training Experience	.842	<.00*	-1.36	4.33
K-DOCS Everyday	.973	.51	-.28	2.41
K-DOCS Scholarly	.964	.26	-.68	3.63
K-DOCS Artistic	.980	.72	.07	2.52
K-DOCS Performance	.972	.43	.06	2.09
K-DOCS Mechanical/Scientific	.920	.01*	-1.16	4.92

Creative Self-Efficacy Overall Score met the assumption of normality ($W(38) = .95$, $p = .07$). Skewness and kurtosis were both within the appropriate range with skewness at -.09 and kurtosis at 2.33.

Creativity Skills Training Experience Overall score did not meet the normality assumption. The curve was left-skewed with a reported skewness of -1.36. The curve was

platykurtic with a kurtosis reported at 4.33. Both skewness and kurtosis were outside of the accepted range. A Shapiro-Wilk test showed that the Creativity Skills Training Experience Overall score was statistically significantly different from normality (W(38) = .84, p = .00). Data were transformed using a log function. After using the log transformation, both skewness and kurtosis were within a normal range. Skewness was reported at -0.07 and kurtosis was reported at 2.16. A Shapiro-Wilk test showed the Transformed Creativity Skills Training Experience Overall score did follow a normal curve (W(38) = .94, p = .051). The transformed score was used to run correlational analyses.

Table 4.14

Creativity Skills Training Experience Overall Shapiro-Wilk Test for Normality

			Shapiro - Wilk	
	Skew	Kurtosis	W	p-value
Original Data	-1.36	4.33	.84	.000*
After Transformation	-0.07	2.16	.94	.051

Figure 4.8

Histogram of Creativity Skills Training Experience Overall Score

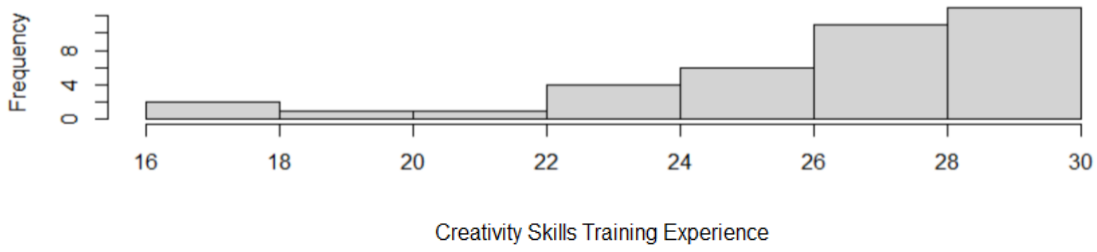
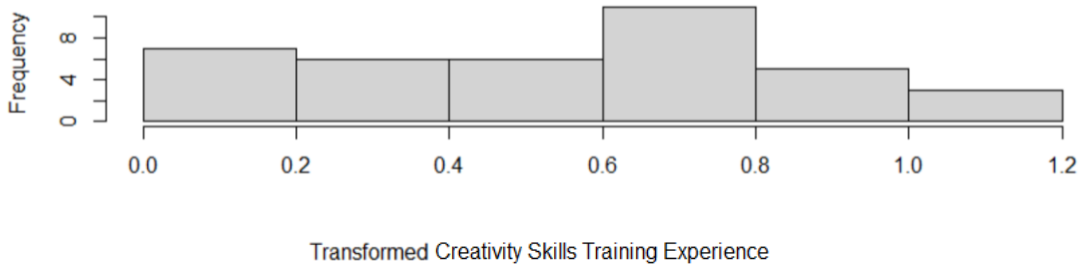


Figure 4.9

Histogram Creativity Skills Training Experience Overall Score After Transformation



K-DOCS Everyday Overall Score met the assumption of normality (W(36) = .97, p = .51). Skewness and kurtosis were both within the appropriate range with skewness at -.28 and kurtosis at 2.41.

K-DOCS Scholarly Overall Score met the assumption of normality (W(36) = .96, p = .26). Skewness and kurtosis were both within the appropriate range with skewness at -.68 and kurtosis at 3.63.

K-DOCS Artistic Overall Score met the assumption of normality (W(36) = .98, p = .72). Skewness and kurtosis were both within the appropriate range with skewness at .07 and kurtosis at 2.52.

K-DOCS Performance Overall Score met the assumption of normality (W(36) = .97, p = .43). Skewness and kurtosis were both within the appropriate range with skewness at .06 and kurtosis at 2.09.

K-DOCS Mechanical/Scientific Overall score did not meet the normality assumption. The curve reported a skewness of -1.16 and was left-skewed. The kurtosis

was 4.92, indicating a platykurtic curve. A Shapiro-Wilk test showed that the K-DOCS Mechanical/Scientific Overall score is statistically significantly different from normality (W(36) = .92, p = .01). Data were transformed using a log function. After using the log transformation, both skewness and kurtosis were within a normal range. Skewness was reported at -0.88 and kurtosis at 3.82. The Shapiro-Wilk test for normality (W(36) = .94, p = .053) showed the Transformed K-DOCS Mechanical/Scientific Overall score did meet the assumption of normality. The transformed score was used to run correlational analyses.

Table 4.15

K-DOCS Mechanical / Scientific Domain Shapiro-Wilk Test for Normality

			Shapiro - Wilk	
	Skew	Kurtosis	W	p-value
Original Data	-1.16	4.92	.92	.009*
After Transformation	-0.88	3.82	.94	.053

Figure 4.10

Histogram of K-DOCS Mechanical / Scientific Overall Score

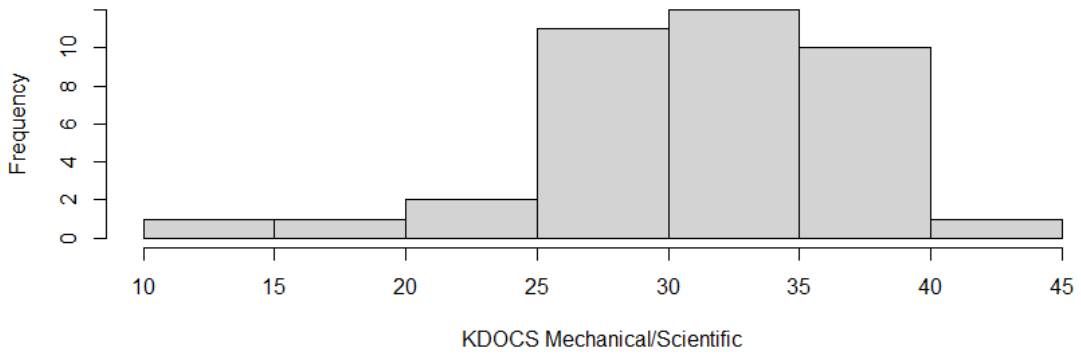
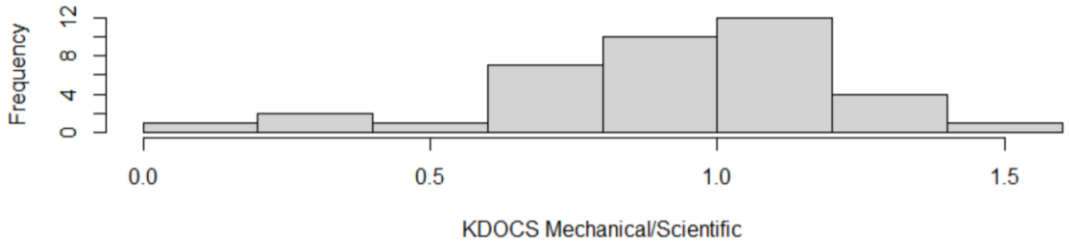


Figure 4.11

Histogram of K-DOCS Mechanical / Scientific Overall Score After Data Transformation



In summary, all variables were normal or transformed to be normal. In the following section, correlations are run to determine relationships among variables.

Correlation Results

Correlations were run between Creativity Skills Training Experience, Creative Self-Efficacy, and each of the K-DOCS domain areas. The analysis of each Pearson product-moment correlation is reported below with tables and scatterplots.

Creative Self-Efficacy and Creativity Skills Training Experience

There was no statistically significant relationship between Creative Self-Efficacy and Creativity Skills Training Experience ($r(36) = -.18$, $p = .07$).

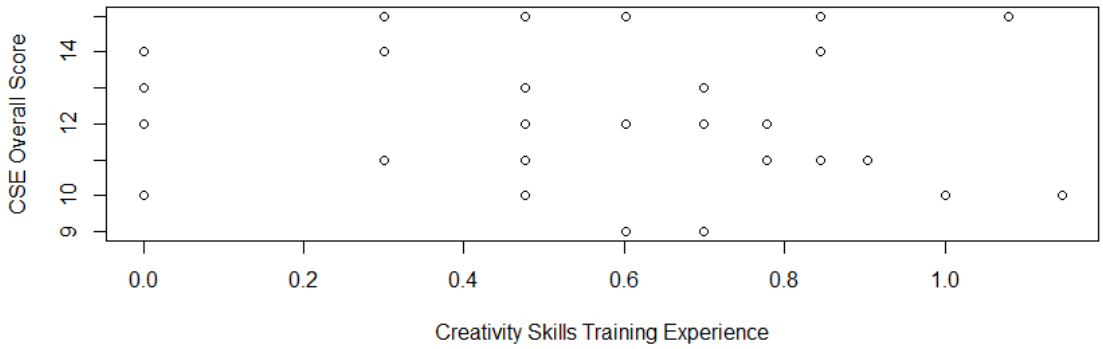
Table 4.16

Correlations and Confidence Intervals Between Creative Self-Efficacy Creativity Skills Training Experience

	CSE Overall	
	Pearson *r* and Confidence Interval	*p*-value
Creativity Skills Training Experience	-.183 [-.47 - 14]	**.068**

Figure 4.12

Scatterplot Showing the Relationship Between Transformed Creativity Skills Training Experience Overall Score and Creative Self-Efficacy Overall Score



There was no relationship between creativity skills training and creative self-efficacy. The following section determines relationships between the K-DOCS domains and creative self-efficacy.

Creative Self-Efficacy and K-DOCS Domains.

Pearson product-moment correlation coefficients were computed to assess the relationship between Creative Self-Efficacy and each of the K-DOCS domain-specific areas. Only the relationship between CSE and the Performance domain area was statistically significant. There were no statistically significant relationships between Creative Self-Efficacy and any of the other K-DOCS domain-specific areas.

Table 4.17

Correlations and Confidence Intervals Between Creative Self-Efficacy and Each K-DOCS Domain Area

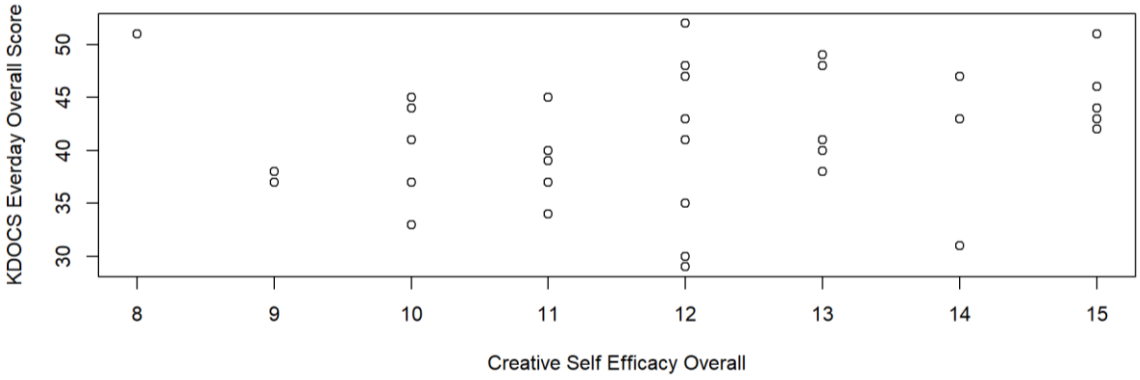
K-DOCS Domain Areas	CSE Overall	
	Pearson *r* and Confidence Interval	*p*-value
Everyday	-.306 [-.57 - .01]	.112
Scholarly	.169 [-.16 - .46]	.113
Artistic	.266 [-.06 - 54]	.106
Mechanical / Scientific	.037 [-.29 - .35]	.266
Performance	.450 [.15 - .68]	.005*

* Indicates p < .05 level.

Although the relationship between everyday creativity and creative self-efficacy appears to be weak and negative, it is not statistically significant ($r(36) = -.31$, $p = .11$). The confidence interval shows that the possible relationship between everyday creativity and creative self-efficacy may not exist.

Figure 4.13

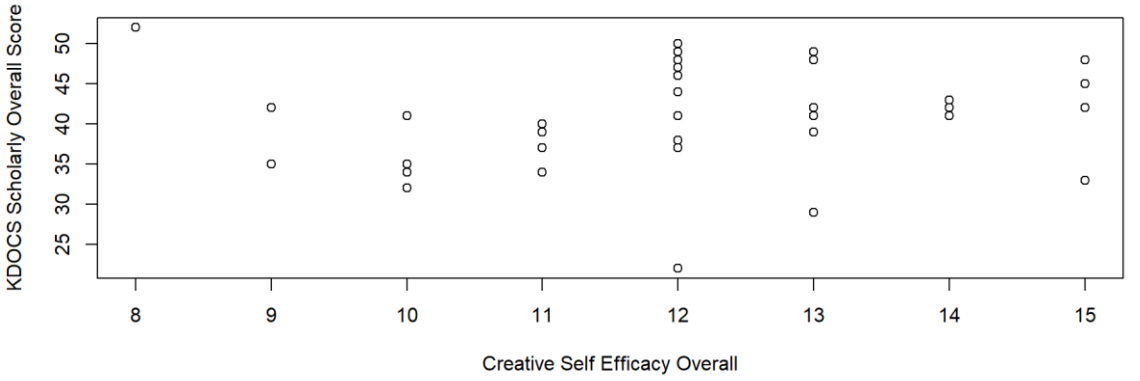
Scatterplot Showing the Relationship Between Creative Self-Efficacy Overall Score and K-DOCS Everyday Domain Area Overall Score



There appears to be no relationship between scholarly creativity and creative self-efficacy and it is not statistically significant ($r(36) = .17$, $p = .11$). The confidence interval shows that the possible relationship between scholarly creativity and creative self-efficacy varies widely.

Figure 4.14

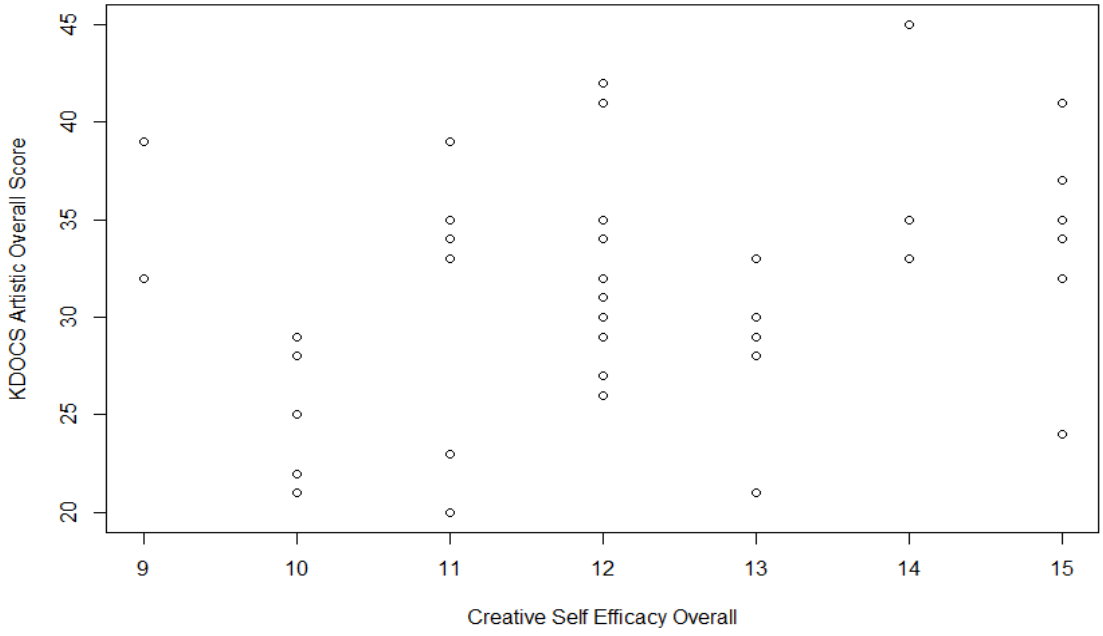
Scatterplot Showing the Relationship Between Creative Self-Efficacy Overall Score and K-DOCS Scholarly Domain Area Overall Score



Although there appears to be a weak positive relationship between artistic creativity and creative self-efficacy, it is not statistically significant ($r(36) = .27$, $p = .11$). The confidence interval shows that the possible relationship between artistic creativity and creative self-efficacy varies widely and may not exist at all.

Figure 4.15

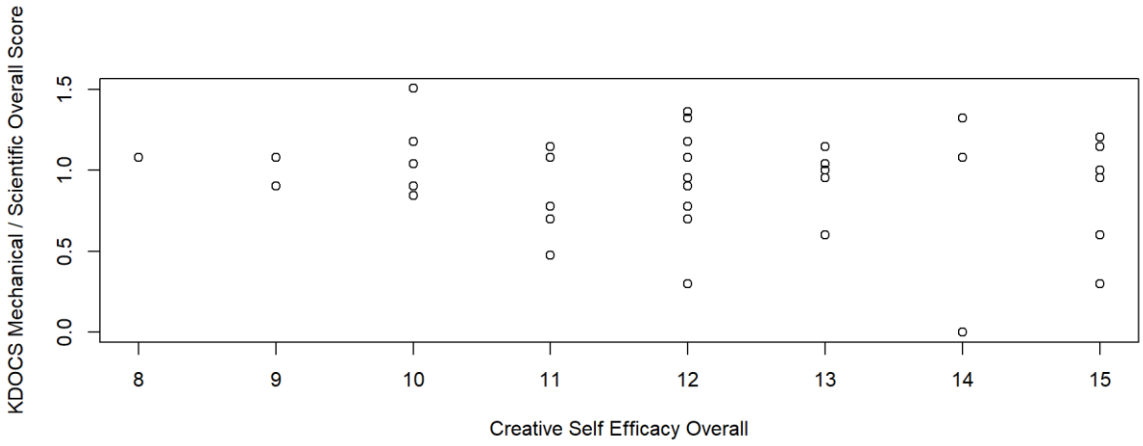
Scatterplot Showing the Relationship Between Creative Self-Efficacy Overall Score and K-DOCS Artistic Domain Area Overall Score



There appears to be no relationship between mechanical/scientific creativity and creative self-efficacy, and it is not statistically significant ($r(36) = .04$, $p = .11$). The confidence interval shows that the possible relationship between mechanical/scientific creativity and creative self-efficacy varies widely.

Figure 4.16

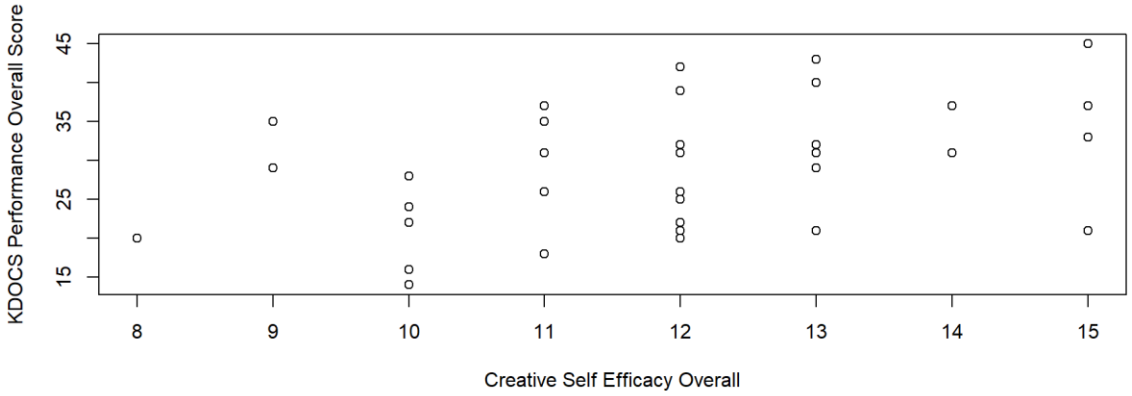
Scatterplot Showing the Relationship Between Creative Self-Efficacy Overall Score and Transformed K-DOCS Mechanical/Scientific Domain Area Overall Score



There is a moderate positive relationship between performance creativity and creative self-efficacy, and it statistically significant ($r(36) = .45$, $p = .005$). The confidence interval shows that the possible relationship between performance creativity and creative self-efficacy varies between a slight and strong correlation signifying that there is a positive relationship between the two variables, but the strength of the relationship may vary.

Figure 4.17

Scatterplot Showing the Relationship Between Creative Self-Efficacy Overall Score and K-DOCS Performance Domain Area Overall Score



There was only one relationship found between K-DOCS domains and creative self-efficacy. The relationship was positive between performance creativity and creative self-efficacy overall. The following section determines relationships between the K-DOCS domains and creativity skills training experience.

Creativity Skills Training Experience and K-DOCS Domains.

Pearson product-moment correlation coefficients were computed to assess the relationship between Creativity Skills Training Experience and each of the K-DOCS domain-specific areas. There were no statistically significant relationships between Creativity Skills Training Experience and K-DOCS domain-specific areas.

Table 4.18

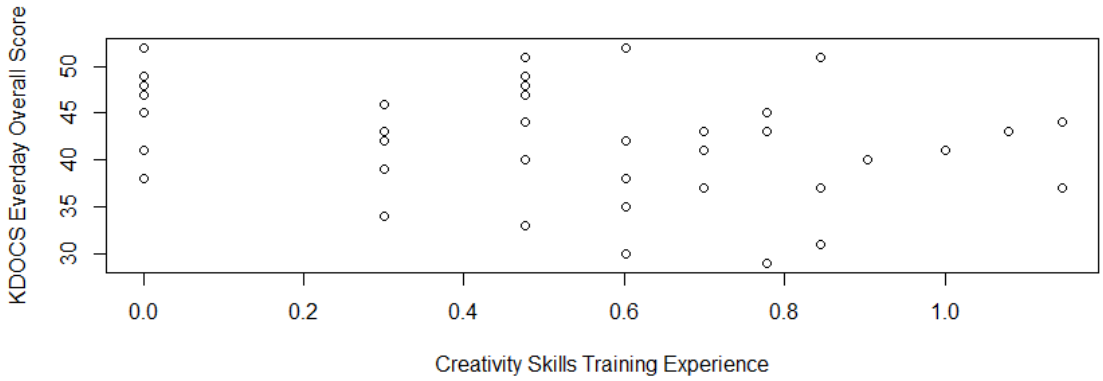
Correlations and Confidence Intervals Between Creativity Skills Training Experience and K-DOCS Domain Areas

K-DOCS Domain Areas	Creativity Skills Training Experience	
	Pearson *r* and Confidence Interval	*p*-value
Everyday	.220 [-.11 - .50]	.080
Scholarly	-.316 [-.58 - .00]	.073
Artistic	-.164 [-.46 - .16]	.324
Mechanical / Scientific	.044 [-.47 - .36]	.793
Performance	-.190 [-.48 - .14]	.253

There appears to be no relationship between everyday creativity and Creativity Skills Training Experience and it is not statistically significant ($r(36) = .22$, $p = .08$). The confidence interval shows that the possible relationship between everyday creativity and Creativity Skills Training Experience varies widely.

Figure 4.18

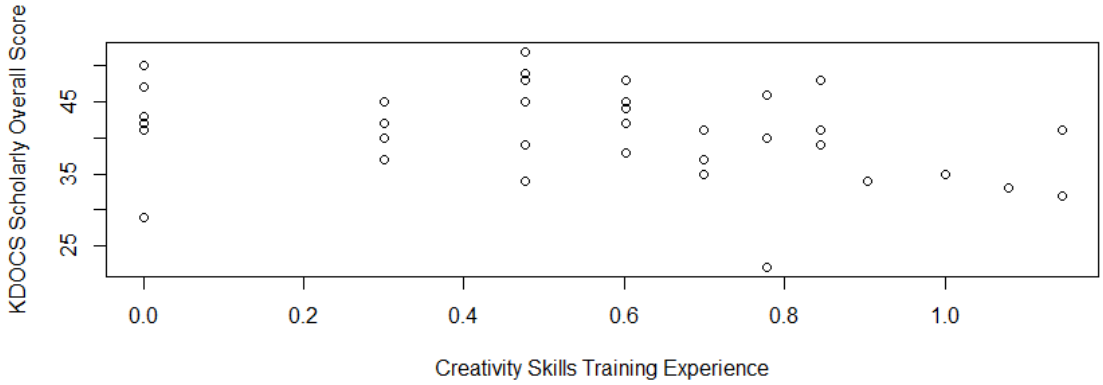
Scatterplot Showing the Relationship Between Transformed Creativity Skills Training Experience and K-DOCS Everday Domain Area Overall Score



There appears to be no relationship between scholarly creativity and Creativity Skills Training Experience, and it is not statistically significant ($r(36) = -.32$, $p = .07$). The confidence interval shows that the possible relationship between scholarly creativity and Creativity Skills Training Experience varies widely.

Figure 4.19

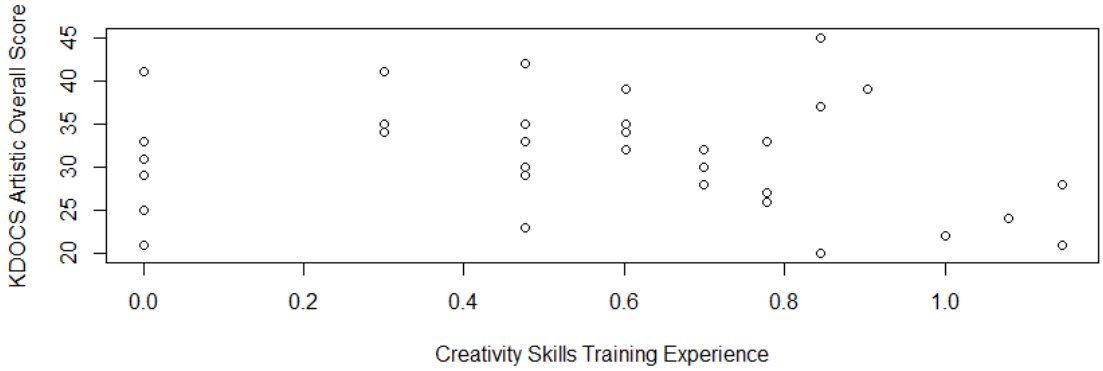
Scatterplot Showing the Relationship Between Creativity Skills Training Experience and K-DOCS Scholarly Domain Area Overall Score



There appears to be no relationship between artistic creativity and Creativity Skills Training Experience, and it is not statistically significant ($r(36) = -.16$, $p = .32$). The confidence interval shows that the possible relationship between artistic creativity and Creativity Skills Training Experience varies widely.

Figure 4.20

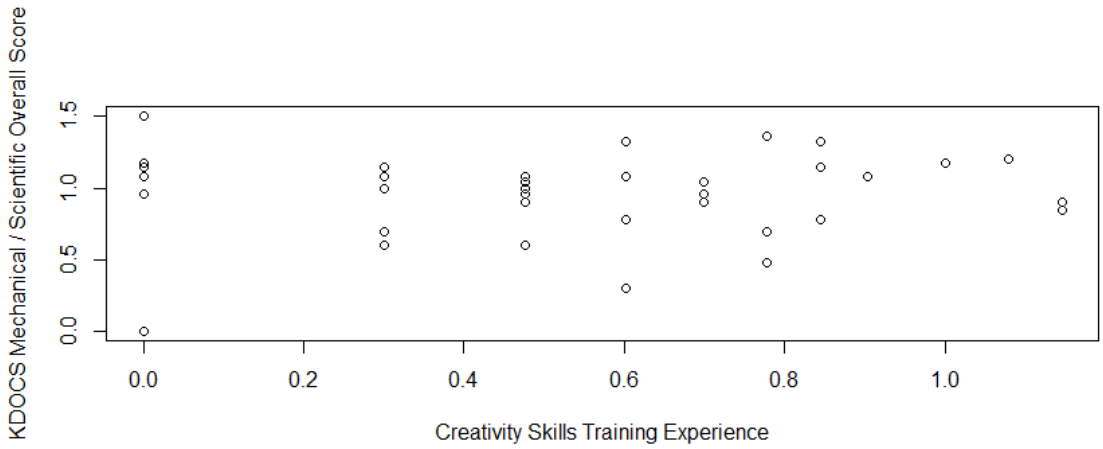
Scatterplot Showing the Relationship Transformed Creativity Skills Training Experience and K-DOCS Artistic Domain Area Overall Score



There appears to be no relationship between mechanical/scientific creativity and Creativity Skills Training Experience, and it is not statistically significant ($r(36) = .04$, $p = .79$). The confidence interval shows that the possible relationship between mechanical/scientific creativity and Creativity Skills Training Experience varies widely.

Figure 4.21

Scatterplot Showing the Relationship Between Creativity Skills Training Experience Overall Score and Transformed K-DOCS Mechanical/Scientific Domain Area Overall Score



There appears to be no relationship between performance creativity and Creativity Skills Training Experience, and it is not statistically significant ($r(36) = 0.19$, $p = .25$). The confidence interval shows that the possible relationship between performance creativity and Creativity Skills Training Experience varies widely.

Figure 4.22

Scatterplot Showing the Relationship Between Transformed Creativity Skills Training Experience and K-DOCS Performance Domain Area Overall Score

There were no relationships between K-DOCS domains and creativity skills training. The following section summarizes all quantitative results.

Summary of Quantitative Results

The quantitative findings from this study show adult alumni believe that their engagement with a creativity skills training experience impacted their creativity. Alumni also report that they are more creative than their same-age peers in self/everyday, scholarly, performance, and scientific/mechanical creativity. Participants reported their artistic creativity as less than or the same as their same-age peers.

Correlations among creativity skills training experience, domain-specific creativity, and creative self-efficacy were run to determine relationships. Only one relationship was statistically significant; the moderate positive relationship between performance creativity and creative self-efficacy was statistically significant ($r(36) = .45$,

p = .005). There were no other statistically significant relationships among creativity skills training, domain-specific creativity, and creative self-efficacy. Qualitative results are shared in the next section.

Qualitative Results

The purpose of the qualitative component of this research was to add depth and nuance to statistical findings. One-time, structured interviews with alumni of Destination Imagination were conducted. During the quantitative phase, participants that chose to self-select into the qualitative phase were added to the possible interview participant pool. Participants from the possible interview participant pool were randomly selected to be interviewed. All interviews occurred online via Zoom during a preferred time selected by the participants. Interviews lasted no more than one hour. All interview questions are available in Appendix G. To protect the identity of each participant, pseudonyms were assigned.

Interviews were recorded and transcribed using Zoom auto-transcription and Trint auto-transcription. The researcher then reviewed all transcriptions for accuracy and made corrections as appropriate. A priori coding was used to analyze the information provided from the interview. A priori codes were derived from the theoretical framework guiding this study and included: initial requirements, general thematic areas, domains, and micro-domains. Within initial requirements, three additional categories from the theoretical framework were used as codes: intelligence, motivation, and environment.

Interview transcriptions were uploaded into NVivo. The four areas of the theoretical framework (initial requirements, general thematic areas, domains, and micro-

domains), and the three subcategories of initial requirements (intelligence, motivation, and environment) were uploaded into NVivo's coding system. All interviews were reviewed a minimum of five times by the researcher to ensure all themes were appropriately coded. Participant narratives and a summary of findings are shared below.

Participant Narratives

During the interview, participants described their experience in Destination Imagination. Participant narratives, outlining their personal experiences, are described below.

Lily

Lily is a Destination Imagination Alumna that participated in the experience from 2nd grade through her senior year of high school. It has been more than five years since she last participated in Destination Imagination as a team member. Her involvement in the organization began when her mom started a team.

> My mother was the team manager. I think she knew what Odyssey of the Mind was. So, she created our [Destination Imagination] team in second grade and then I just really liked it. I kept doing it until I graduated.

Lily defines Destination Imagination as an environment, as indicated in the theoretical framework, that supports creativity:

> [Destination Imagination is] a team-based, STEAM competition where you work with your peers. [The teams are] given a challenge where they have to work together to usually make a set, build props, write a whole story, along with other tasks. There's also Instant Challenges which are on the spot problem solving,

> oftentimes using a lot of random fun things under pressure like writing like mini-skits or building things.

Engaging in Destination Imagination meant engaging in both types of challenges, the Central or Team Challenge and the Instant Challenge. Lily engaged in three different Central Challenges throughout her tenure in the organization. She was motivated, as indicated in the theoretical framework, to participate in various challenges.

> For context, I only did the Fine Arts [challenge], maybe the Scientific [challenge], and I did Improv [challenge] for a couple of years, but I didn't like it [the improv challenge].” Lily reports that the team challenge “made me think outside the box.

This was an environment, as indicated in the theoretical framework, where she could choose how to engage and show creativity.

> My favorite part was always set design. That's why I keep going to the materials side of it.

Her team was also motivated, as indicated in the theoretical framework, to achieve the challenge while working within constraints.

> We would think of unique ways to get the point across while also being resourceful.

In general, Lily reported that Destination Imagination Central Challenges supported her learning, but defining the specifics of the learning is challenging. She described feeling like the environment was a fun learning experience.

> It's hard to think of specific examples because there were so many just little things like over the years. Since I started [participating in Destination Imagination] so

young, I think a lot of it I didn't remember when I was learning it because it was just fun.

Instant Challenge is the secondary component of the Destination Imagination experience. Lily was able to describe the environment, as indicated in the theoretical framework, which allowed her and her team to brainstorm a variety of ways to complete the challenge.

I liked it [Instant Challenge] because we as a team would usually come up with a bunch of ideas and discuss it first, which allowed us to think more outside of the box.

Lily's team felt motivated, as indicated in the theoretical framework, to innovate during the Instant Challenge experience.

It allowed for more iteration, which we often came up with a lot cooler of ideas.

Because of the way Instant Challenge is structured, Lily found that the environment, as indicated in the theoretical framework, taught her to work under pressure.

It also helped me learn to work under pressure with all of the time limits.

Lily explains that "being organized and staying on top of time management because it's easy to run out of time," were key components to her team's success. Other micro-domains, as indicated in the theoretical framework, also stuck with her.

I learned how to most efficiently use a mailing label. It always bothers me and the rest of my teammates when we see teams use the entire label in one, like [when the teams] just stick it in one spot.

Lily's engagement and motivation, as indicated in the theoretical framework, as a team member in Destination Imagination led her to the highest level of competition. During her second year in the organization, her team was invited to the global-level competition.

> My first year was second grade, and then in third and fourth grade, we went to Global Finals, which was fun. Then, the next two years we did improv. We didn't like that one as much. And then I did it [Destination Imagination] from then until senior year of high school and we ended up going to Globals two or three more times.

During Lily's participation in Destination Imagination, she highlighted several skills she learned throughout the experience including the teamwork environment, as indicated in the theoretical framework, and working under pressure. Lily listed the following as learnings from Destination Imagination:

- Teamwork
- Teamwork under pressure
- Being able to work with people and not be mad at them or work with them when they are mad at each other
- Thinking outside the box with using materials to make things
- Being resourceful
- Conflict resolution

Lily also highlighted learning micro-domain, as indicated in the theoretical framework, specific skills including using the following tools:

- Hot glue gun
- Cardboard cutter
- Drill
- Cement
- Spray painting
- Use different materials
- Heat gun

Looking back and reflecting on her involvement in Destination Imagination, Lily reports that during her younger years of participation she learned more because she was able to absorb more information. Her motivation, as indicated in the theoretical framework, over time changed:

> I think it [Destination Imagination] was definitely more impactful when I was younger and when I was first learning these skills because by middle school and high school, we'd kind of like perfected a lot of the aspects of the challenges because we had just practiced it so much. When you're little, you're learning more in general because you don't know everything in the world. You are still exploring and trying new things. You absorb more and like you have more to take away from each little thing you do. Each lesson is more impactful and then it gets less impactful the more lessons you learn. The stuff I learned stuck with me. I always will have that moving forward, which is great.

As an alumna of the organization, Lily reported still feeling motivated, as indicated in the theoretical framework, to engage in the organization as an adult

volunteer. She continues to feel that the environment, as indicated in the theoretical framework, specifically the Instant Challenge environment, as indicated in the theoretical framework, is somewhere she would like to spend time.

> I did like the Instant Challenges a lot. I'm excited. I'm volunteering for two appraiser roles and one of them is Instant Challenge. One site needed more engineering ones [appraisers], but I was most excited to judge the Instant Challenges.

Lily also reports Destination Imagination supporting her work in her career domain, as indicated in the theoretical framework.

> I'm in STEM. I'm doing material science and do research on renewable stuff. It's definitely cool having a creativity background. It's helpful, in a STEM field, thinking outside of the box. Like, 'Hey, how are we going to work to improve this one issue.' It's definitely been helpful in my career.

Lily described her experience in Destination Imagination as something she valued and continues to find value in her career.

Henry

Henry is a Destination Imagination Alumnus that participated in the experience off and on between 5th grade and 12th grade. It has been more than 10 years since Henry last participated in Destination Imagination as a participant. Destination Imagination was an environment he sought out at different parts of his K-12 experience.

> I did it in fifth grade. I did it in eighth grade because when I went to middle school, that middle school didn't have a team, but I moved between seventh and

eighth grade. The school I was in, in eighth grade, had a team. Then in high school, that school had a team, but they didn't do it my freshman year. I did it in 10th, 11th, and 12th grade.

He participated more than 10 years ago and started his Destination Imagination experience in Odyssey of the Mind (the organization that Destination Imagination split from).

Destination Imagination, before Destination Imagination exists, was an organization called Odyssey of the Mind that started in the early 80s when I was in elementary school.

Henry applied to join a team addressing the general thematic area, as indicated in the theoretical framework, of structure.

The math teacher and the computer science teacher in my elementary school always did Odyssey of the Mind. They always did only the structure challenge

Henry remembers his family being the environmental factor, as indicated in the theoretical framework, leading him to apply.

My mother or father probably found out about it and said, ‘let's apply you’ and because they only did the one problem [central challenge], they did an audition process. I think there were usually about 15-20 kids [that applied], and they had to whittle it down to seven.

His efforts to join a team were unsuccessful in his first year, but the continuing motivation, as indicated in the theoretical framework, led him to join the team the following year.

> In fourth grade, I didn't make it on the team, but in fifth grade I did, and that's where I started.

Henry defines the environment, as indicated in the theoretical framework, of the Destination Imagination experience as:

> a creative problem-solving competition for school-aged children. Teams of up to seven students, grouped by age group, pick one of several challenges to complete during the year. They present their solution at a competition either at the region, state, or global levels. They receive feedback based on their solution and while at the tournament, the teams also participate in an Instant Challenge where they apply the skills, knowledge, and teamwork they've learned during their solution process to an additional creative problem to solve.

Henry's engagement in Destination Imagination included both the Central Challenge and the Instant Challenge. The Central Challenge environment, as indicated in the theoretical framework, taught Henry to dig deep and try out new things.

> Destination Imagination, I feel like, allowed me to experience, really explore, different solutions to problems.

Part of the Destination Imagination experience that Henry highlighted was the motivation, as indicated in the theoretical framework, for teams to manage constraints like money and materials.

> The team challenge is about exploring different options to a solution because you can't necessarily buy something. You can't necessarily use the materials you want because of the cost limit, and you can't present the solution you want because of

> the time limit. The way that the Destination Imagination challenges are written, they challenge teams and team members, like myself. You can't just go out and buy a solution. You have to come up with something. You have to get it under a cost limit. You have to look for what's something different that you can do.

Henry also discussed the environment, as indicated in the theoretical framework, including the importance of his team learning to work together:

> I'll say also, the teamwork aspect of Destination Imagination was definitely a learning experience for me. I was a shy kid. I was probably bullied a lot. Being on a team of like-minded individuals, you learn to speak up. You learn to respect other people's viewpoints. You learn to just interact with other people.

When Henry was in high school he found himself integrating the teamwork environment, as indicated in the theoretical framework, with the general thematic area, as indicated in the theoretical framework, of structure challenges.

> My high school team was me and five girls. Being the only male on a team, sometimes it works out that they're just like, ‘OK, we're going to do this challenge that has some building. You go build this. We're going to go work over here on the script.’ They would come back every week, like, ‘Hey, this is what we're thinking about doing. Are you OK saying these things?’ But learning to work as a team was a big, big takeaway for me.

The Central Challenges that Henry engaged with had two general thematic components, as indicated in the theoretical framework.

> We usually did one of the challenges that were semi-technical and semi-performance based.

Through this experience, Henry learned a combination of domain-specific and micro-domain skills, as indicated in the theoretical framework.

> I learned to use a lot of power tools. You'd go down to the shop class or you'd borrow a circular saw or a drill. I gained a lot of those building skills.

Henry also highlights the general thematic process, as indicated in the theoretical framework, which he used to engage in new ideas and try new things.

> [I] learned the trial-and-error process. You would put together a solution and you would test it out. Would this work?

Henry walked through the process his team manager engaged the team in to get students practicing the general thematic, as indicated in the theoretical framework, "trial-and-error" process.

> Everybody is going to build a structure, then let's come back in the next week and we'll test it out and see how much it holds. Then we'll do an analysis of it.

Henry highlights that throughout that general thematic process, as indicated in the theoretical framework, he also engaged in domain-specific learning, as indicated in the theoretical framework, around challenge requirements.

> You learn structural engineering skills from something like that. I did the structure challenge in middle school, which is all about building a structure to hold weights, and that's primarily what you focused on.

Henry also identified that the central challenge experience taught him to think differently about the general thematic area, as indicated in the theoretical framework, of seeing objects and materials creatively.

> The team challenge forces you to really think outside of the box. You look for those alternative solutions and you start to see things in different ways. It's not just a piece of Styrofoam, it's not just a piece of cardboard. It becomes a backdrop, it becomes a prop, it becomes a phone, it becomes something that you can use in your solution.

Instant Challenge is the dual component of Destination Imagination. Henry described his experience with Instant Challenge, although he recognizes the Instant Challenge has changed from his participation as a team member.

> Back in the back in the day, in the Odyssey of the Mind days, the spontaneous was a lot different than Instant Challenges these days. They threw a lot of things in to slow you down. There was always a lot of like card flipping, or you had to go in order.

Henry goes on to explain the environment, as indicated in the theoretical framework, of his recent exposure to the Instant Challenge experience.

> I don't have a lot of experience with the modern Instant Challenge experience, but they [Destination Imagination officials] break them down, sometimes into performance-based or task-based. The task-based ones are often asking you to build a tower that is this high or build something that spans this long or build something to reach this far.

Henry also goes on to explain learning different ways to use materials. Materials use, as a general thematic area, as indicated in the theoretical framework, taught Henry how to explore and creatively use materials:

> They give you a lot of odd materials. You get straws and spaghetti and pipe cleaners and tape and labels. I say that a very specific thing is how to how to use a label. Well, you know, you only get two of them. If you if you start tearing it apart, you can get a lot more use out of it than just using two labels.

Henry's motivation, as indicated in the theoretical framework, to participate in Destination Imagination led him to the highest level of competition.

> I had the opportunity my junior year to go to Worlds, which was the Odyssey of the Mind equivalent to Globals.

Within this competitive environment, as indicated in the theoretical framework, Henry engaged in learning new general thematic skills, as indicated in the theoretical framework, related to exchange.

> One of the big things is pin trading. You have a number of pins and you're allowed to trade them with other people. You learned how to be fair in trading and how to not be taken advantage of.

Reflecting on his involvement in Destination Imagination, Henry sees the general thematic, as indicated in the theoretical framework, interpersonal skills he learned as applicable to his current career:

> I do apply them [the skills learned in Destination Imagination] on a semi-regular basis to my real life, my career, and my work. I work as part of a team at my job

> and being able to be part of that team, being able to speak up and offer ideas that other people haven't thought of, being able to respect other people's opinions, and being able to recognize people's strengths and how that all fuses together into a cohesive team, [that] is something that I feel like I learned from Destination Imagination.

Henry also reported that Destination Imagination taught him skills for testing and revising ideas. These are skills Henry acknowledged he uses in his profession.

> The trial-and-error process has proven very useful. I'm a software engineer, so the trial-and-error process of building something, testing it out, seeing what works what didn't is something that I do on a constant basis.

As an alumnus of the organization, Henry reported still participating in the organization as a volunteer, appraiser, and challenge master.

> As I got older, I continued on and stayed with it as a volunteer for many years now.

Henry finds that in the volunteer environment, as indicated in the theoretical framework, he continued to learn from teams.

> Being an appraiser and being a challenge master, you have to recognize the creativity that the teams are bringing to their solution. You look beyond your own biases and your own mental pictures of what you expect to see, and you start to see these viewpoints that the teams bring that you didn't think of at all.

Henry described his experience in Destination Imagination as something valuable that he wants to recreate and enhance for future students participating in the creativity skills training experience.

Jean

Jean is a Destination Imagination Alumna that participated in the experience from 7th grade through twelfth grade.

From seventh grade to 12th grade, I did all the years.

Her passion and motivation, as indicated in the theoretical framework, to stay involved in the Destination Imagination environment, as indicated in the theoretical framework, ended because of losing teammates.

I probably would have done it in university as well, but I was not interested in creating a new team and my team dispersed all over the country.

Although her mom was friends with the director of her state, the environment did not become available to her until her 7th-grade year.

My mom knew the state director of it [Destination Imagination]. I'm not too sure why it didn't come up earlier because my mom had known about it for a while, but I didn't have a chance to get involved.

It wasn’t until Jean was motivated, as indicated in the theoretical framework, to find an additional extracurricular activity to participate in that she joined a Destination Imagination team.

I started [Destination Imagination] in seventh grade when I was kind of looking for more activities to participate in. I wanted an extra activity and the team that I

joined had already been together for a couple of years. They kind of already all knew each other. They were from a different middle school, so that was a good way to get some extra friends.

Jean admits that Destination Imagination is “very awkward to describe” Destination Imagination as an organization and her perception of the environment, as indicated in the theoretical framework, of Destination Imagination focuses on a combination of general thematic areas, as indicated in the theoretical framework.

> [Destination Imagination is] a very team-focused, performance, arts-focused, extracurricular activity. It's not necessarily drama, and it's not necessarily engineering or acting or anything. It is kind of a combination.

Jean goes on to highlight that the Destination Imagination experience is motivated, as indicated in the theoretical framework, by what you make of it.

> You can also choose what you want to get out of it as far as building or performing or creating things.

By participating in Destination Imagination, Jean engaged in both the Central Challenge and Instant Challenge. For the central challenge, Jean engaged in several different general thematic areas, as indicated in the theoretical framework. The central challenges addressing the general thematic areas, as indicated in the theoretical framework, included the Structure/Engineering Challenge.

> The first challenge that I did with that team was called Versus! Foiled Again! It was a structural, building one [challenge], and that was very interesting because we all had different ideas about how to approach it.

Learning to address different perspectives is something Jean reflected on as a critical general thematic learning, as indicated in the theoretical framework, from her time in Destination Imagination.

> I think that was a good thing to learn at a young age that you need to be able to hear everyone's ideas and create a cohesive idea and troubleshoot problems and support each other throughout that. I have to say the biggest thing [I learned] would just be teamwork.

The Structure/Engineering Challenge also taught Jean the general thematic idea, as indicated in the theoretical framework, of how to manage tough situations under pressure.

> Our first time at Global Finals we did have a structural project and we built our structure here [home state] and then brought it there [Tennessee] and ran into the devastating problem of humidity. Our structure was very over the weight limit and we had to completely destroy it. It did not hold very much [weight] at all. So that was a very devastating thing in the moment, but I think we learned a lot about how to support each other.

Jean also engaged in the Fine Arts challenge for the Central Challenge. The Fine Arts challenge allowed Jean to explore materials to attack a domain-specific problem, as indicated in the theoretical framework, of set building.

> We had a couple of years where we did the main theatrical challenge and that was really fun with set design. I would say we got very creative in what materials to use as well.

Jean’s final years in Destination Imagination included the Improv challenge as the Central Challenge. Jean took this environment, as indicated in the theoretical framework, as a time to be more social and engage with creative peers.

> Our last couple of years were the improv challenged streaks because we just wanted an excuse to like, hang out” We didn't really prepare a lot for our last couple of competitions, but it was so fun.

Instant Challenge is the second component of Destination Imagination. Jean reported that her team was recognized with an Instant Challenge special award because of a micro-domain skill, as indicated in the theoretical framework.

> We won a special Instant Challenge award one year because I knew how to make an origami box.

According to Jean, the special award was something her team didn’t feel accomplished in earning.

> I was debating whether or not that was fair with my friend because that wasn't a skill. That's not a creative skill to me, it's just like a thing that I knew how to do. But the judges were like, 'oh my gosh' because we made it into a boat of some sort and we got a special award for it. And I was like, 'I mean, thanks', but I'm not sure that that was super creative, I just made a box.

Jean reflected on Instant Challenges as something that had more domain-specific, as indicated in the theoretical framework, building components than performance components.

> The Instant Challenges that I remember were a lot more structural or solving a physical problem. They sort of reminded me of elementary school, when you would do the projects so you could protect the egg and drop it from the roof. It [Instant Challenge] was a lot more like engineering and using your materials in a creative way rather than making up stories.

Jean reported that there were challenges with two domain-specific components, as indicated in the theoretical framework: structure and performance.

> There were a couple of challenges where it was like a structure and a story, or a goal and a story. I feel like, personally, I relied a lot more on my teammates for that. I'm not the best at improv. A lot of the girls on my team were [good at improv] though, so they sort of carried us.

The instant challenge also taught Jean the general thematic skill, as indicated in the theoretical framework, of quickly making decisions and working together on a team.

> [I learned] quick teamwork. We had to make a quick plan and even if I don't think that someone had a good plan, we don't have time to fix it, so we're just going to go.

Jean's experience and motivation, as indicated in the theoretical framework, in Destination Imagination led her to the highest level of competition in the organization.

> We went to global finals twice and that was a very interesting experience both times. The year that we went to global finals, the first time, we made an Eiffel Tower suit out of tin foil.

Jean also reports the Global Finals environment, as indicated in the theoretical framework, supported building elaborate and cost-effective solutions to compete.

> I remember we had a tree that had the trunk was made out of different boxes, like the boxes got smaller. We had to figure out how to support the branches and everything. Plus, not wanting to spend a lot of money. We had to get creative that way by reusing materials to make things work for our purposes.

When Jean reflects on her Destination Imagination experience, she highlighted micro-domain skills, as indicated in the theoretical framework, she learned tangential to the organization like warmups and cakewalks.

> My team liked to do a lot of silly warm-up activities. So, I've learned some really good teambuilding, icebreaker activities. I used them when I volunteered in classrooms. I'm also good at hosting cake walks.

Jean also highlighted the importance of her teammates in the environment, as indicated in the theoretical framework.

> I would say [Destination Imagination] impacted [my creativity] mainly because of my teammates and what they were bringing to the table. I wouldn't say that I started DI because of the acting and drama part of it. That's not what I was excited about, but I learned a lot about that through it because my teammates were good at it. So that impacted my creativity.

Jean's motivation, as indicated in the theoretical framework, to stay involved with Destination Imagination changed over time.

> The reason that I stuck with it [Destination Imagination], probably, was because it was like a team-bonding fun, friend-hangout time. My team didn't really care a whole lot about the competition, because there was none [in the home state]. As I got older in high school, it was a lot more just about the social aspect of it.

Jean described her experience in Destination Imagination as something that gave her a community to bond with. She appreciated the social aspects of the creativity skills training experience.

Summary of Qualitative Findings

The narratives of three Destination Imagination Alumni were reported using the lens of the theoretical framework. All three narratives share insights into the Destination Imagination creative experience. All three narratives highlight the key components of the Destination Imagination creativity skills training experience. Interviewees discussed initial requirements including motivation and environmental factors that led to their success in the organization. Ideas supporting the environmental subcategory of initial requirements, as indicated in the theoretical framework, were discussed in the narratives. The environmental ideas include peers, fostering creativity, and teaching skills applicable across domains. Findings support motivational initial requirements, for example, the desire to do well and attend the global competition, wanting to perform well, and the various reasons for engaging and continuing to engage in Destination Imagination as a creativity skills training experience. General thematic areas were also discussed among participants including the various challenges the alumni participated in as a youth. There

were specific learnings that each interviewee discussed as key to their learning within general thematic areas.

There were also components that each interviewee highlighted about domain-specific areas and micro-domain-specific areas. Examples provided by participants regarding domain-specific areas and micro-domain specific areas were fewer and specific to the individual. Some narratives discussed learning domain-specific skills in one area like the creative/engineering design process or micro-domain skills such as using a heat-gun while other groups had different domain-specific skills including set-design and micro-domain learnings including origami. Overall, participants discussed many more initial requirements and general thematic areas compared to their descriptions of domain-specific skills and micro-domain-specific skills.

Summary

This chapter details the results of this study through quantitative and qualitative findings. Quantitative results were presented and qualitative narratives from participant interviews were shared. All results were connected to the theoretical framework, the Amusement Park Theoretical Model of Creativity. The next chapter will provide a deeper analysis and interpretation of the results.

CHAPTER FIVE: ANALYSIS AND DISCUSSION

Overview

The purpose of this chapter is to analyze the findings from this study. This chapter begins by revisiting the purpose, theoretical framework, and research questions, followed by an in-depth analysis of the results. The chapter concludes with lessons learned, limitations, and implications for the larger field of education.

Revisiting the Purpose Statement

The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. The theoretical framework guiding this study is revisited in the following section.

Revisiting the Theoretical Framework

The theoretical framework guiding this study is the Amusement Park Theoretical Model of Creativity (APT) (Baer & Kaufman, 2017).

Table 5.1

The Amusement Park Theoretical Model of Creativity

Level	Amusement Park Examples	APT Model Examples
Initial Requirements (the highest degree of domain generality)	Transportation to the park, a ticket to enter, money	**Intelligence**, **motivation** (whether intrinsic or extrinsic) to do or create something, an **environment** that allows some form of creativity
General Thematic Areas	What type of amusement park? Rides, animals, water, cartoon characters, etc.	Everyday, scholarly, performance, math/scientific, or artistic creativity (among others)
Domains	Picking the actual amusement park itself	Within math/science (for example) it could be chemistry, biology, physics, psychology, economics, etc.
Micro-domains	Within the actual amusement park, where do you go?	Within psychology (for example): clinical, cognitive, social, developmental, neuroscience, educational, or organizational

Note. From "The Amusement Park Theoretical Model of Creativity," by J. Baer & J. C. Kaufman, 2017, In J. C. Kaufman, V. P. Glaveanu, & J. Baer (Eds.), *The Cambridge Handbook of Creativity Across Domains,* p. 42-43. Copyright 2017 by Cambridge University Press.

Throughout this chapter, the four main components of the APT initial requirements (general thematic areas, domains, and micro-domains), and the three additional areas that are nested within the initial requirements (intelligence, motivation, and environment), are connected to the analysis.

Response to the Research Questions

The research questions (RQs) that guide this mixed-methods study are:

RQ 1: How do adult alumni of a youth creativity skills training experience report its impact?

RQ 2: How do adult alumni of a youth creativity skills training experience report their domain-specific creativity?

RQ 3: How do adult alumni of a youth creativity skills training experience report their creative self-efficacy?

RQ 4: What are the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience?

Each research question is discussed and analyzed below.

RQ 1 Creativity Skills Training Experience

How do adult alumni of a youth creativity skills training experience report its impact?

Research question one was designed to understand the perceptions that adult alumni have regarding their creativity skills training experience. Overall, both the quantitative and qualitative data show that participants perceive their creativity skills training experience as supporting their creativity. Based on the quantitative results, each participant felt like their experience was important in enhancing their creativity. The quantitative findings from this study relate to the Amusement Park Theoretical Model of Creativity (APT)'s initial requirements.

The creativity skills training environment was described by participants as supportive in generating many original ideas, using materials in new ways, brainstorming, and thinking creatively under stressful conditions.

The qualitative findings generated from participant interviews support initial requirements, as indicated in the theoretical framework, being met through the creativity skills training environment. All three interviewees discussed the environment and motivation components of initial requirements and described the creativity skills training experience as a challenging and supportive environment that encouraged risk-taking. Participants reported exposure to various domains throughout their participation in the creativity skills training experience, including various domains, original ideas, receiving feedback, teamwork with peers, and choice.

The central challenge is one area where participants were exposed to various domains during their participation in the creativity skills training experience. The central challenge is the competitive, long-term challenge centered around one of six areas: Technical, Scientific, Fine Arts, Improv, Engineering, and Service Learning. Seventy-one percent of participants engaged in more than one central challenge while involved in Destination Imagination. Alumni of Destination Imagination reported engaging in different central challenges and aspects such as structure building, technical design, set design, costuming, and improv throughout their involvement in the creativity skills training experience.

Creative peers are an important initial requirement for engaging in a creative environment (Piirto, 2004). During interviews, all participants discussed the importance of collaboration with their teammates. Participants reported that their peers taught them specific skills, supported their creative growth, and were a critical factor in their continued engagement in the creativity skills training experience.

Exposure to new ideas is central to a creative environment (Beghetto & Kaufman, 2014; Hunter et al., 2007; Runco, 2005) and something that participants within the creativity skills training experience intentionally pursued. Alumni of the creativity skills training experience-reported elevating their solutions to the global level to showcase their ideas and learn from other teams. During the global competition, participants reported learning skills they could not otherwise learn at the regional and state level. The global experience, compared to the regional and state experience, provided a unique environment for engaging in novel and innovative creative experiences.

RQ 2 Domain-Specific Creativity

How do adult alumni of a youth creativity skills training experience report their domain-specific creativity?

Research question two was designed to understand the perceptions that adult alumni have regarding their domain-specific creativity. Domain-specific creativity, in this study, was measured by the K-DOCS which measures five domains of creativity: Self/Everyday, Scholarly, Artistic, Performance, and Mechanical/Scientific. The

quantitative data show that participants perceive they are much more creative than their same-age peers in the four of the five measured domains: self/everyday, scholarly, artistic, and mechanical/scientific. Self/everyday creativity and scholarly creativity were the areas where alumni perceived they were the most creative.

Qualitative data from interviews highlighted the ways alumni believe the creativity skills training experience enhanced their creativity in general thematic areas. Examples from participant interviews primarily included the initial requirements component of the theoretical framework. Participants reported their ability to develop skills relating to specific challenges, including structural and engineering skills, or performance skills. Participants also discussed learning how to engage in everyday skills that transfer to areas such as teamwork, conflict resolution, and the creative design process.

Adult alumni of a youth creativity skills training experience report that they are more creative than their same-age peers in self/everyday, scholarly, performance, and mechanical/scientific creativity. Each interviewed participant described different components of domain-specific creativity. Interviews highlighted that the self/everyday creativity domain included bringing new ideas to the table, highlighting other people's strengths, and asking critical questions. Participants did not describe their scholarly creativity. Alumni described their performance creativity as something that wasn't easy to develop but something that peers supported them in developing. Participants described learning the engineering/creativity design process which supported their mechanical/scientific creativity. Artistic creativity was something some participants felt

very strong in and something other participants felt less creative than their same-age peers. During interviews, one participant mentioned aspects of artistic creativity including set-design. Another participant highlighted the conflict between receiving a special award for a skill that didn't feel creative to them. The Four C theory of creativity can be lifted to make sense of this idea. The Four C theory includes Big C (eminent creativity), little-c (everyday creativity), mini-c (personal creativity), and Pro-c (professional or expert creativity) (Kaufman & Glaveanu, 2019). The appraisers scoring the solution using the origami determined it was worth a special award. To the appraisers, this solution showed Big-C creativity as they were very impressed with the use of origami in solving the challenge. To the participant and her team, this solution showed mini-c it was something that was creative at one point, maybe when they first learned it, but at this point, it was not something the participant deemed as new or creative.

Overall, domain-specific creativity of alumni that participated in a creativity skills training experience seems to be specific to the individual. While alumni of the creativity skills training experience, in general, feel confident about their domain specific creativity abilities, individual participants focused on different domain areas to highlight in interviews showing each participant took unique domain-specific creativity skills away from the creativity skills training experience.

RQ 3 Creative Self-Efficacy

How do adult alumni of a youth creativity skills training experience report their creative self-efficacy?

Research question three was designed to understand the perceptions that adult alumni have regarding their creative self-efficacy. Based on the quantitative results, participants describe their creative self-efficacy at or above their same-age peers. On average, participants believe that they are more creative than their peers. Creative self-efficacy highlights the importance of believing oneself capable of being creative (Sternberg, 2019). Without the motivation to do something, creativity is not possible (Hennessey, 2019; Runco, 2005). All participants reported self-efficacy in generating new ideas. Furthermore, on average, alumni of a creativity skills training experience believe they have good ideas and a good imagination.

Those interviewed explained that their entry into the creativity skills training experience occurred because they were motivated to engage in something new. Rather than seek out specific creative opportunities, participants were seeking out the opportunity to engage in a new experience. Participants reported various aspects of the central challenge, the team based competitive challenge linked to several domain areas, or instant challenge, a quick-thinking team based task, that motivated them to engage in the creativity skills training experience. Some participants report different types of central challenges being more personally interesting than others. Other participants reported components within challenges like set building, or structure building as more motivating.

RQ 4 Relationships Among All Areas

What are the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience?

Research question four was designed to understand the potential relationships that exist among creativity skills training experiences, domain-specific creativity, and creative self-efficacy. Based on the quantitative results, the only two areas that are related are the domain of creative self-efficacy and the performance area of the K-DOCS. This indicates that the more creative the participant believed they were, the more creative they perceive themselves in the performance area. While this may be the case, it is important to note that the creativity skills training experience required participant performance. Interviews from participants shed light on this idea; several participants mentioned that the performance aspect of Destination Imagination was not the sole reason for their engagement. Those interviewed shared the sentiment that engaging with peers who enjoyed the performance component served to enhance their performance creativity.

Summary of Response to Research Questions

A creativity skills training experience is highly valued by those that participate in it. Alumni of a creativity skills training experience report that it positively impacts their creativity. These impacts were identified by interviewees as meeting the initial requirements of creativity as identified by the theoretical framework. Participants report that a creativity skills training experience provides them with the environment and motivation to be creative, including creative peers and constructive feedback.

Domain-specific creativity is something participants perceive they are much more creative than their same-age peers in the four of the five measured domains: self/everyday, scholarly, artistic, and mechanical/scientific. Each participant was able to describe their creativity in several domain areas, but each participant had specific domains that they felt more confident about than other domains. For example, all participants discussed their self-perceived adeptness at self/everyday creativity including teamwork and conflict resolution. Each participant described specific areas they feel adept including using the engineering design process or designing set pieces. Participants all learned some domain-specific skills but also semi-specialized while in their creativity skills training program and took away unique domain-specific skills.

Participants believe in their own creative abilities. Their creative-self efficacy is highlighted both by their quantitative rationale stating they have good ideas and a good imagination, but also by the interviews. Participants reported feeling creative and supported by their peers to engage creatively in tasks. Alumni reported that their peers trusted them with specific parts of a challenge which allowed them to lead a portion of the creative project.

The relationship between areas shows that creative self-efficacy is related to the performance domain of creativity. This study found that all other areas are unrelated. Additional research should be conducted to dive deeper into these relationships and explore potential moderators. Upcoming sections detail the limitations and implications of this study.

Findings support the idea that creativity is both domain-specific and domain general. According to Plucker and Beghetto (2004), creativity is not dichotomous being either domain-general or domain-specific but rather creativity includes both components. The research questions, quantitative data, and qualitative data from this study lift up domain-specific creativity, domain-general creativity, and mixed domain creativity components.

Limitations

This study's largest limitation was the relatively low response rate during the quantitative data collection. While the quantitative data collection instruments were sent out to over 1,000 participants, only 38 participants completed the online survey. During the quantitative phase, data collection instruments were emailed to potential participants and only received a small number of full completions. Due to the low number of completed instruments, the study's power is low with power = .46. Future research provides an opportunity to conduct the study with a larger number of participants. Implications of findings from this study are detailed in the following section.

The study also uses the Destination Imagination Alumni Network as the access to alumni of the Destination Imagination creativity skills training experience. The Destination Imagination Alumni Network is not fully comprehensive of all participants that ever engaged in Destination Imagination. Most participants enter the Destination Imagination Alumni Network at the Global Finals tournament or by singing up after being age 18 or older. Participants that engage in Destination Imagination once or a few times in elementary or middle school may be unaware of the Destination Imagination

Alumni Network and therefore are not represented in the Alumni Network. Participants in this study are likely those that were highly involved in the organization at a high level (attending Global Finals). This is due to the recruitment process of the Destination Imagination Alumni Network.

Implications

The purpose of this section is to discuss the theoretical and practical implications of this study as well as to address future opportunities for research.

Theoretical

This research contributes to the field of creativity. This study is designed to improve educational opportunities by adding to the body of evidence around creativity, creativity skills training, and creative self-efficacy. The long-term impact of a creativity skills training experience, including domain-specific creativity areas interacting with creativity skills training experiences, has not been adequately researched. This study further contributes to the existing body of research around creativity skills training, creative self-efficacy, and domain-specific creativity. Additionally, this study provides clarity around the relationships among the three elements so that future researchers may better understand the relationships among creativity, the impact of creativity skills training, and creative self-efficacy.

By adding to the field of research around creativity skills training, creative self-efficacy, and domain-specific creativity, the field begins to push toward a better understanding of creativity. Additionally, this study provides evidence that alumni of a creativity skills training experience believe they can be creative, believe they are more

creative in specific-domain areas than their peers, and believe their creativity skills training experience enhanced their creativity. These three findings provide a basis for future research. Theoretical implications are important to growth in the field. Practical implications to improve the field are discussed in the next section.

Practical

This study can be used in a variety of practical ways, including improving creativity skills training experiences and supporting student growth.

Destination Imagination engages participants in "project-based challenges that are designed to build confidence and develop extraordinary creativity, critical thinking, communication, and teamwork skills." (Destination Imagination, 2018b). Based on this research, alumni of the Destination Imagination creativity skills training experience engage in these ideas. Alumni self-report high levels of creative self-efficacy (4's and 5's on a 1-5 scale) meaning they are confident in their creativity skills. Critical thinking, communication, and teamwork were skills highlighted in interviews. Participants reported teamwork and peers as one of the elements that kept them engaged in the organization. The peers, learning to communicate with peers, and solving difficult problems with peers were highlighted by alumni as reasons for staying engaged in the creativity skills training experience. Alumni develop creativity as demonstrated by their general creativity knowledge of experiences like the creative process and examples highlighting domain-specific skills. Their extraordinary creativity skills seem to be more domain-general than domain-specific. While the organization hosts challenges in specific

domains, (technical, scientific, fine arts, improv, engineering, and project outreach), alumni hold on to more domain-general skills than domain specific skills.

Destination Imagination is just one example of a creativity skills training experience focused on supporting students in taking "their learning to the next level," (Destination Imagination, 2020a, p. 3). The joy and positivity around Destination Imagination was shared by participants both in interviews and in the quantitative data collection process through the creativity skills training experience impact. Participants think highly of Destination Imagination and shared many positive experiences while engaging with the organization as a team member. Destination Imagination can use this information to support recruiting efforts. Presenting an experience as something where alumni feel confident and energized by their engagement can support the organization in recruiting new team members.

Alumni describe the creativity skills training experience as a STEM or STEAM competition. Rather than having a clear, concise definition of the experience, participants all described it in their own terms. Each definition focused on the experience as a STEM or STEAM competition that focused on developing a variety of skills including some combination of engineering and performance. "You can choose what you what you want to get out of it" (Jean). This idea of choice and ownership is central to the alumni experience of those interviewed. The organization can use the information about the impact of the creativity skills training experience to better understand the alumni experience. The alumni have descriptions of the organization and the skills it provided to them but have a difficult time articulating the specifics of how the organization impacted

their creativity. Rather identifying how the organization improved their creativity in a specific domain, they spoke of domain-general learnings that they applied within specific domains. “The trial-and-error process has proven very useful. I'm a software engineer, so the trial-and-error process of building something, testing it out, seeing what works what didn't is something that I do on a constant basis,” (Henry). In Destination Imagination, the ”trial-and-error process” is described as the creative process of recognize, imagine, collaborate and initiate, assess, and evaluate and celebrate (see Appendix H). The creative process is a skill that can be used across domains rather than something used in a specific domain. This study provides evidence of Destination Imagination being an impactful organization that pushes students to learn the creative process and other domain-general skills. The creative process is something valued by alumni from the organization and applied within their careers. The organization can take this information and use it to enhance their program. By knowing the creative process is highly valued by alumni and applied in careers, Destination Imagination can recruit and explain to those interested in the organization that one of the key take-aways of the organization is the creative process. When families and educators are selecting extracurricular activities for children, the creative process is one expected impact of participation in the organization.

This study also clarifies the self-perceived abilities of domain-specific creativity. Alumni self-report high levels of self/everyday creativity, scholarly creativity, and scientific/mechanical creativity. These perceived abilities of domain-specific creativity show that alumni feel confident in these areas and their ability to be creative in these spaces. Self-perceived artistic creativity and performance creativity are more variable.

When families and educators are selecting extracurricular activities for children understanding the expected impact of participation in the organization, including creativity in domain-specific areas, clarifies the expectations of outcomes for alumni of the organization. Appropriately marketing and recruiting can be improved using the findings from this study.

Creativity skills training experiences, like Destination Imagination, can use this study to improve their experience for students. This study highlights possible holes in outcomes of alumni regarding domain-specific creativity and creative self-efficacy. Given that no correlations were found regarding any domain-specific areas of creativity and the creativity skills training experience, organizations may choose to focus efforts on improving outcomes pertaining to domain-specific creativity. Additionally, no relationship was found between creativity skills training and creative self-efficacy. Organizations that foster creativity may choose to increase their efforts to support creative self-efficacy.

This study also provides support to parents, educators, and students. While other studies have found that creativity skills training experiences support domain-general creativity (Piirto, 2004), this study supports that finding and supports the conclusion that creativity skills training experiences may not support domain-specific skills. Thus, parents, educators, and students can use this study to guide their decisions around appropriate programming based on desired outcomes. For example, a parent seeking experiences where a creative environment is supported would find Destination Imagination to be a good fit. However, if a parent was seeking a creative computer

programming opportunity, a creativity skills training experience like Destination Imagination may not be the most appropriate fit.

The theoretical implications were discussed in the previous section. The practical implications are discussed in this section. Both are important to considering the impact of this study. Ideas for future research to continue to push the field forward are outlined in the next section.

Future Research

This study would be enhanced by a variety of follow up studies including experimental design, larger sample sizes, longitudinal studies, and similar study design with different samples.

An experimental design that could enhance findings from this study would be an experimental design study that randomly assigns students to patriciate in Destination Imagination or in a different extracurricular activity. Those in the extracurricular activity would serve as a control. Using the same measures in this study, with a modified version of the creativity skills training experience instrument, participants would complete the three instruments before, during, and after participating in the creativity skills training experience. Results from those engaging in the creativity skills training experience and those in the control group could be analyzed to determine differences between groups and correlations within groups.

Another valuable study would be rerunning this study, with an increased sample size, and additional correlations. Testing for potential moderators like challenge type, years of participation (elementary, middle, or senior), and level of participation (regional,

state, global) would help gather a better understanding of what type of experiences impact domain-specific creativity and creative self-efficacy. For example, Destination Imagination has seven central challenge types. Conducting a quantitative analysis with the type of challenge as a moderator would illuminate if participants who engaged in the scientific challenge were more creative in the scientific/mechanical domain, for example.

A longitudinal study regarding domain-specific creativity, creative self-efficacy, and creativity skills training impact would be a valuable contribution to the field. A study that follows several teams of students engaging in Destination Imagination, or another creativity skills training experience, and assesses them annually on self-report instruments of domain-specific creativity, perception of creativity skills training impact, and creative-self efficacy would provide clarity regarding the development of creativity and relationships among the three areas throughout a student's creativity skills training experience.

This study could also be repeated using a different creativity skills training experience as a sample to determine how various creativity skills training experiences enhance creativity development. This study run with more domain-specific experiences, for example, experiences focusing on robotics, computer coding, or dance, would add to the body of research around creativity and creativity skills training experiences.

Building from this study can be done with additional research on other areas and associations with types of creativity or creative self-perceptions. A quantitative correlational study looking at the relationships between personality characteristics and

self-perceptions of creativity would add to the understanding of creativity and its relationship to personality.

In summary, this study prepares for future studies. Potential follow up studies include experimental design, larger sample sizes, longitudinal studies, and similar study design with different samples.

Summary and Conclusions

This study was designed to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. In summary, this study suggests that alumni of a youth creativity skills training experience believe the creativity skills training experience was impactful in their creative development. Participants also reported high creative self-efficacy and believe they are creative in a variety of domains. The relationship between the performance domain and creative self-efficacy is the only statistically significant relationship found in this research. In general, this study highlights that the creativity skills training experience focused more on general creativity including initial requirements and general thematic areas rather than specific areas of creativity including domains and micro-domains.

These data add to the field of research and can be useful to organizations that foster creativity as they work to enhance their programming to address domain-general areas of creativity and domain-specific areas of creativity. This study can be used to help parents, educators, and students select experiences that best meet their needs.

Future studies can expand on this research by using experimental designs, larger sample sizes, longitudinal studies, and similar study design with different samples. These future opportunities can further enhance our understanding of domain-specific creativity, creativity skills training, and creative-self efficacy.

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Appendix A

Destination Imagination Instant Challenge Example

Below is an example of an instant challenge from "Instant Challenge Practice Set: 2020-21 Challenge Season," by Destination Imagination, 2020, p. 9 (https://resources.destinationimagination.org/pubdocs/.epolpkytbqbsvpgqxqb/20-21_Instant_Challenge_Practice_Set.pdf). Copyright 2020-21 Destination Imagination.

PAPER AND PLASTIC

In-Person Task-Based Instant Challenge

Challenge

Your TASK is to create a freestanding tower that is as tall as possible.

For this Challenge, "freestanding" means not attached to anything.

Time

You will have up to 5 minutes to use your IMAGINATION and the CREATIVE PROCESS to create your tower.

Setup

In the center of the room is a table with materials.

Procedure (5 minutes): NOTE THAT THIS CHALLENGE HAS ONLY ONE PART! Create a tower that is as tall as possible. At the end of time, or sooner if you wish, the Appraisers will measure the height of your tower.

Materials

2 Paper Lunch Bags 10 Plastic Forks

Your team will also have a yardstick (meterstick), but this may NOT be damaged and may NOT be part of your tower.

Scoring

You will receive:

A. 2 points (60 points maximum) for each inch (2.5cm) of height of your tower.
B. Up to 20 points for the creativity of your tower.
C. Up to 20 points for how well your team works together.

Appendix B

Destination Imagination Technical Team Challenge Scoring Sheet

From “The Next Level Technical: 2020-21 Challenge Season,” by Destination Imagination, 2020, p. 10 (https://resources.destinationimagination.org/pubdocs/.jcsdkuyurvdtuqxsxy/20-21_Technical_Challenge_-_The_Next_Level.pdf). Copyright 2020-21 Destination Imagination.

IV. SCORING

CENTRAL CHALLENGE: Up to 240

A. Video Game (See Section I.A.)	Up to 110
1. **Creativity of the Adventurer's quest to attain the Ultimate Prize** This means there is novel development of the character(s) and quest.	**Up to 20**
2. **Clear and effective storytelling** This means the Video Presentation has a beginning, a middle, and an end and is presented in a way that is easy to follow and understand.	**Up to 20**
3. **Theatrical effect of the use of the Adventurer's Special Ability** This means that the Adventurer uses the Special Ability in the Video Game in a dramatic, interesting, and/or memorable way.	**Up to 20**
4. **Technical Design of the portrayal of the Adventurer's Special Ability** This means how Technical Methods are used to enhance the depiction of the Special Ability. Technical Design is the result of a plan for carrying out or accomplishing a task. A high-quality design shows careful planning and is effective, efficient, and reliable.	**Up to 20**
5. **Technical Innovation of the portrayal of the Adventurer's Special Ability** This means how Technical Methods are used to enhance the depiction of the Special Ability. Technical Innovation includes how new, unique, original, or creative the methods are for carrying out or accomplishing a task.	**Up to 20**
6. **The Adventurer attains the Ultimate Prize**	**0 or 10**
B. Tool (See Section I.B.)	**Up to 80**
1. **Creativity of how the Quest Items are revealed during the Video Game**	**Up to 15**
2. **Technical Design of the Tool** This includes, but is not limited to, how each of the Quest Items contributes to the Technical Design of the Tool.	**Up to 25**
3. **Technical Innovation of the Tool** This includes, but is not limited to, how each of the Quest Items contributes to the Technical Innovation of the Tool.	**Up to 25**
4. **Creative use of the Tool to help the Adventurer on the quest**	**Up to 15**
C. Portrayal of the Video Game (See Section I.D.)	**Up to 50**
1. **Effective use of cinematic techniques to portray the Video Game**	**Up to 25**
2. **Effective use of artistic and/or theatrical techniques to portray the Video Game**	**Up to 25**

TEAM CHOICE ELEMENTS: Up to 60

D. Team Choice Element 1 (See Section II.)	Up to 30
1. **Creativity and originality**	**Up to 10**
2. **Quality, workmanship, or effort that is evident**	**Up to 10**
3. **Integration into the Video Presentation**	**Up to 10**
E. Team Choice Element 2 (See Section II.)	**Up to 30**
1. **Creativity and originality**	**Up to 10**
2. **Quality, workmanship, or effort that is evident**	**Up to 10**
3. **Integration into the Video Presentation**	**Up to 10**

Appendix C

Recruitment Letter

The University of Denver's Morgridge College of Education is conducting a research study on: **Examining Relationships Among Creativity Skills Training, Domain-Specific Creativity, and Creative Self-Efficacy: A Correlational Research Study**. The study will occur online via survey format using Qualtrics software.

If you are an alumni of Destination Imagination you are eligible to participate in a research study examining the relationships among the impact of creativity skills training, domain-specific creativity, and creative self-efficacy. If you decide to participate in this study, you will answer an online survey that should take about 15 minutes to complete.

Remember, this is completely voluntary. You can choose to be in the study or not. If you would like to participate please click the link below:

THE LINK TO SURVEY WOULD APPEAR HERE

For more information about the study please email Kayla Steffens at kayla.steffens@du.edu or call 720-507-7665.

Principal Investigator: Kayla Steffens kayla.steffens@du.edu

Faculty Sponsor: Dr. Norma Hafenstein norma.hafenstein@du.edu

Morgridge College of Education
Katherine A. Ruffatto Hall | 1999 E. Evans Ave. | Denver, CO 80208-1700 | 303-871-2509 | 303-871-4456 | www.du.edu/education

Appendix D

Implied Consent for Online Survey

You are invited to participate in the research study *Examining Relationships Among Creativity Skills Training, Domain-Specific Creativity, and Creative Self-Efficacy: A Mixed Methods Study.* The purpose of this study is to examine the relationships among and impact of creativity skills training, domain-specific creativity, and creative self-efficacy in adult alumni of a youth creativity skills training experience. You were selected as a possible participant in this study because you are a member of the Destination Imagination Alumni Network.

If you decide to participate, please understand your participation is voluntary and you have the right to withdraw and discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. The alternative is not to participate. If you decide to participate, complete the following survey. Your completion of this survey indicates your consent to participate in this research study. The survey is designed to measure perceptions of creativity skills training impact, self-perceptions of domain specific creativity, and self-perceptions of creative self-efficacy. It will take about 15 minutes to complete. You will be asked to answer questions about your experience in the Destination Imagination Program, your creativity, and your potential for creativity. No benefits accrue to you for answering the survey, but your responses will be used to broaden knowledge about creativity and adult perceptions of creativity. Any discomfort or inconvenience to you are situations such as confidentiality issues due to the use of

technology for data collection, but they are not expected to be any greater that anything you encounter in everyday life. Data will be collected using the Internet; no guarantees can be made regarding the interception of data sent via the Internet by any third party. Confidentiality will be maintained to the degree permitted by the technology used.

Your decision whether or not to participate will not affect your future relationships with the University of Denver or Destination Imagination. If you decide to participate, you are free to stop at any time; you may also skip questions if you don't want to answer them or you may choose not to return the survey.

Please feel free to ask questions regarding this study. You may contact me if you have additional questions at:

Principal Investigator:

Kayla R. Steffens

Curriculum and Instruction

Morgridge College of Education, University of Denver

kayla.steffens@du.edu

720-507-7665

Faculty Mentor:

Dr. Norma Hafenstein

Teaching and Learning Sciences

Morgridge College of Education, University of Denver

norma.hafenstein@du.edu

303-871-2527

If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about the research or your rights as a participant, please contact the University of Denver (DU) Institutional Review Board to speak to someone independent of the research team at (303) 871-2121, or email at IRBAdmin@du.edu.

De-identified data from this study may be shared with the research community at large to advance science and health. We will remove or code any personal information that could identify you before files are shared with other researchers to ensure that, by current scientific standards and known methods, no one will be able to identify you from the information we share. Despite these measures, we cannot guarantee anonymity of your personal data.

Thank you for your time.

Sincerely,

Principal Investigator

Kayla R. Steffens

Curriculum and Instruction

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By clicking the link below, I confirm that I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement, and possible risks and inconveniences have been explained to my satisfaction. I understand that I can discontinue participation at any time. My consent also indicates that I am at least 18 years of age. [Please feel free to print a copy of this consent form.]

☐ I agree to participate (link to survey) ☐ I decline (link to close webpage)

Appendix E

Destination Imagination Survey

From “Evaluating the Impacts of Destination ImagiNation on the Creative Problem Solving Skills of Middle School Students” by T. C. Missett, C. M. Callahan, & H. Hertberg-Davis, 2012 (https://link.gale.com/apps/doc/A444309499/HRCA?u=coloboulder&sid=summon&xid=c758b942). Copyright 2012 The International Journal of Creativity and Problem Solving.

How much did DI [Destination Imagination] teach about CREATIVE THINKING in the areas stated below? (Scale of 1 *Not at all* to 5 *A great deal*)

Generating many ideas

Generating unusual or original ideas

Making unusual or original products

Finding new ways to use materials

Brainstorming

Thinking creatively even when conditions become difficult or stressful

Appendix F

Kaufman Domains of Creativity Scale (K-DOCS)

From "Counting the Muses: Development of the Kaufman Domains of Creativity Scale (K-DOCS)" by J. C. Kaufman, 2012, p. 308 (https://doi.org/10.1037/a0029751). Copyright 2012 Psychology of Aesthetics, Creativity, and the Arts.

Instructions: Compared to people of approximately your age and life experience, how creative would you rate yourself for each of the following acts? For acts that you have not specifically done, estimate your creative potential based on your performance on similar tasks.

1	2	3	4	5
Much Less Creative	Less Creative	Neither More nor Less Creative	More Creative	Much More Creative

1. Finding something fun to do when I have no money _____
2. Helping other people cope with a difficult situation _____
3. Teaching someone how to do something _____
4. Maintaining a good balance between my work and my personal life _____
5. Understanding how to make myself happy _____
6. Being able to work through my personal problems in a healthy way _____
7. Thinking of new ways to help people _____
8. Choosing the best solution to a problem _____
9. Planning a trip or event with friends that meets everyone's needs _____
10. Mediating a dispute or argument between two friends _____

11. Getting people to feel relaxed and at ease _____
12. Writing a nonfiction article for a newspaper, newsletter, or magazine _____
13. Writing a letter to the editor _____
14. Researching a topic using many different types of source that may not be readily apparent _____
15. Debating a controversial topic from my own perspective _____
16. Responding to an issue in a context-appropriate way _____
17. Gathering the best possible assortment of articles or papers to support a specific point of view _____
18. Arguing a side in a debate that I do not personally agree with _____
19. Analyzing the themes in a good book _____
20. Figuring out how to integrate critiques and suggestions while revising a work _____
21. Being able to offer constructive feedback based on my own reading of a paper _____
22. Coming up with a new way to think about an old debate _____
23. Writing a poem _____
24. Making up lyrics to a funny song _____
25. Making up rhymes _____
26. Composing an original song _____
27. Learning how to play a musical instrument _____
28. Shooting a fun video to air on YouTube _____

29. Singing in harmony _____

30. Spontaneously creating lyrics to a rap song _____

31. Playing music in public _____

32. Acting in a play _____

33. Carving something out of wood or similar material _____

34. Figuring out how to fix a frozen or buggy computer _____

35. Writing a computer program _____

36. Solving math puzzles _____

37. Taking apart machines and figuring out how they work _____

38. Building something mechanical (like a robot) _____

39. Helping to carry out or design a scientific experiment _____

40. Solving an algebraic or geometric proof _____

41. Constructing something out of metal, tone, or similar material _____

42. Drawing a picture of something I've never actually seen (like an alien) _____

43. Sketching a person or object _____

44. Doodling/drawing random or geometric designs _____

45. Making a scrapbook page out of my photographs _____

46. Taking a well-composed photograph using an interesting angle or approach

    _____

47. Making a sculpture or piece of pottery _____

48. Appreciating a beautiful painting _____

49. Coming up with my own interpretation of a classic work of art _____

50. Enjoying an art museum _____

Scoring: all items should be randomized.

Items 1-11 comprise Self/Everyday

Items 12-22 comprise Scholarly

Items 23-32 comprise Performance

Items 33-41 comprise Mechanical/Science

Items 42-50 comprise Artistic

Appendix G

Interview Questions

- Please describe Destination Imagination.
- How did you get involved in Destination Imagination?
- When did you participate in Destination Imagination?
- What were some of your general learnings from Destination Imagination?
- What were some of your specific learnings from Destination Imagination?
- Describe how the Instant Challenge experience impacted your creativity.
- Describe how the Team Challenge experience impacted your creativity.
- How have your views around Destination Imagination's impact on creativity changed over time?
- Why have your views around Destination Imagination's impact on creativity changed?

Appendix H

Destination Imagination Creative Process

From “Who We Are” by Destination Imagination, 2022, (https://www.destinationimagination.org/who-we-are/#CreativeProcess). Copyright 2022 Destination Imagination.